

Goal 7 Element: Tillamook County Draft Tsunami Resilience Comp Plan Policies

2.6 TSUNAMI (SEISMIC WAVES)

Description of the Hazard:

The Oregon coast is well known for its spectacular scenery and natural resources. However, because the coast lies at the interface between land and the Pacific Ocean, it also is a zone of great instability and vulnerability. Over time, we have gained a greater awareness of our coast's geologic hazards and its risks to people and property.

Coastal Oregon is not only vulnerable to chronic coastal hazards such as coastal erosion from winter storms and sea level rise, but it is also subject to the potentially catastrophic effects of a Cascadia earthquake event and related tsunami. These types of powerful and devastating earthquakes of magnitude 9+ are generated at the Cascadia Subduction Zone where the eastward-moving Juan de Fuca tectonic plate dives under the westward-moving North American plate just off the Oregon coast.

These large earthquakes will occur under the ocean just offshore of our coast and will produce extremely destructive tsunamis that can strike the coast as soon as 15 minutes after the earthquake, leaving devastation in their path. It is likely that in most Oregon coast communities, including Tillamook County, the only warning of an approaching tsunami will be the earthquake itself.

The geologic record shows that the largest of these large Cascadia Subduction Zone earthquakes and accompanying tsunamis occur about every 500 years, plus or minus 200 years. The last such earthquake and tsunami occurred over 300 years ago, on the evening of January 26th, 1700. This means that we are in the time window where a destructive Cascadia earthquake and tsunami could occur and the probability of that occurrence will continue to increase over time. This time the stakes are much higher as the great earthquake and catastrophic tsunami could occur when tens of thousands of Oregonians and visitors are enjoying coastal beaches and towns. To address this increasing risk and substantially increase resilience within our community, Tillamook County is proactively addressing tsunami preparedness and mitigation within its land use program. Land use planning that addresses tsunami risk is an essential tool to help increase resilience to a potentially catastrophic tsunami event within Tillamook County.

Tsunami Hazard Maps:

The Department of Geology and Mineral Industries (DOGAMI) has developed Tsunami Inundation Maps (TIMs) which provide the essential information for defining tsunami risk along the Oregon coast. Tillamook County has adopted the TIM's applicable to its coastal unincorporated areas as a part of its comprehensive plan hazard inventory. These maps are also referenced within this natural hazards element of the comprehensive plan and are the basis for establishing the boundaries of Tillamook County's Tsunami Hazard Overlay Zone. The TIMs are referenced in the tsunami related plan policies and within the overlay zone for purposes of differentiating between areas of higher versus lower risk.

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Tsunami Related Policies:

Tillamook County has adopted a set of comprehensive plan policies related to tsunami preparedness and recovery that are included within this and other applicable sections of the comprehensive plan. These policies have been developed to address the resilience goals of the County. They are designed to support the County's resilience efforts within the comprehensive plan and implementing codes.

Zoning:

Tsunami Hazard Overlay Zone (THO): Tillamook County has adopted an overlay zone which utilizes the applicable DOGAMI Tsunami Inundation Maps (TIMs). The overlay zone includes all areas identified as subject to inundation by the largest (XXL) local source tsunami event which ensures that life safety and evacuation route planning and development are adequately addressed. Other land use resilience strategies and requirements included within the overlay zone, which are not life safety or evacuation related, are applied within a subset of the overlay to smaller inundation scenario areas. These measures are included within the overlay zone provisions and reflect the community's risk tolerance and application of mitigation measures. The overlay zone boundary has been adopted as an amendment to the official zoning map for Tillamook County.

Tsunami Evacuation Facilities Improvement Plan Maps: The County, as part of its land use program for tsunami preparedness, is in process of completing a comprehensive Tsunami Evacuation Facilities Improvement Plan in coordination with affected communities and stakeholders. The Tsunami Evacuation Facilities Improvement Plan identifies designated evacuation routes, assembly areas and other components of the local evacuation system. The plan is a key component of the County's efforts to reduce risk to life safety by planning for a comprehensive evacuation system and developing the detailed information necessary to establish land use requirements to implement evacuation measures and improvements.

General Policies

To protect life, minimize damage and facilitate rapid recovery from a local source Cascadia Subduction Zone earthquake and tsunami, the County will:

1. Support tsunami preparedness and related resilience efforts.
2. Take reasonable measures to protect life and property to the fullest extent feasible, from the impact of a local source Cascadia tsunami.
3. Use the Oregon Department of Geology and Mineral Industries (DOGAMI) Tsunami Inundation Maps applicable to the County to develop tsunami hazard resiliency measures.
4. Adopt a Tsunami Hazard Overlay Zone for identified tsunami hazard areas to implement land use measures addressing tsunami risk.
5. Enact design or performance implementing code components in identified tsunami hazard areas.

