

## Coastal Resilience Advisory Committee (CRAC) recommendation to Select Board

### **Recommendation**

*Pending the Select Board's acceptance of a detailed Coastal Resilience Plan and its specific project recommendations (for which an RFP is currently in the procurement process), the CRAC proposes the following recommendation to the SB:*

**"The CRAC recommends all Town Departments, Boards, Commissions and Committees and any service providers, contracted engineers and consultants need to be aware of and need to use the NOAA "High" scenario to accommodate current storm surge as well as Sea Level Rise in their decisions, deliberations and planning. These data are periodically updated by NOAA and will be posted on the CRAC page on the Town's website."**

### **Intent**

The purpose of the recommendation is to supplement FEMA flood elevations as FEMA flood elevations do not include sea level rise.

### **Supporting information**

Sea Level Rise (SLR) data and Coastal Resilience strategies are listed in the Town of Nantucket Coastal Resilience Risk Assessment and Strategies report that was received by the Town in January 2020: <https://www.nantucket-ma.gov/DocumentCenter/View/35045/Coastal-Risk-Assessment-and-Resiliency-Strategies-Report-January-2020-PDF>. This is now a guiding document for CRAC and is a reference for all Town staff and vendors to make public infrastructure and private construction & development projects more resilient to Sea Level Rise and coastal flooding. Projects should look at the Sea Level Rise scenario and risk tolerance that is appropriate for the expected service life of the project.

### **Nantucket Sea Level Rise Scenarios**

NOAA has developed Sea Level Rise scenarios specific to Nantucket. Due to the orientation of the harbor, and the position of the island off the Northeast coast, the island is projected to experience higher levels of Sea Level Rise than the global average.

NOAA (2017) SLR scenarios are presented in **Table 1**. The relative sea level rise scenarios shown in this table are derived from the 2017 NOAA Technical Report NOS CO-OPS 083 "Global and regional sea level rise scenarios for the United States" and use the same methods as the U. S. Army Corps of Engineers Sea Level Rise Calculator. 2017 NOAA report available here [https://tidesandcurrents.noaa.gov/publications/techrpt83\\_Global\\_and\\_Regional\\_SLR\\_Scenarios\\_for\\_the\\_US\\_final.pdf](https://tidesandcurrents.noaa.gov/publications/techrpt83_Global_and_Regional_SLR_Scenarios_for_the_US_final.pdf)

The CRAC recommends following the "High" NOAA scenario to accommodate current storm surge as well as Sea Level Rise. (See **Storm frequency and impact on SLR** section on the next page). The upward trend in sea level rise also worsens the impact of storm surge, high tides and wave action. Use the table as a guide for selecting the elevations that are appropriate for the lifespan of the project, project risk tolerance and the project's adaptive capability.

**Table 1.** NOAA SLR scenarios. All elevations are in feet above local mean sea level (LMSL) relative to year 2000.

Year	Low	Int-Low	Intermediate	Int-High	High	Extreme
2000	0.00	0.00	0.00	0.00	0.00	0.00
2010	0.16	0.20	0.26	0.36	0.43	0.46
2020	0.36	0.43	0.59	0.79	0.92	0.95
2030	0.52	0.62	0.92	1.21	1.48	1.64
2040	0.72	0.85	1.28	1.77	2.26	2.49
2050	0.89	1.05	1.71	2.36	3.12	3.54
2060	1.08	1.31	2.17	3.05	4.13	4.82
2070	1.21	1.51	2.66	3.81	5.15	6.17
2080	1.38	1.71	3.22	4.66	6.36	7.71
2090	1.48	1.87	3.77	5.58	7.74	9.51
2100	1.57	2.03	4.33	6.56	9.25	11.42

## Storm frequency and impact on SLR

Critical infrastructure, high value infrastructure, infrastructure with long life expectancy, infrastructure that would not tolerate flooding, or other infrastructure that is currently not in a flood zone but is near a flood zone may need to be designed to resist the combination of SLR and storm impacts.

The U.S. Army Corp of Engineers (USACE) commissioned a report published in 2014 called “North Atlantic Coast Comprehensive Study”. Phase 1 of the report, “Statistical Analysis of Historical Extreme Water levels with Sea Level Change”, looks at historical water levels and combines that data with storm surge modeling. This differs from many other SLR projections that are limited to increases in mean sea level and do not estimate high water elevations during future storms. The report projects to the year 2114, looking out 100 years from the report’s baseline year. This data is for the North Atlantic area, and not Nantucket specific.

The USACE report is available on the Town website <https://nantucket-ma.gov/DocumentCenter/View/36719/North-Atlantic-Coast-Comprehensive-Study-Phase-1-Report-Statistical-Analysis-of-Historical-Extreme-Water-levels-with-Sea-Level-Change-PDF>

## Storm Surge

Storm events, particularly from the Northeast, have the potential to temporarily increase the water level in Nantucket Harbor and cause flooding. Stormtide stacking may also occur when the wind does not allow the low tide to release high tide waters from the harbor. Subsequent high tides can “stack” more water in the harbor and compound flooding. Stormtide pathways were studied and added to the Town of Nantucket GIS online mapping system, which can be accessed here to evaluate potential risk to developments and projects: <https://www.nantucket-ma.gov/151/GIS-Maps>