

Sea Level Rise

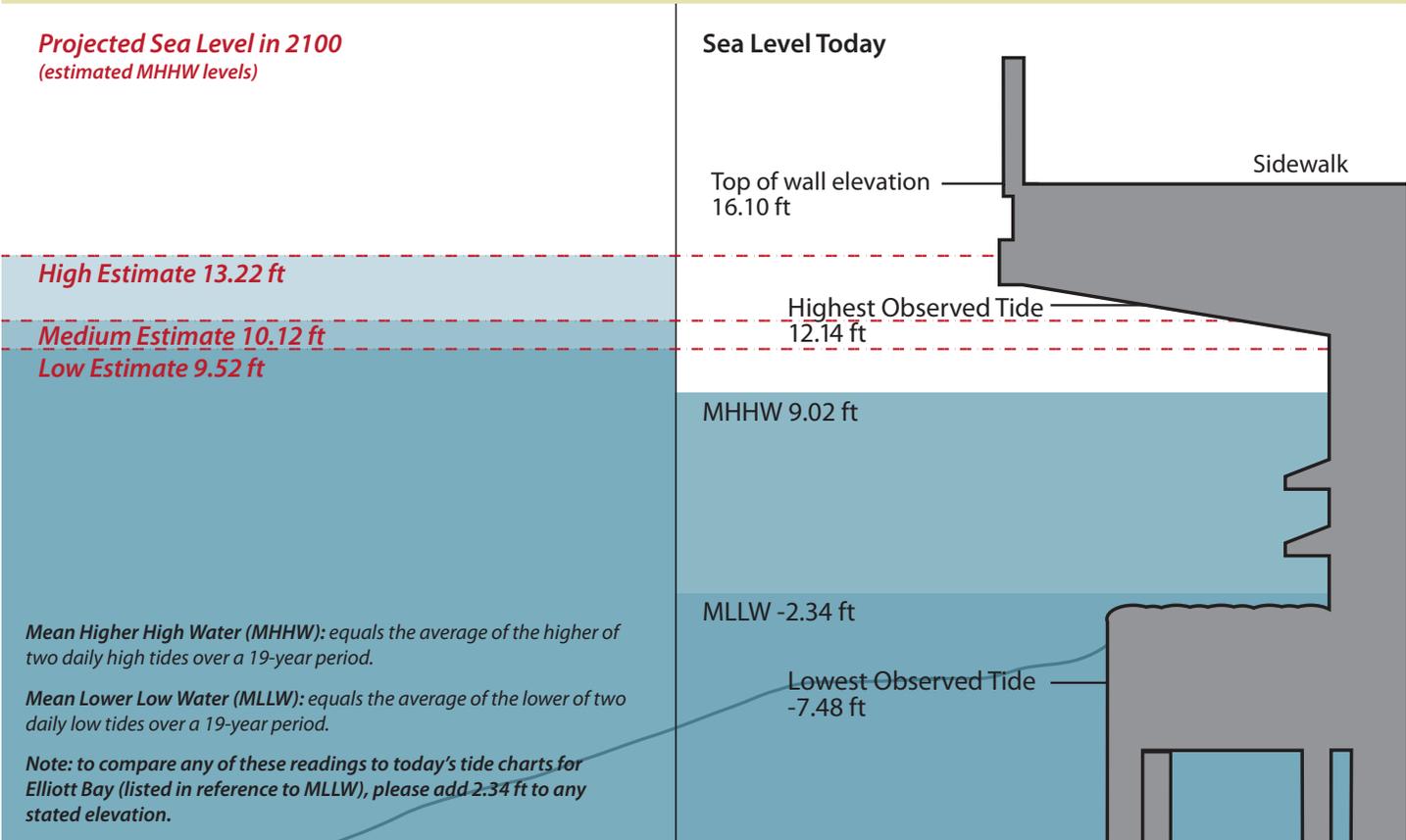
Sea level rise and the Elliott Bay Seawall Project

Given the proximity of Seattle to the Puget Sound and the known impacts of climate change on the rise of sea levels, the Elliott Bay Seawall Project fields many questions on this topic. It's an issue that the City of Seattle takes seriously, whether on this project, or on others throughout the city. During design of the new Elliott Bay Seawall, Seattle Department of Transportation (SDOT) has taken into account findings of localized scientific studies that predict sea levels in varying scenarios.

What does sea level rise mean for designing and constructing a new seawall today?

If the highest predicted sea level rise were to occur, the current seawall elevation would be three feet above the new still water level (see graphic). Based on the projections taken into account by the City of Seattle, we do not anticipate it being necessary to build a higher structure to accommodate sea level rise over the next 100 years. With sea level in mind, the seawall, and adjacent roadway, are being designed to reduce the risk of inundation by tidal backwater during extreme high water events, such as a storm surge at high tide.

Sea Level Rise and the New Seawall



The graphic above compares current Mean Higher High Water (MHHW) levels with the MHHW levels predicted for 2100. The grey structure on the right is the new seawall, which will be at the same height of the existing seawall.

What information is the City of Seattle relying on for sea level rise?

There is no universally agreed upon projection for sea level rise, but the City of Seattle is fortunate to have an internationally-recognized, interdisciplinary research resource in our backyard: the University of Washington. The UW's Climate Impacts Group focuses on climate science for local communities and the entire Western United States. The City has adopted guidance on sea level rise from the University of Washington's Climate Impacts Group as the standard for the city, and the Elliott Bay Seawall Project has been a pilot using this guidance tool.

What are climate change experts projecting?

There are numerous factors to consider with sea level rise, including the melting glaciers and icecaps, and elevation changes of the land from tectonic plate movement. Given the complexity of the issues, the Climate Impacts Group provided a range of sea level rise estimates, each with different likelihoods of occurrence. By the year 2100, the rise in sea levels predicted for Elliott Bay could be as little as six inches or as much as 50 inches*. Given the importance of the seawall, SDOT is using the highest predictions from the study.



* Source: Mote, Philip, Alexander Petersen, Spencer Reeder, Hugh Shipman, and Lara Whitely Binder. "Sea-level rise in the Coastal Waters of Washington State", University of Washington Climate Impacts Group, January 2008. See: <http://www.cses.washington.edu/db/pdf/moteetalslr579.pdf>

What is the Elliott Bay Seawall Project?

The Seattle Department of Transportation will replace the failing seawall from S. Washington Street to Broad Street, providing the foundation for a new waterfront. The seawall must be replaced due to:

- **Aging structure:** The Elliott Bay seawall was built between 1916 and 1934 and has deteriorated significantly.
- **Earthquakes:** The seawall was not designed for earthquakes.
- **Erosion:** Failure of the seawall could also be caused by wind-driven storm waves or the erosive tidal forces of Elliott Bay.
- **Infrastructure:** The seawall supports major utilities, Alaskan Way and SR 99, the ferry terminal, rail lines, and waterfront businesses and destinations.

The oldest and most vulnerable portion of the seawall, the Central Seawall from S. Washington Street to Virginia Street, will be replaced in Phase 1 of the project. Construction of Phase 1 will begin in fall 2013. The new seawall will be built to current seismic standards and designed to last more than 75 years.

For more information

Web: www.seattle.gov/transportation/seawall.htm

Email: seawall@seattle.gov | Project Hotline: 206-618-8584

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