



## Washington State Enhanced Hazard Mitigation Plan

**Requirement 201.4.c.7: *The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11.c. The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11.d.***

### *Purpose of the State Hazard Mitigation Plan*

The purpose of the Washington State Hazard Mitigation Plan (SHMP) is to provide guidance for hazard mitigation in the State of Washington. It identifies hazard mitigation goals, objectives and recommended actions and initiatives for Washington state government that will reduce or prevent injury and damage from natural hazards. Participating agencies provided strategies that will improve their resistance to the impacts of a natural hazard-caused disaster.

This plan meets requirements for an Enhanced State Plan under 44 CFR 201, published by the Federal Emergency Management Agency (FEMA). It also meets the requirements of plan review guidance developed by FEMA in 2006 for updating of state plans.

Meeting the requirements of the regulations noted above keeps the State of Washington qualified to obtain all disaster assistance including hazard mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended.

### *Plan Organization*

The Washington SHMP contains several sections:

- Description of the process used to develop this plan, Tab 2.
- Description of the coordination of this plan with local planning initiatives, Tab 3.
- Description of how this plan will be maintained once approved by FEMA, Tab 4.
- Risk Assessment, Tab 5, which includes profiles of nine regions of the State of Washington and the nine natural hazards faced by the state. A synopsis of the at-risk facilities owned or operated by the state agency partners of this plan are

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at the end of hazard profiles as well as regional profiles. A description of the State of Washington, its geography, climate, economy, and government also is here.

- Description of the hazard mitigation strategy and goals for the state, and a list of recommended actions and initiatives to improve the state's resistance to natural hazard-caused disasters, Tab 6.
- Description of how the state meets the Enhanced Plan criteria, Tab 7.
- Copy of the state's administrative plan for federally funded hazard mitigation grant programs, Tab 8.

### *Revisions to the State Plan*

Below is a synopsis of the revisions made to the sections of this plan:

Washington State profile – Moved to the Risk Assessment (see below).

Planning process – Provides description of how the plan was reviewed and revised, the agencies and individuals involved, and how they were involved.

Coordination of local planning – Provides narrative on support provided to local jurisdictions in 2004-2007, how local plans were reviewed and approved and appropriate information incorporated into the 2007 SHMP, and how local mitigation projects are reviewed, prioritized and recommended for funding.

Plan maintenance – Provides a description of the 2004 implementation process, how it worked in 2004-2007, and revisions made to the process for 2007-2010. Also provides tables with status reports on mitigation actions identified in the Mitigation Strategy as well as in state agency annexes in the 2004 plan.

### Risk assessment:

- Socio-economic profiles of the state's nine planning regions were condensed and added to the Washington State profile, which was placed in the Risk Assessment. Narratives describing each county, its economy and commuting patterns were eliminated; the information was superfluous and not especially relevant to hazard mitigation. Population figures and median household incomes for each county were updated, using June 2007 and April 2007 estimates, respectively, developed by the State Office of Financial Management's (OFM) Forecasting Office. Hazard tables and loss estimates for each region were updated to reflect revisions made in the hazard profiles and determination of at-risk state facilities (see narrative below).

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- Hazard Zones – Geo-spatial data sets for hazard zones in combination with geo-coded facility information was used to refine the state facility projected loss information. The dataset used for each hazard is described below:

Earthquake – Used data set developed by the Department of Natural Resources (DNR) for engineers and buildings officials to use implementing the seismic provisions of the International Residential Code (2003) and the International Building Code (2003). The hazard zone takes into consideration soil conditions as well as spectral acceleration (a specific measure of ground shaking) that has 2 percent probability of exceedance in 50 years.

Flood – Used the latest special flood hazard zone data available as of mid 2006, the Q3 digital flood data set from the Department of Ecology.

