



Exercise Scenario Document

Note that the scenario outlined below is a summarized version for initial awareness purposes, a more detailed Scenario Document will be made available to players prior to participation and on the Player Placard for reference any time during the exercise.

Disclaimer: This scenario is designed for exercise purposes only. The scenario is intended to be realistic but are not meant to be a precise representation of earthquake impacts or response activities. The information in this report is not predictive; there may be significant differences between this scenario and published modeled results and actual losses following a real-world Cascadia Subduction Zone earthquake and tsunami.

Exercise Scenario Timeline

At 8:00 A.M. on October 25, 2024, the Cascadia Subduction Zone released the centuries-long stress built up on the margin between the Juan de Fuca Plate and the North American Plate. A 9.0 magnitude earthquake started and encompassed the nearly 700 miles (1100 km) long fault. The earthquake impacted the entire fault zone, rupturing from end to end, causing one great earthquake that was felt throughout the Pacific Northwest.

Within seconds of the fault's rupture at the southern end, seismic waves started impacting coastal communities in Curry and Coos Counties. As the rupture expanded northward, shaking intensified on the south coast of Oregon and Northern California. The shaking intensity along the coast rose to MMVI (strong shaking) and continued to rise as the shaking continued.

As the locked zone released the pressure, the North American Plate slipped ~80 feet (~25 meters) west, causing an uplift of the ocean floor. This displacement caused the water column to rise, generating a tsunami. The tsunami split with waves going both east and west at about 500 miles per hour.

By 8:02 A.M. on October 25, 2024, Eugene, Salem, and Portland communities began to feel the first shaking. The shaking continued for 2-3 minutes. While the shaking was not as strong as on the coast, the nature of the long seismic waves generated by a subduction zone earthquake means that more damage likely occurred to larger, older structures. The rupture continued northward, and the coastal areas of Washington state began to feel the effect of ground shaking.

Across Oregon, power went out, and cellular communication was significantly impacted. A significant number of unreinforced masonry, non-ductile concrete, and tip-up buildings collapsed, and bridges across the Coastal region and Willamette Valley collapsed or shifted off supports. Coastal subsidence caused a drop of 3-6 feet (1-2 meters), depending on location, which in turn caused an inrush of ocean water.



At 8:15 A.M. on October 25, 2024, the first tsunami surges arrived on the outer coasts of Curry and Coos Counties. On the North coast of Oregon, the leading trough of the tsunami caused a drawdown, and the water temporarily receded from the coast. The initial waves were followed by a series of increasingly larger surges, averaging 30-50 feet (9-15 meters) high and in some areas, even higher. At 8:45 A.M. on October 25, 2024, the tsunami surges reached the Clatsop Spit, entered the Columbia River, and impacted the town of Astoria.

The tsunami generated by the earthquake wrought destruction along the Pacific Northwest coastline. These waves inundated coastal towns, sweeping away homes, businesses, and critical infrastructure. Entire neighborhoods were reduced to rubble, and thousands of residents were either swept out to sea or trapped beneath the debris. The force of the water uprooted trees, overturned vehicles, and left a thick layer of mud and wreckage in its wake. Ports and marinas were decimated, disrupting the local fishing industry and cutting off essential supply lines. The environmental impact was severe, with the tsunami waves causing extensive erosion and depositing hazardous materials across the landscape.

Additional Tsunami inundation area can be found through the following [GIS map](#) – areas in yellow and brown have been significantly impacted.

