

# MAPPING KITTERY'S VULNERABILITY TO FLOODING

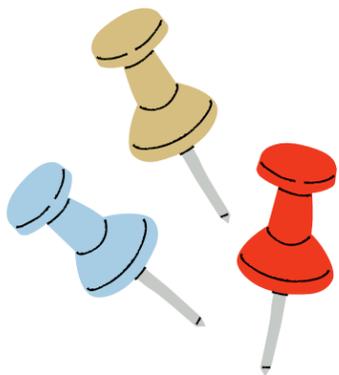
Kittery's 30 miles of coastline make it a great place to live and work, but also makes it vulnerable to coastal flooding, especially from large coastal storms. The maps depicted here provide a representation of how vulnerable Kittery is to flooding from coastal storms and sea-level rise, now and in the future. Acknowledging this vulnerability is the first step in building a community more resilient to coastal flooding.

Tide gauge measurements in Portland ME show that relative sea level has risen about 8 inches since 1912. There is extensive scientific evidence that indicates anthropogenic climate change (aka global warming) driven by carbon pollution from human activities will cause sea levels to rise for centuries. (1) The rate of sea-level rise depends on how much carbon pollution is emitted in the future from human activities.

The maps of the entire Town of Kittery and the Gate 2 entrance to the Portsmouth Naval Shipyard presented here portray two different sea-level scenarios that result from the combined impacts of sea-level rise and storm surge:

- **The 3.9 foot scenario** above high astronomical tide (HAT) provides a reasonable estimate of flooding associated with a current 100 year storm.
- **The 6.1 foot scenario** above high astronomical tide (HAT) provides a reasonable estimate of flooding associated with a 100-year storm in 2050.

## HOW VULNERABLE ARE YOU TO COASTAL FLOODING TODAY OR BY 2050?



Find your **residence, workplace or school** on the maps, and add a push-pin to the map to identify that location and find out.

# SEA-LEVEL RISE

A recent scientific study on coastal flood risk (2) indicates that:

By 2050, Kittery is likely (67% probability) to experience sea-level rise of 0.5 to 1.3 feet. There is a 1-in-100 chance that sea-level rise will exceed 2.0 feet by 2050.

By 2100, Kittery is likely to experience sea-level rise of 1.0 to 3.8 feet. There is a 1-in-100 chance that sea-level rise will exceed 5.3 feet.

There is a much larger range in the estimates of sea-level rise after 2050 due to uncertainties in the rate at which the Antarctic ice sheet disintegrates.

# STORM SURGE

Storm surge is the abnormal rise of water generated by a storm. (3)

Recent scientific estimates of the height of storm surge associated with the 100-year storm at the mouth of the Piscataqua River range from about 4.0 to 5.3 feet. (2)

The height of the storm surge will be greatest on the open coast and will be reduced as the surge moves up the river.

Detailed modeling indicates that the height of the storm surge associated with a 100-year storm is reduced by 50% at the Little Bay Bridge. (2)

## Maps prepared by the Kittery Climate Adaptation Committee.

The Committee is charged by the Town Council "to seek options to make Kittery more resilient in the face of risks associated with warming temperatures and rising seas".

For more information on the Committee, visit [www.kitteryme.gov/climatecomm](http://www.kitteryme.gov/climatecomm).

## Actual maps represent the work of Alexandra Duprey,

## 2020 UNH Sustainability Fellow for Kittery and Tufts University's Urban and Environmental Policy and Planning Program Graduate.

Additional flood maps of Kittery are available in Alexandra Duprey's 2020 report - A Town in High Water:

Coastal Hazard Planning Practices for Kittery, Maine, which is available on the Kittery Climate Adaptation Committee web site.

## FOOTNOTES

1. Intergovernmental Panel on Climate Change (2019) <https://www.ipcc.ch/srocc/>  
a. U.S. Fourth National Climate Assessment (2017) <https://science2017.globalchange.gov>
2. New Hampshire Coastal Flood Risk Summary (2019) <https://scholars.unh.edu/ersc/210/>
3. NOAA Storm Surge Overview <https://www.nhc.noaa.gov/surge/>