



Washington State Enhanced Hazard Mitigation Plan

Resources and Best Available Science Guidance

This appendix provides some examples of resources of Best Available Science to use for hazard mitigation planning. The sources provided below are a sampling of information available for use by local jurisdictions as they develop their hazard mitigation plans. The State used these sources in the development of its SHMP. There are many open-sources of data available; peer reviewed science are validated studies, open source data may not be. The intent behind mitigation planning is not to make the jurisdictions create new information but to utilize already existing data where gaps exist. However, if the local jurisdiction has the ability to conduct a valid study that will benefit the body of the whole, and the information is validated, local jurisdictions are encouraged to provide that data to the State for inclusion in this document.

The Washington State Department of Commerce adopted administrative rules in August 2000 (WAC 365-195-900 through 925) to assist cities and counties in determining what is the best available science, where to obtain it, how to include it in land use management policies and regulations, and what to do if there is no available valid scientific information. Scientific information can be produced only through a valid scientific process. To ensure that the best available science is being included in policies and regulations, a county or city should consider the "characteristics" of a valid scientific process and common sources of scientific information [see WAC Chapter 365-195-905(5)].

In the context of critical areas protection, a valid scientific process is one that produces reliable information useful in understanding the consequences of a local government's regulatory decisions. The Department of Commerce produced the [GMS Guidebook: Citations of Recommended Sources of Best Available Science \(BAS\) – For Designating and Protecting Critical Areas](#) in 2002; this publication is a list of resources that state agencies have identified as meeting the characteristics of the best available science. As science is a dynamic process and new science and new interpretation of existing work occur continually, it is impossible to present all of the science in a single source that may be appropriate for use in decision-making and plan development. Nonetheless, its 95 pages remains the standard.



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Multi-Hazard

A good start to identifying the risks in your area is the [Washington State Enhanced Hazard Mitigation Plan](#); this plan contains profiles for all nine natural hazards facing Washington ([Avalanches](#), [Drought](#), [Earthquake](#), [Flood](#), [Landslide](#), [Severe Storm](#), [Tsunami](#), [Volcano](#), and [Wildland Fire](#)).

[Hazards United States \(HAZUS\)](#) is FEMA's methodology for estimating potential losses from disasters. Current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after, a disaster occurs.

The [Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards](#) resource presents ideas for how to mitigate the impacts of different natural hazards, from drought and sea level rise, to severe winter weather and wildfire. The document also includes ideas for actions that communities can take to reduce risk to multiple hazards, such as incorporating a hazard risk assessment into the local development review process.

[National Weather Service \(NWS\)](#) provides four forecast offices to serve Washington State. These are Seattle, Spokane, Pendleton, and Portland. Their web sites offer a wealth of information that supports the four phases of emergency management - mitigation, preparedness, response, and recovery. Key web site elements include the Area Forecast Discussion, latest outlooks, watches, warnings, and advisories, climatic/historical data resources, the Advance Hydrologic Predictive Service or AHPS, and digital forecasts including GIS mapping forecast fields.

[InteractiveNWS](#) (iNWS) hosts mobile and desktop innovations from the National Weather Service. iNWS strives to fulfill their mission of protecting life and property by using new technology to reach out to our customers. Register and define your "Alert Area" as a county, a zip code, address, city, landmark, or custom areas defined by the user.

[The Natural Hazards Center](#) is funded by a consortium of federal agencies and located at the University of Colorado, the center's goal is to strengthen communication among researchers and the individuals, organizations, and agencies concerned with reducing damages caused by disasters. The website contains updated information and links to publications, organizations, and other internet resources for hazards research and practice.

The [U.S. Geological Survey \(USGS\)](#) is a science organization that provides impartial information on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land-use change, and the core science systems that help us provide timely, relevant, and useable information. The webpage *Science in Your Backyard* links directly to a multitude of sites with specific natural hazards information on the state, including real-time information. The webpage [Natural Hazards Gateway](#) provides links to information on all the natural hazards.