At 9:00 A.M. on October 25, 2024, the first of thousands of aftershocks was felt along the coast. These aftershocks will lessen in frequency and magnitude over time. In the first 24 hours after the main shock, there were dozens of aftershocks in the 4.2-5.3 magnitude range. With more intense aftershocks listed below those are listed below:

7.4 Mw, October 26, 2024, at 12:31 A.M.

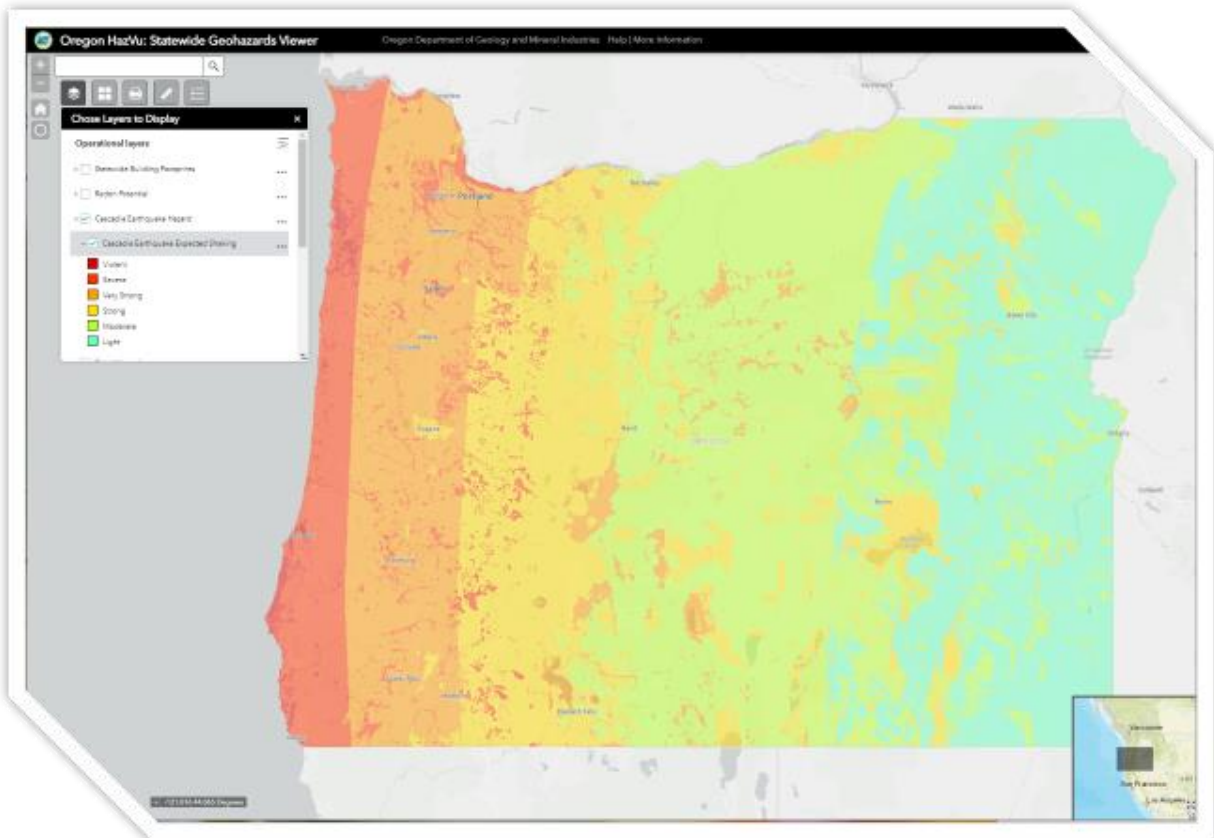
7.1 Mw, October 26, 2024, at 3:37 P.M.

5.7 Mw, October 27, 2024, at 1:15 P.M.

Exercise Scenario Impacts

This earthquake and subsequent tsunami had a significant impact across the State of Oregon, with the shake intensity felt last Friday shown in the image below:

Figure 2. Shake Intensity map of Oregon (DOGAMI HAZVu)



The impact on Oregon was profound. The initial earthquake and subsequent tsunami resulted in an estimated 4,200 fatalities and over 14,000 injuries. Nearly 260,000 buildings, including schools and hospitals, suffered moderate to complete damage. Approximately, 438,000 people have been displaced, and 50,000 households are left homeless. Essential services, such as power, communication, and water, are severely disrupted. In total the estimated economic losses are expected to exceed \$30 billion.

