



## California Cascadia Subduction Zone Earthquake and Tsunami Response Plan, September 2013

### Overview

The Cascadia Subduction Zone (CSZ) Earthquake and Tsunami Response Plan outlines how agencies and organizations will work together in coordination with affected local level Operational Areas to execute joint agency responsibilities and direct federal response, short-term recovery, and mitigation efforts following a catastrophic earthquake and tsunami along the Northern California coast. The plan focuses on the immediate application of resources to lifesaving and life-sustaining missions to stabilize event impacts within the first 72 hours. The primary objectives of this plan are to save lives, minimize suffering, protect property, and safeguard the environment through response efforts, and then to set the conditions for recovery of local, state, tribal, and federal governments, as well as nongovernmental and private sector organizations.



### California Cascadia Subduction Zone Earthquake and Tsunami Response Plan

US Department of Homeland Security  
Federal Emergency Management Agency Region IX  
California Governor's Office of Emergency Services

September 2013

FOUO Sensitive



### Impacted Counties

Del Norte, Humboldt, and Mendocino.

### Scenario

This scenario anticipates a Magnitude (M)9.0 earthquake that generates a tsunami impacting most of the Pacific Ocean and adjacent west coast of North America including California, Oregon, Washington, and British Columbia, Canada. Damage and community isolation caused by the earthquake, resulting tsunamis, and subsequent aftershocks will require large-scale response efforts and an extended recovery for the region.

### Threat

The Cascadia Subduction Zone is an 800-mile-long (1287 km) offshore fault, stretching from Northern California to Vancouver Island in British Columbia, Canada. Based on historical data, modeling, and simulation, a M9.0 CSZ earthquake off the coasts of Northern California, Oregon, Washington, and British Columbia will be immediately devastating.

## Fact Sheet: California Cascadia Subduction Zone Earthquake and Tsunami Response Plan

A catastrophic M9.0 CSZ earthquake would cause violent ground shaking in several coastal areas in Del Norte, Humboldt, and Mendocino counties and generate a tsunami with estimated wave heights of between 5 and 15 meters (16 – 49 ft.) in Crescent City, and up to 12 meters (39 ft.) in Eureka/Humboldt Bay. Due to the proximity of the expected earthquake, coastal communities may have as little as 5 minutes of warning before a tsunami arrives following the initial several minutes of ground shaking.

Tsunami inundation and ground shaking will push widespread damage inland, resulting in high numbers of potential fatalities, hospitalizations, evacuees, and destroyed buildings. The event could trigger cascading effects within the entire Northern California region and surrounding states, including possible severe long-term economic impacts. Conventional response efforts and capabilities will be overwhelmed.



### Planning Factors

Understanding the expected impacts of an earthquake and tsunami help planning for needed capabilities.

- The CSZ earthquake, resulting tsunami, and aftershocks will significantly disrupt critical infrastructure, such as transportation, energy, telecommunications, utility systems, and public health and medical systems, and will require a large-scale response effort.
- Buildings will shift and collapse; utilities will suffer damage and outages; pipelines will sustain damage and leaks that lead to a loss of pressure and hazardous materials issues; water infrastructure may be damaged and contaminated, and electrical and natural gas infrastructure damage may result in fires throughout the area. Ongoing damage will occur if distribution systems are not shut down and repaired. Some infrastructure facilities will require complete reconstruction.
- Communities will be isolated and many areas will only be accessible by airlift or by water, increasing delays in response and stabilization operations.
- Minimal local resources and materials will be available.
- Incoming response must be self-sustaining, requiring significant buildup of support services at base camps and staging areas.
- The region has limited medical treatment facilities. Many are in areas that will experience severe shaking or tsunami inundation and will sustain structural damage.

## Fact Sheet: California Cascadia Subduction Zone Earthquake and Tsunami Response Plan

- Almost 1,000 lives could be lost, and another 780 people could be injured due to tsunami inundation alone, with Crescent City hardest hit.
- Approximately 21,000 people live in the tsunami inundation zone. The three-county area population can increase by as much as 17,000 due to tourism.
- Roughly 2,000 people will require search and rescue.
- About 24,000 households are expected to be displaced, (about 60,000 people).
- Displaced household pets are expected to total approximately 13,750.
- Approximately 35,000 people will require sheltering, and another 74,000 are expected to shelter in place in or near their homes and require long-term or bulk supplies. Of those requiring shelter, 1,400 will be children between the ages of 1 and 5, and 8,750 will have some sort of access or functional need. Shelter capacity after the event is expected to accommodate only 22 percent of those requiring shelter.
- An estimated 51,000 people will need to evacuate as transportation routes allow.
- Up to 10 million tons of debris will be generated, moved, and disposed of.
- Infrastructure such as water treatment plants and power stations will be compromised, and other public utilities will be damaged or destroyed.
- Communication capabilities, including communications with vulnerable populations, will be compromised.
- Continuing impacts including delayed response will be caused by subsequent tsunami waves, aftershocks, flooding, or availability of resources.

### Plan Structure

This Operational Plan consists of a base Concept of Operations (CONOP) and eight annexes. The CONOP provides broad response operations guidance and includes:

- Predicted impacts of a magnitude M9.0 earthquake and resulting tsunami caused by a full rupture of the CSZ fault.
- The mission of the joint federal/state organization.
- Objectives (decision points for response) and Courses of Action (any sequence of activities that accomplish an objective).
- A schedule of actions, referred to as the Execution Checklist, that will be implemented should a CSZ event occur.

**For more information, please visit:**

<https://www.caloes.ca.gov/office-of-the-director/operations/planning-preparedness-prevention/planning-preparedness/catastrophic-planning/>