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[Washington State Department of Natural Resources \(DNR\), Geologic Information Portal](#) hosts interactive earth science mapping, data, and related information.

Natural Hazards

Avalanche

- [Northwest Weather and Avalanche Center](#): promotes safety by helping reduce the impacts of avalanches and adverse mountain weather on recreation, industry and transportation in Washington, and northern Oregon through [data collection](#), [mountain weather](#) and [avalanche forecasting](#), and [education](#).
- [Washington State Department of Transportation Avalanche Control](#): provides description of avalanche control activities, winter driving information, and state travel information.

Drought

- [Department of Ecology](#) is the lead agency for drought response in Washington; as such, they have a lot of information on their website, including Washington State [Drought Laws and Rules](#).
- [Drought Ready Communities Guide](#) is a guide to community drought preparedness.
- National Weather Service:
 - Long-range weather forecasts are available from the [Climate Prediction Center](#)
 - Water supply forecasts from [Northwest River Forecast Center](#)
- [USDA Disaster Declarations](#): The Farm Service Agency provides assistance for natural disaster losses, resulting from drought, flood, fire, freeze, tornadoes, pest infestation, and other calamities.
- [U.S. Drought Monitor](#)
- [USGS Drought Watch](#)
- [Washington water supply information](#)
- [Yakima daily water reports](#)

Earthquake

- [Crew](#) provides information on earthquakes and related hazards, such as tsunami, throughout the [Cascadia region](#).
- [Earthquake Hazards information](#) - The United States Geological Survey (USGS) earthquake hazards program.
 - [Hazards Mapping and Data](#)
- [Pacific Northwest Seismic Network](#): provides accurate, fast information about earthquakes and ground motions to scientists, engineers, planners, and the public. Housed at the University of Washington.
- [Washington State Geologic Information Portal](#): Through this online service offered by DNR, you can access interactive earth science mapping, data, and related information.



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- [Washington State Seismic Hazards Catalog](#): The Washington State Earthquake Hazards Scenario Catalog contains loss estimates for a suite of earthquake scenarios. These scenarios were selected to represent reasonable estimates of the most serious earthquake hazards everywhere in Washington as a basis for planning.
 - Earthquake Scenario Fact Sheets - DNR
 - [Seattle fault zone](#) (PDF)
 - [Southern Whidbey Island fault zone](#) (PDF)
 - [Tacoma fault](#) (PDF)
 - [Saddle Mountain fault](#) (PDF)
 - [Cle Elum fault](#) (PDF)
 - [Hite fault](#) (PDF)

Flood

- [Community Collaborative Rain, Hail, and Snow Network \(CoCoRaHS\)](#): a unique, non-profit, community-based network of volunteers working together to measure and map precipitation (rain, hail, and snow).
- The **Department of Ecology** (ECY) is the leading state agency for floodplain management in Washington State.
 - [Coastal Atlas](#): provides information about Washington's marine shorelines and the land areas near Puget Sound, the outer coast, and the estuarine portion of the Columbia River, including public access and beach closures.
 - [General flood information](#) and specific [Washington State Flood Hazard Maps](#) can be found on their website.
- [FEMA Map Service Center](#): hosts digital versions of FEMA's Flood Insurance Rate Maps (FIRMs) and interfaces to create FIRMettes (small sections of a FIRM that can show individual properties) for use in hazard mitigation planning and project development. [FEMA Map Modernization](#) and [FEMA RiskMAP](#) products.
- [Journalists Resource](#) website, maintained by Harvard University, a roundup of research on the topics of Global warming, rising seas, and coastal flooding.
- [NOAA Coastal Services Center](#) provides coastal county snapshots in its Digital Coast Program. Current topics include Flood exposure, Wetland benefits, and Ocean and Great Lakes jobs. It includes StormSmart Coasts program that provides a clearinghouse for coastal decision-makers interested in accessing, applying, and sharing resilience information. The interface breaks out reports by State and County.
- [Northwest River Forecast Center](#): provides real-time and historical data including a geographical representation of the available stream gages. The site also has links to summaries of past flooding events and the factors that led to those events.
- [SeaSketch Designing](#) for Our Oceans is being used in New Zealand for Ocean GeoDesign Spatial Decision Making incorporating non-science stakeholders and [Ocean GIS](#) mapping oceans bathymetry like topography on land for marine spatial planning.
- [Sea Level Rise](#) data from NOAA