Evacuation Policies

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To facilitate the orderly and expedient evacuation of residents and visitors in a tsunami event, the County will:

1. Develop a Tsunami Evacuation Facilities Improvement Plan that identifies current and projected evacuation needs, designates routes and assembly areas, establishes system standards, and identifies needed improvements to the local evacuation system.
2. Identify and secure the use of appropriate land above a tsunami inundation zone for evacuation, assembly, and emergency response.
3. Ensure zoning allows for adequate storage and shelter facilities.
4. Allow for needed evacuation route improvements, including improvements to route demarcation (way finding in all weather and lighting conditions) and vegetation management, for new development and substantial redevelopment in tsunami hazard areas.
5. Work with neighboring jurisdictions to identify inter-jurisdictional evacuation routes and assembly areas where necessary.
6. Allow for the development of vertical evacuation structures in areas where reaching high ground is impractical.
7. Evaluate multi-use paths and transportation policies for tsunami evacuation route planning.
8. Encourage suitable structures to incorporate vertical evacuation capacity in areas where evacuation to high ground is impractical.
9. Install signs to clearly mark evacuation routes and implement other way finding technologies (e.g. painting on pavement, power poles and other prominent features) to ensure that routes can be easily followed day or night and in all weather conditions.
10. Prepare informational materials related to tsunami evacuation routes and make them easily available to the public.

Policies Related to Reducing Development Risk in High Tsunami Risk Areas

The County will:

1. Prohibit comprehensive plan or zone map amendments that would result in increased residential densities or more intensive uses in tsunami hazard areas unless adequate mitigation is implemented. Mitigation measures should focus on life safety and tsunami resistant structure design and construction.
2. Encourage open space, public and private recreation and other minimally developed uses within the tsunami inundation zone area.
3. Prohibit the development of those essential facilities and special occupancy structures within the **LARGE (L)** tsunami inundation area, unless a "Use Exception" has been granted.
4. Protect and enhance existing dune features and coastal vegetation to promote natural buffers and reduce erosion.

Hazard Mitigation Planning

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The County will:

1. Address tsunami hazards and associated resilience strategies within the community's FEMA approved hazard mitigation plan.
2. Incorporate and adopt relevant sections of the hazard mitigation plan by reference into the comprehensive plan.

Tsunami Awareness Education and Outreach

The County will:

1. Encourage and support tsunami education and outreach, training, and practice.
2. Implement a comprehensive and ongoing tsunami preparedness community education and outreach program.
3. Collaborate with local, state and federal planners and emergency managers for the purpose of developing a culture of preparedness supporting evacuation route planning and other land use measures that minimize risk and maximize resilience from tsunami events.

Debris Management

The County will:

1. Identify and work to secure the use of suitable areas within the Tsunami Inundation Zone for short and long-term, post-disaster debris storage, sorting and management.
2. Work with other public and private entities to establish mutual aid agreements for post-disaster debris removal and otherwise plan for needed heavy equipment in areas which may become isolated due to earthquake and tsunami damage.

Hazardous Materials

The County will:

1. Limit or prohibit new hazardous facilities within tsunami inundation zones. Where limiting or prohibiting such facilities is not practical, require adequate mitigation measures consistent with state and federal requirements.

Goal 11: Public Facility and Services

The County will:

1. Consider and address tsunami risks and evacuation routes and signage when planning, developing, improving, or replacing public facilities and services.

Goal 12: Transportation

The County will:

1. Develop multi-use paths that both enhance community livability and serve as tsunami evacuation routes.

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2. Coordinate evacuation route and signage planning in conjunction with existing or proposed transportation system plan pedestrian and bicycle route planning efforts.
3. Locate new transportation facilities outside the tsunami inundation zones where feasible.
4. Where feasible design and construct new transportation facilities to withstand a Cascadia event earthquake and be resistant to the associated tsunami.

Goal 14: Urbanization

The County will:

1. Limit the allowable uses on property in the tsunami hazard area vacated as the result of a community growth boundary expansion to relocate existing development. Such limitations shall include permitting only low risk uses, or requiring uses which implement adequate protection or mitigation measures for seismic and tsunami hazards.
2. Plan for the location or relocation of critical facilities outside of tsunami hazard area when conducting the land needs analysis.

Map Amendments

- a. *DOGAMI Tsunami Inundation Map (TIM): Communities should adopt the map, or maps in the DOGAMI Tsunami Inundation Map (TIM) Series applicable to their jurisdiction as a part of the comprehensive plan inventory, as they provide the essential information for defining tsunami risk. The TIMs include five inundation scenario areas including small, medium, large, extra-large, and extra extra-large tsunami events. The TIMs will typically be referenced in the natural hazards element of the comprehensive plan, and will also be used as the basis for establishing the boundaries of a Tsunami Hazard Overlay zone. The TIMs may also be referenced in plan policies and/or the overlay zone for purposes of differentiating between areas of higher versus lower risk.*
- b. *Tsunami Hazard Overlay Zone Map (THO): The overlay zone map(s) should be developed using the applicable DOGAMI Tsunami Inundation Maps or TIMs. In developing the overlay map it is recommended that the overlay area include all five inundation scenarios identified on the TIMs (S, M, L, XL, and XXL) which would ensure that life/safety and evacuation route planning and development are adequately addressed. Other land use resilience strategies and requirements included within the overlay zone, which are not life safety or evacuation related, may be applied within a subset of the overlay to smaller inundation scenario areas subject to the community's risk tolerance and application of mitigation measures. The map(s) should be adopted in the form of an amendment to the official zoning map for the community.*
- c. *Tsunami Evacuation Facilities Improvement Plan Maps: The Tsunami Evacuation Facilities Improvement Plan will typically include a map or maps that identify designated evacuation routes, assembly areas and other components of the local evacuation system. This map would be included in the adoption of the overall Tsunami Evacuation Facilities Improvement Plan. The Tsunami*

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Evacuation Facilities Improvement Plan should, in turn, be incorporated into the community's comprehensive plan or transportation system plan, as appropriate.

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