Transportation infrastructure was severely impacted. Access to the most severely impacted areas is limited for ground assets and primarily available through air assets due to damaged surface transportation infrastructure. Highway bridges, railways, airports, and port facilities sustained widespread damage. Nearly half of Interstate 5, spanning from southern Oregon to the Columbia River, was rendered impassable. U.S. Highway 101 along the coast suffered significant damage with initial reports sharing limited, to no movement capabilities. As many as 700 bridges may have collapsed or be in danger of collapsing. Landslides triggered by the



earthquake blocked key routes through the east of the Cascade Mountains, isolating communities and complicating evacuation efforts. Coastal areas, now accessible only by sea or air, faced monumental challenges in receiving emergency supplies. Status of locally managed roadways is currently not well known. Portland International Airport (PDX) suffered moderate to severe structural damage, and its runways are cracked and require repairs. Most airports west of I-5 are damaged or still require assessments.

Communication networks are similarly devastated. Cellular and landline infrastructure was largely destroyed. Although communication facilities in eastern Oregon sustained less damage, intermittent power outages hampered their functionality.

Food and water supplies were severely disrupted. The destruction of transportation and power networks jeopardized food storage, particularly frozen and refrigerated goods. Potable water is scarce, with coastal areas potentially facing weeks or months without safe municipal drinking water. Much of the potable water systems in western Oregon have suffered medium damage, including widespread breaks and leaks. Food preparation and processing facility inspection requirements exceed local capabilities.

Health and medical systems have been overwhelmed. Many hospitals sustained medium to high damage and drastically reduced bed availability. Hospitals and medical facilities that can operate lack enough staff and equipment to handle the surge in patients seeking medical attention. Medical facilities are suffering from compounding issues related from the lack of power, fuel, clean water, and supplies. Pharmaceutical supplies are dwindling rapidly, and reestablishing medical supply chains is hindered by damaged transportation networks. Limited refrigeration compounded the crisis.

Energy infrastructure was crippled. Large regions of Oregon plunged into darkness minutes after the earthquake, and restoring power was projected to take weeks, if not months. The state face a severe shortage of refined fuel due to damage to fuel storage, transportation, and pumping infrastructure. Fuel availability at any storage facilities are at 50% of routine capacity, and the Olympic Pipeline has been damaged and is not operational. Most gas stations west of the Cascades are not operational, there are not impacts to gas stations east of the Cascades. Generator support is insufficient to meet demand. The cascading effects of power outages hinders efforts to stabilize other lifelines.

The safety and security situation are evolving. Local communities have shown remarkable resilience, with residents banding together to support each other. Public services, such as fire and police departments, are operating at reduced capacity, struggling to manage the increased demand. While there have only been limited reports of looting and rioting after the earthquake, there are concerns that the security situation will deteriorate as supplies become scarcer. Police forces, already stretched thin, struggled to operate in heavily damaged areas, and essential



government services are overwhelmed. Evacuation efforts are hindered due to the lack of public safety personnel and compromised transportation infrastructure.

Hazardous materials incidents further exacerbated the disaster. Chemical facilities along the coast were inundated by tsunami waves, resulting in major maritime hazardous material incidents. The Critical Energy Infrastructure Hub in Portland suffered catastrophic damage, resulting in a massive spill of millions of gallons of oil and hazardous materials into the Columbia River. This environmental disaster compounded the region's challenges, threatening aquatic ecosystems and contaminating drinking water sources. Additionally, Natural gas pipelines suffered significant breaks, complicating recovery efforts. Thousands of fires have broken out in areas thought the state.

In the face of such overwhelming devastation, the response efforts began. The people of the Pacific Northwest faced immense challenges in the aftermath of the Cascadia Subduction Zone disaster.