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- [Sea Level Affecting Marshes Model \(SLAMM\)](#)
- Stormwater:
 - [EPA Stormwater Program](#) - This site contains technical and regulatory information about the NPDES stormwater program.
 - [EPA's Stormwater Calculator](#) - EPA's National Stormwater Calculator is a desktop application that estimates the annual amount of rainwater and frequency of runoff from a specific site anywhere in the United States (including Puerto Rico).
 - [EPA Science Matters Newsletter: Green Infrastructure Research](#)

Landslide

- [The Landslide Handbook-A Guide to Understanding Landslides](#) provides a synthesized summary of landslides, land-use policies, and simple precautions to ensure an individual's immediate safety.
- [USGS Landslide Hazards Program](#) gathers information, conducts research, and produces scientific reports and other products for planners and decision makers from all government entities. The site includes a rollup of landslides reported in the media by calendar year.
- [Washington State Department of Ecology](#) provides information on landslides and slope maps. [Washington State Geologic Information Portal](#): Through this online service offered by DNR, you can access interactive earth science mapping, data, and related information.
 - [Landslides](#)
 - [Landslide Hazard Zonation Project](#): The information developed by the Landslide Hazard Zonation (LHZ) project consists of: a map of landslides, a map of landslide hazard areas (also known as mass wasting map units), and a report detailing the landslide hazard findings for that watershed administrative unit.

Severe Storms

- [Atmospheric River](#) information from NOAA's Earth System Research Laboratory.
- [National Severe Storms Laboratory](#) is working to improve the lead-time and accuracy of severe weather warnings and forecasts in order to save lives and reduce property damage.
- NOAA's [National Climactic Data Center](#) (historic information)
- [Office of the Washington State Climatologist](#)
- [SHELDUS](#) is Spatial Hazard Events and Losses Database for the United States providing data, maps and research by state and by county. Its mission is to conduct basic research on hazard vulnerability and resilience; train the next generation of hazard scientists and practitioners; and through its outreach efforts, assist in the improvement of emergency preparedness, planning, response, and recovery at local, state, national, and international scales.
- [Storm Event Database](#) contains data from January 1950 to the present (usually the data is about 3 months behind), as entered by NOAA's National Weather Service (NWS).
- [Storm Prediction Center](#) provides timely and accurate forecasts and watches for severe weather and monitors heavy rain, heavy snow, and fire weather events and issues specific products for those hazards.



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- [StormReady](#) is a program developed by the National Weather Service designed to help cities, towns, counties, universities, and other larger sites to reduce the potential for disastrous severe storm related consequences.

Tsunami

- [Crew](#) provides information on earthquakes and related hazards, such as tsunami, throughout the [Cascadia region](#).
- [National Tsunami Hazard Mitigation Program](#) coordinates national efforts to assess tsunami threats, prepare community response, issue timely and effective warnings, and mitigate damage.
- [NOAA Center for Tsunami Research](#) supports research and development of improved methods to predict tsunami impacts on the population and infrastructure of coastal communities.
 - [TsunamiReady](#) is a program developed by the National Weather Service designed to help cities, towns, counties, universities, and other larger sites in coastal areas reduce the potential for disastrous tsunami-related consequences.
- [Tsunami Hazard Maps](#) shows the modeled tsunami inundation areas based on a Cascadia Subduction Zone Earthquake.
 - [Tsunami Evacuation Brochures](#)
 - [Tsunami Inundation Maps](#)
- [USGS Tsunami Topics](#) - USGS maintains a list of resources for planners, teachers, and interested persons.