Tsunami – Used digitized and geo-referenced evacuation maps developed by the DNR based on tsunami modeling by NOAA and feedback from local jurisdictions. The communities covered by these maps include those on the Pacific Coast and Strait of Juan de Fuca. The modeling and maps are based on a tsunami generated by a M9.1 earthquake on the Cascadia Subduction Zone (CSZ). Additionally, the inundation map for Elliott Bay based on a tsunami generated by a M7.3 earthquake on the Seattle Fault was used for locating state facilities in the tsunami inundation zone in and near downtown Seattle. Tsunami modeling has been completed for communities near Tacoma; however, maps and digital data are not yet available that could be used for estimating potentially vulnerable state facilities in this area.

Volcano – Used hazard zone datasets published in 1996 by the U.S. Geological Survey's Cascades Volcano Observatory for the state's five volcanoes – Mount Baker, Glacier Peak, Mount Rainier, Mount St. Helens and Mount Adams. These data sets are the most current available. The hazard zone studied was lahar, which poses the greatest threat to people and property.

Wildland fire – Used the September 2004 dataset of Wildland Urban Interface High Risk Communities published by DNR. The communities were determined using data from the current National Fire Protection Association (NFPA 299) risk assessment.

- State facilities data – Used the 2006 state facility inventory developed by the State OFM. The dataset includes information on more than 11,000 state agency owned and leased facilities statewide. Although it lacks information needed for a complete assessment of risk (such as occupancy and replacement costs), it is the best and most complete facilities data set available (it also is being used by

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other state planning initiatives including Critical Infrastructure Protection Planning).

- Hazard Profiles – The plan focuses on five natural hazards for which geo-spatial hazard zone information is available and for which the state has an emphasis on preparedness and mitigation – Earthquake, Flood, Tsunami, Volcano, and Wildland Fire. These profiles include information on at-risk state facilities. Profiles for four other hazards – Avalanche, Drought, Landslide, and Severe Storm – were included but without information on at-risk state facilities. All profiles were updated to include a summary of the hazard on the first page and include significant hazard events that occurred between early 2004 and early 2007. Other changes include:

Avalanche hazard profile – Added information on avalanche fatalities during 2004 to 2006.

Drought hazard profile – Added information on the 2005 drought event as well as updated agricultural information and other data tables. Updated list and map of Jurisdictions Most Vulnerable to Drought.

Earthquake hazard profile – Made minor edits.

Flood hazard profile – Added information on the November 2006 flood disaster, and updated information on the October 2003 flood disaster.

Landslide hazard profile – Added information on landslides of significance that took place from 2004 to 2006.

Severe Storm hazard profile – Reduced the number of severe storm types profiled to two – high winds and winter storm – as these are the storms of greatest concern to local jurisdictions. Revised the Jurisdictions Most Vulnerable to each storm type. Added information about the December 2006 windstorm that resulted in disaster declarations. Revised other tabular information.

Tsunami hazard profile – Added information on the December 2004 and March 2005 Indian Ocean earthquake and tsunami events along with a comparison of the geologic feature that generated those events to the CSZ off the Pacific Northwest Coast. Added information on the November 2006 tsunami that struck the coast. Condensed information on historic events in Washington, and corrected information on impacts of 1964 tsunami. Added new tsunami inundation / evacuation maps; those for outer coast and Strait of Juan de Fuca communities reflect new hazard modeling performed by NOAA in 2005. Added inundation map for Tacoma from March 2006 NOAA modeling data.

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Volcano hazard profile – Added a chart on lahar probability and a graphic on ash fall probability. Added information on recent eruptive activity of Mount St. Helens (September 2004 – present).

Wildland fire hazard profile – Updated figures for fires and acres burned for state owned and protected lands, and added charts. Added maps showing fire seasons.

Mitigation Strategy – Revised list of mitigation actions, and made minor edits and revisions throughout. Added sections on Repetitive and Severe Repetitive Loss.

Enhanced Plan – Updated with current 2004 – 2007 mitigation initiatives and documentation that the state is committed to a comprehensive mitigation program

Hazard Mitigation Administrative Plan – Included the most current version, approved March 2007, in this plan.

### *Assurances*

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State and national hazard experts for their review of hazard profiles (see Planning Process, Tab 2 for names and agencies/expertise represented).