Summarized Turnover Briefing

Overview

At 8:00 A.M. on October 25, 2024, the Cascadia Subduction Zone released a catastrophic 9.0 magnitude earthquake, causing widespread devastation across the Pacific Northwest. Over the past 96 hours, immediate response operations have been conducted with limited coordination due to significant impacts on communications infrastructure. The Oregon National Guard (ONNG) has been the primary immediate response lead agency through this point, with the State of Oregon Emergency Coordination Center (ECC) planning for its first fully staffed operational period starting Tuesday, October 29 at 8:00 AM out of their primary location in Salem. While information has been trickling in, the full extent of damage and impact to humans, infrastructure, and the environment is not yet clear.

0 - 24 Hours (October 25)

The initial moments after the earthquake were critical for establishing a coordinated response. At 8:05 A.M., the Statewide Integrated Public Alert and Warning System (IPAWS) Emergency Alert System (EAS) was activated to notify the public. However severe downed communications systems have limited the success of that notification distribution. At 10:35 AM, the Governor issued a statewide Emergency Declaration. Based on the request from the Governor of Oregon, the United States President, recognizing the severity of the situation, declared a Major Disaster for affect counties in Oregon, mobilizing federal resources to support the overwhelmed state.

Local jurisdictions immediately began performing life-saving actions and conducting damage assessments. Fire and law enforcement services throughout the state began conducting search and rescue operations to identify survivors. These efforts were complicated by significant aftershocks throughout the day. The National Guard established state coordination operations and conducted aerial assessments of coastal communities to gauge the extent of the damage.

State agencies and local authorities have worked tirelessly to set up emergency operations centers (EOC) across the impacted regions, it is unclear at this point the status of each County EOC. Medical facilities, though many were damaged, started triaging and treating the injured. Makeshift shelters were established in schools and community centers to accommodate displaced residents. Emergency services have had limited success in coordinating with utility companies to begin assessing and restoring critical infrastructure, such as power lines and the water supply.

The Federal Emergency Management Agency (FEMA) activated the Region 10 Regional Response Coordination Center (RRCC) and the National Response Coordination Center in Washington D.C. FEMA also activated regional and national response teams, and began deploying personnel and resources to support the initial response. FEMA's Urban Search and



Rescue (USAR) teams and Incident Management Assistance Teams (IMAT) were deployed. Commercial flights into and out of airports in Oregon and Washington were suspended until damage to runways and facilities are assessed.

24 – 48 Hours (October 26)

On the second day, response efforts intensified. The Governor addressed the public and held a press conference to provide updates and reassurance.

FEMA established Incident Support Bases (ISB) at Redmond and Crater Lake/Klamath Regional Airports. Search and rescue teams from neighboring states arrived at the ISB, bringing additional manpower and expertise. These teams focused on locating and rescuing individuals trapped in collapsed buildings.

Oregon National Guard coordinated the aerial assessments of the affected regions to obtain a comprehensive view of the damage. The aerial assessments conducted by the Oregon National Guard revealed extensive and widespread damage across the impacted regions. The coastal communities bore the brunt of the destruction, with entire neighborhoods flattened and critical infrastructure, such as roads, bridges, and utilities, severely compromised. The assessments identified numerous areas where buildings had collapsed, leading to significant casualties and entrapments. Key transportation routes, including major highways and rail lines, were found to be impassable due to landslides, debris, and structural failures. The aerial surveys also highlighted significant damage to hospitals, schools, and emergency services facilities, further complicating the rescue and relief efforts. These assessments informed the deployment of resources and personnel, allowing for a targeted response.

The U.S. Army Corps of Engineers (USACE) was mobilized to assist with infrastructure assessments and temporary repairs. Their expertise has been critical in evaluating the structural integrity of bridges, roads, and public buildings, and in implementing immediate stabilization measures.

Public health advisories were issued to prevent disease outbreaks due to compromised water supplies and sanitation systems. The Department of Health and Human Services (HHS) activated the National Disaster Medical System (NDMS), deploying medical teams directing them to staging bases in Oregon. These teams are equipped to provide both trauma care and general medical support. Additionally, through NDMS, HHS provides patient movement support in coordination US TRANSCOM and US NORTHCOM.