Volcano

- [USGS Volcano Hazards Program](#) links to a multitude of volcano related information including the Cascades Volcano Observatory.
- [Washington State Department of Natural Resources \(DNR\)](#) provides information on geologic hazards. Their geologists actively identify, assess, and map geologic hazards using modern geotechnical and geophysical methods. Our hazard maps are critical for land-use and emergency-management planning, disaster response, and building-code amendment.

Wildland Fire

- [DNR's Main Fire Webpage](#)
 - [Burn Risk Map](#) provides information on the current fire danger by county.
- [Landscape Fire and Resource Management Planning Tools](#) (LANDFIRE) is an interagency vegetation, fire, and fuel characteristics mapping program, sponsored by the United States Department of the Interior (DOI) and the United States Department of Agriculture, Forest Service. Its geospatial data products describe existing vegetation composition and structure, potential vegetation, surface and canopy fuel characteristics, historical fire regimes, and fire regime condition class.



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- [Northwest Coordination Center](#) covers Washington State and serves as the focal point for predictive services for all state and federal agencies involved in wildland fire management and suppression in the region.
- [U.S. Fire Administration](#) provides information on fires for citizens, fire service, media, statistics, and publications.
- [Video](#) of President Obama's Science Advisor Dr. John Holdren explaining, in less than three minutes, how climate change is making America's wildfires more dangerous and why we must act now.

Technological Hazards

Animal, Crop, Plant Disease, and Infestation Outbreak

- [Washington State Department of Agriculture](#) provides a broad spectrum of activities that support the producers, distributors, and consumers of Washington's food and agricultural products.
- [U.S. Department of Agriculture](#) provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and efficient management.

Dam Safety

- [U.S. Army Corps of Engineers, National Levee Database](#) provides information to facilitate and link activities, such as flood risk communication, levee system evaluation for the National Flood Insurance Program (NFIP), levee system inspections, flood plain management, and risk assessments.
- [Washington State Department of Ecology – Dam Safety Office](#) provides emergency response services, construction services, inspection services, and coordination services for dams.

Hazardous Materials

- [Environmental Protection Agency, Emergency Planning and Community Right-to-Know Act \(EPCRA\)](#) leads the national effort to prevent, prepare for, and respond to environmental emergencies. Specifically, it works with other EPA partners, federal agencies, state and local response agencies, and industry to prevent accidents, and maintain and provide superior response capabilities.
- [Washington State Department of Ecology](#) provides information and program services for spills, toxics cleanup, and nuclear waste.
 - [Facility/Site Identification \(F/SID\) System](#) provides information on facilities and sites of interest to the Department of Ecology. State Cleanup sites Federal Superfund sites, Hazardous Waste Generators, Solid Waste Facilities, Underground Storage Tanks, and Dairies Enforcement.



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- [Washington State Department of Health](#) responds to acts of bioterrorism, outbreaks of infectious disease, and other large-scale public health emergencies or mass casualty incidents.

Pipelines

- [U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration](#) is the federal safety authority for ensuring the safe, reliable, and environmentally sound operations of our nation's pipeline transportation system.
- [Washington Utilities and Transportation Commission, Pipeline Safety](#) develops and enforces safety standards for natural gas and hazardous liquid pipelines located within the state.

Public Health Communicable Disease Outbreak, Epidemic, and Pandemic

- [Centers for Disease Control and Prevention](#) collaborates to create the expertise, information, and tools that people and communities need to protect their health – through health promotion, prevention of disease, injury and disability, and preparedness for new health threats.
- [Washington State Department of Health](#) provides data and statistical reports, communicable disease conditions, and emergency preparedness information.
- [World Health Organization](#) provides general information, technical information, statistics, publications, and programs on infectious diseases.

Terrorism

- [Federal Bureau of Investigations, Seattle Division](#) provides statistics, news, and information about counter-terrorism.
- [U.S. Department of Homeland Security](#) provides statistics, news, and information about terrorism.
- [Washington State Patrol, Homeland Security Division](#) provides information on grants, activities, and programs related to homeland security.

Other

Climate Change

- [Climate change vulnerability and adaptation in the North Cascades region, Washington](#) by the U.S. Forest Service, published September 2014.
- [Climate-Smart Conservation: Putting Adaptation Principles into Practice](#) offers guidance for practitioners and policy-makers understand what constitutes "good" climate adaptation, how to recognize those characteristics in existing work, as well as how to design new interventions when necessary.
- [Ecology's Climate Change Webpage](#): Ecology has a variety of information on how climate change is affecting Washington.
- [EPA](#) has published a wide variety of information on their website:



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- [2014 Report on the Environment](#): This site contains maps that can be helpful in showing the changing climate.
- [Climate Impacts in the Northwest](#): Information on general impacts to the Northwest.
- [Climate Ready Estuaries](#)
- [Climate Ready Water Utilities](#)
- [Climate Resilience Evaluation and Awareness Tool \(CREAT\)](#)
- [Journalists Resource](#) website, maintained by Harvard University, a roundup of research on the topics of Global warming, rising seas, and coastal cities: Trends, impacts and adaptation strategies.
- [National Climate Assessment](#)
- [Planning for Climate Change in the West](#): Chapter 1 is an overview of the climate context in the intermountain west.
- [RealClimate: Climate Science from Climate Scientists](#) This website has a good list of climate change resources.
- [Sea Level Rise](#) data from NOAA.
- [Sea Level Affecting Marshes Model \(SLAMM\)](#)
- The White House's [Climate Change Adaptation Task Force](#)

Demographic Data

- [U.S. Census Data](#) - Census Bureau statistics organized by themes, making it easier for you to find what you need. [shapefiles](#) and [demographics](#).
- The [Social Vulnerability Index](#) (SoVI®) 2006-10 measures the social vulnerability of U.S. counties to environmental hazards. The index is a comparative metric that facilitates the examination of the differences in social vulnerability among counties. The index synthesizes 30 socioeconomic variables, which the research literature suggests contribute to reduction in a community's ability to prepare for, respond to, and recover from hazards. SoVI® data sources include primarily those from the U.S. Census Bureau.
- The [Regional Economic Analysis Project](#) (REAP) features data and regional economic tools of analysis that apply to the 39 Washington counties and Washington's 12 metropolitan statistical areas (MSAs). The cornerstone for the data used on REAP are the state and county level income, earnings, employment, transfer payments and product data compiled and updated annually by the Bureau of Economic Analysis, U.S. Department of Commerce.
- [Washington State County Profiles](#) - The State Employment Security Department composes county profiles using data collected from the federal Bureau of Labor Statistics, federal Bureau of Economic Analysis, the U.S. Census Bureau, Washington State Department of Revenue, Washington State Office of Financial Management, and other resources. County profiles focus on the following areas: Geography, Industries, Population, Labor force and unemployment, Industry employment by age and gender, Wages and income.
- [The Washington State Office of Financial Management](#) develops official state and local population estimates and projections for use in the allocation of certain state revenues, growth management, and other planning functions. As the official partner of the U. S. Census Bureau



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for Washington State, the Population unit helps disseminate information about the characteristics of Washington's population, housing, and economy and provide guidance to a variety of stakeholders in accessing and using demographic information.