48 – 72 Hours (October 27)

The third day focused on assessing the state's infrastructure and logistical capabilities. The Oregon Department of Transportation (ODOT) reports revealed that all state routes from I-5 to the coast are inaccessible. ODOT has cleared landslide debris and made some emergency repairs to Highways 26 and 22 to open east-west routes for emergency responder use through



the Cascades. All routes east of the Cascade Mountains are open. The ODOT began clearing debris from critical roadways to restore access for emergency vehicles. The U.S. Department of Transportation (DOT) is working closely with state agencies to assess and clear key transportation routes. Due to the extensive nature of debris and landslides, establishing routes to the coast and over the cascades is expected to take weeks to months. This highlighted the logistical challenges of delivering aid to the hardest-hit areas.

The Oregon Department of Emergency Management building was inspected and deemed safe, ensuring that coordination efforts could continue. ECC staff directed to report by 0800 on October 29.

The National Guard expanded its aerial assessments to include communities along the I-5 corridor. Initial airfield assessments were conducted to determine the operational status and capability for receiving aid and facilitating evacuations. The assessment results enabled FEMA to establish a Federal Staging Area (FSA) in Eugene and use PDX to some extent. Oregon Department of Transportation (ODOT) is assessing the status of key roadways throughout the impacted area.

In Pendleton, three FEMA Type 1 Urban Search and Rescue (USAR) teams were staged, ready to deploy and assist with search and rescue operations. Additionally, USACE positioned 20 generators of varying capacities at the ISB in Redmond to support critical infrastructure needs. HHS also deployed a Disaster Mortuary Operational Response Teams (DMORTs) the staging area to assist with fatality management.

The EPA and Coast Guard (USCG) began a coordinated effort with Oregon DEQ and the State of Washington to begin the control and containment of the catastrophic oil and hazardous material spill on the Columbia River from the Critical Energy Infrastructure Hub. The Environmental Protection Agency (EPA) began monitoring air and water quality, addressing contamination concerns from hazardous materials released during the earthquake and subsequent tsunami. The EPA worked to mitigate environmental hazards, ensuring the safety of both the responders and the public.

The Department of Defense (DoD) provided additional support with logistics and airlift capabilities, enabling rapid deployment of personnel and supplies to hard-to-reach areas. Military assets were utilized to transport critical resources and assist in evacuation efforts.

The Defense Logistics Agency (DLA) has started to bring fuel into the state to support impacted fuel supply chains.

There is an identified need for food and water distribution centers to be established for coastal communities that now have no way to receive supplies or evacuate the area. Mental health services were also deployed to provide counseling and support to those traumatized by the disaster.



72 – 96 Hours (October 28)

By the fourth day, the focus remained on stabilizing the situation and providing essential services. Coordination between state and federal agencies is required to ensure a streamlined response.

The challenge of providing shelter, food, and medical care to hundreds of thousands of displaced residents remained significant. Rapidly establishing shelters for displaced individuals in the impacted areas is necessary, and additional medical and logistical support is required in affected regions. Evacuation efforts continued, although they are hampered by the widespread damage to infrastructure and lack of coordinated guidance on where evacuees should go.

HHS NDMS teams have arrived in Eugene ISB ready to support local hospitals and clinics overwhelmed with casualties. HHS also deployed Mental health services to provide counseling and support to those traumatized by the disaster. The Environmental Protection Agency (EPA) monitored air and water quality, addressing contamination concerns from hazardous materials released during the quake and tsunami.

Ongoing Response Efforts

Throughout these critical first 96 hours, the combined efforts of local, state, and federal agencies aimed to save lives, assess the extent of the damage, and begin efforts to stabilize the situation. Much work remains to protect lives, provide critical resources, stabilize and restore community lifelines, and begin planning for recovery.