Growth Management and Comprehensive Plans

- [The Department of Commerce](#) provides a list of resources that state agencies have identified as meeting the characteristics of the best available science. [Citations of Recommended Sources of Best Available Science for Designating and Protecting Critical Areas](#).
- [Washington State's Optional Comprehensive Plan Element for Natural Hazard Reduction](#) Guidebook provides local government planners with tools that can be used to address hazard avoidance and mitigation in comprehensive plans.
- FEMA's [Building Science Resources](#) has information on design standards, building codes, and other construction requirements for mitigation activities that reduce risk to a range of hazard types.
- **EPA:**
 - [Essential Smart Growth Fixes for Urban and Suburban Zoning Codes](#) suggests specific code and ordinance fixes that local governments can consider to make development in their communities more environmentally, economically, and socially sustainable.
 - [best-practice examples](#) of adopted codes and guidelines from around the U.S. that support smart growth. This list is not exhaustive, but rather is a sampling of good, smart growth-supportive codes that could be used as models for communities trying to make similar updates to their zoning.
- [Hazard Mitigation: Integrating Best Practices into Planning](#), prepared by the American Planning Association (APA) and supported through a contract with the Federal Emergency Management Agency (FEMA), seeks to close the gap that often exists between hazard mitigation planning and other local planning and regulatory land-use processes.
- The [Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials](#) resource provides practical guidance on how to incorporate risk reduction strategies into existing local plans, policies, codes, and programs that guide community development or redevelopment patterns.
 - [Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan: A Guidebook for Local Governments \(FEMA Region X\)](#)
- The [Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards](#) resource presents ideas for how to mitigate the impacts of different natural hazards, from drought and sea level rise, to severe winter weather and wildfire. The document also includes ideas for actions that communities can take to reduce risk to multiple hazards, such as incorporating a hazard risk assessment into the local development review process.
- [Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability \(FEMA 364\)](#)



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- **Planning guidelines for hazard prone areas from New Zealand**
 - [Planning for the development of land on or close to active faults: A study of the adoption and use of the Active Fault Guidelines](#)
 - [Guidelines for assessing planning policy and consent requirements for landslide prone land](#)
 - [Integrating tsunami inundation modelling into land use planning](#)
 - [Just add water: When should liquefaction be considered in land use planning?](#)

Geospatial Maps

- [DNR Forest Practices Application Review System \(FPARS\)](#) is designed to streamline the processing of Forest Practices Applications and improves the public's ability to review proposed forest activities; it can also be used for creating base maps for other purposes.
- [USGS Earth Explorer](#) allows you to search, download, and order U.S. Geological Survey products from many datasets.
- [USGS National Geologic Map Database \(NGMDB\)](#) - A U.S. Geological Survey resource for maps and related data about geology, hazards, earth resources, geophysics, geochemistry, geochronology, paleontology, and marine geology
- [USGS National Map Viewer](#) allows you to interactively view "The National Map" data as a map, customize the view, and print a map.
- [Washington Department of Ecology GIS Applications](#) allows you access to GIS applications that the Department of Ecology uses. Topics include shoreline aerial photos, regulated facilities, coastal atlas, well log viewer, environmental data, and water quality information.
- [Washington State Department of Natural Resources](#) provides interactive map themes on the Geologic Information Portal.
- [Washington State Orthoimage Portal](#) allows you to view and download orthoimagery of Washington, prepared from aerial photographs and other data.

Geospatial Downloadable Data

- [Washington Department of Ecology GIS Data](#) provides access to downloadable GIS data.
- [WSDOT GeoData Distribution Catalog](#) is a centralized distribution site for GIS data produced at the Washington State Department of Transportation.

Planning Resources

- [Federal Emergency Management Agency](#) (FEMA) provides information and links regarding Hazard Mitigation Planning:
 - On-Line Course: [Mitigation Planning for Local and Tribal Communities](#)
 - [Code of Federal Regulations \(CFR\) Title 44 – Emergency Management and Assistance §201.6, Local Mitigation Plans](#)
 - [Local Mitigation Plan Review Guide and Tool](#) – this guide provides details on exactly what FEMA wants to see in your HMP in order to meet statutory requirements.
 - [Local Mitigation Planning Handbook](#)



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- [Sample Mitigation Planning Scope of Work](#) for FEMA funding
- [Tribal Multi-Hazard Mitigation Planning Guidance](#)
- [Tribal Hazard Mitigation Plan Review Crosswalk](#)
- [4 Steps to Highly Engaging Plan Documents](#) outlines creative strategies for making your plan and planning documents more engaging to the public.
- Information about [Appreciative Inquiry](#).
- [Beyond the Basics](#) offers practical approaches and examples for how communities can engage in effective Hazard Mitigation Planning.
- [Building a Roadmap to Resilience](#): This planning process was designed for use internationally but it can be easily altered to fit the needs of our communities here in Washington.
- The [Climate Resilience Toolkit](#) provides resources and a framework for understanding and addressing the climate issues that impact people and their communities. This Toolkit (a product from NOAA, NASA, USGS, NSC and others) contains a broad range of information that enables the user to research topics, tools, partnerships, and data by geographical area in an interactive format.
- [Drought Ready Communities Guide](#) is a guide to community drought preparedness.
- [Hazard Mitigation: Integrating Best Practices into Planning](#), prepared by the American Planning Association (APA) and supported through a contract with the Federal Emergency Management Agency (FEMA), seeks to close the gap that often exists between hazard mitigation planning and other local planning and regulatory land-use processes. It introduces hazard mitigation as a vital area of practice for planners; provides guidance on how to integrate hazard mitigation strategies into comprehensive, area, and functional plans; and shows where hazard mitigation can fit into zoning and subdivision codes. Best practices and practical applications are provided.
 - The site has additional planning oriented products for mitigation and recovery including a [bookstore](#) and a [Hazards Planning Research Center](#).
- [Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials](#)
- [Natural Hazard Mitigation Association](#) (NHMA) White Paper, [Planning and Building Livable, Safe & Sustainable Communities. The Patchwork Quilt Approach](#). There are helpful websites listed at the end of the document too.
- [Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability \(FEMA 364\)](#)
- [Washington State's Optional Comprehensive Plan Element for Natural Hazard Reduction](#) Guidebook provides local government planners with tools that can be used to address hazard avoidance and mitigation in comprehensive plans.

Recovery Planning

- **FEMA On-Line Courses:**
 - [National Disaster Recovery Framework \(NDRF\) Overview](#)
 - [Public Works and Disaster Recovery](#)



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- [Holistic Disaster Recovery: Ideas for Building Local Sustainability After a Natural Disaster](#) This handbook presents a variety of strategies for improving resilience to future disasters as well as increasing attractiveness to business, improving growth management, and preserving local history and culture.
- [Long-Term Community Recovery Planning Process: A Self Help Guide](#) This guide provides communities with a framework for long-term community recovery that has been successful in bringing communities together to focus on their long-term recovery issues and needs and to develop projects and strategies to address those needs.
- [Model Pre-Event Recovery Ordinance](#) APA prepared this annotated model pre-event recovery ordinance designed to assist communities in preparing before an event for better managing the process of recovery after a disaster.
- The [National Disaster Recovery Framework](#) is a guide that enables effective recovery support to disaster-impacted States, Tribes, Territorial and local jurisdictions. It provides a flexible structure that enables disaster recovery managers to operate in a unified and collaborative manner. It also focuses on how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of the community and build a more resilient Nation.
 - On-Line Course: [National Disaster Recovery Framework \(NDRF\) Overview](#)
- [Planning for Post-Disaster Recovery](#) Free Webinar (recorded) — Get a jump on recovery from natural disasters with this two-part session from APA's 2013 National Planning Conference. What you learn can make your community stronger, safer, and more resilient. Published by American Planning Association 2013 (150 minutes).
- [Planning for Post-Disaster Recovery and Reconstruction](#) - These chapters from APA's 2005 report Planning for Post-Disaster Recovery and Reconstruction focus on policies for reconstruction, guidance for the planning process, and tools to assist in recovery planning.
 - [Planning for Post-Disaster Recovery: Next Generation](#) The APA is working on a new guidebook; it will be posted at the above link once it is complete.
- [Post-Disaster Recovery Planning Forum: How-To Guide](#)
- [Post-Disaster Redevelopment Planning website](#) a resource site for communities interested in preparing a Post-Disaster Redevelopment Plan (PDRP). On this site you will find case studies, recovery topics, and detailed guidance on developing PDRPs.
- [Rebuilding After Disaster: Going Green from the Ground Up](#) This guide, developed for community leaders involved in post-disaster reconstruction, is intended to show communities how they can incorporate green principles and technologies like energy efficiency and renewable energy into their rebuilding plans.
- [Rebuilding for a More Sustainable Future: An Operational Framework \(FEMA 365\)](#)
- [Resilient Organizations](#) has information on organizational resilience and on post-disaster reconstruction.
- [St. John the Baptist Parish Community Recovery Strategy](#) chronicles the community-driven planning process to provide a blueprint for the future of St. John Parish as it recovers from Hurricane Isaac.



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- **Decision Making and Project Evaluation Tools:**
 - [Long-Term Community Recovery Toolbox: Decision Making Tool](#) helps communities clarify and prioritize their ideas for community recovery and build them into more specific project proposals.
 - [Long-Term Community Recovery Toolbox: Project Development Guide](#) assists with development of long-term community recovery project descriptions, including collecting and analyzing information about goals, strategies, and expected outcomes of proposed projects.
 - [Long-Term Community Recovery Planning Process Project Value Tool Guide](#) provides a standardized methodology for determining the recovery value of post-disaster reconstruction projects.

Resilience

- The [American Planning Association](#) (APA) has a new website with various documents and information on resilience.
- [Building a Roadmap to Resilience](#): This planning process was designed for use internationally but it can be easily altered to fit the needs of our communities here in Washington.
- The Network on [Building Resilient Regions](#) (BRR) examines the power of metropolitan regions to respond to local and national challenges.
- [The Business Alliance for Local Living Economies](#) (BALLE) is focused on creating real prosperity by connecting leaders, spreading solutions that work, and driving investment toward local economies.
- The [Climate Resilience Toolkit](#) provides resources and a framework for understanding and addressing the climate issues that impact people and their communities. This Toolkit (a product from NOAA, NASA, USGS, NSC and others) contains a broad range of information that enables the user to research topics, tools, partnerships, and data by geographical area in an interactive format.
- [City Fixer](#) from *The Atlantic CityLab*: "Solutions for an Urbanizing World"
- [Community Development Crisis and Belonging](#) – Exploring the role of community development in Queensland's recovery from the January 2011 floods.
- The goal of the [Community and Regional Resilience Institute](#) (CARRI) is to strengthen any community or region's ability to prepare for, respond to, and rapidly recover from significant human caused or natural disaster with minimal downtime for the community.
- (for purchase) [The Environmental Planning Handbook for Sustainable Communities and Regions](#) Newly updated, this handbook gives local governments, nonprofits, and citizens guidance on how to create an action plan for a better environment. He clarifies complex environmental issues, looks at current efforts to boost sustainability, and shows local governments how they can make environmental quality part of their planning.
- [Essential Smart Growth Fixes for Urban and Suburban Zoning Codes](#) suggests specific code and ordinance fixes that local governments can consider to make development in their communities more environmentally, economically, and socially sustainable.



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- EPA compiled this set of [best-practice examples](#) of adopted codes and guidelines from around the U.S. that support smart growth. This list is not exhaustive, but rather is a sampling of good, smart growth-supportive codes that could be used as models for communities trying to make similar updates to their zoning.
- HUD's [Economic Resilience](#) website and [listserve](#)
- [Planning and Building Livable, Safe, & Sustainable Communities](#)
- [Resilient Communities podcasts](#) from the RAND Corporation offer insights into strengthening communities' capacity to withstand and recover from disasters and other conditions that affect community well-being.
- [Resilient Organizations](#) has information on organizational resilience and on post-disaster reconstruction.
- [Urban Sustainability Research Group](#)
- [Model Pre-Event Recovery Ordinance](#)
- [My Community Renewable Energy Project Development Tool](#) This planning tool helps communities think about the baseline conditions and opportunities for renewable energy in their community.