

R.I. researchers project future flooding in Barrington, Bristol and Warren

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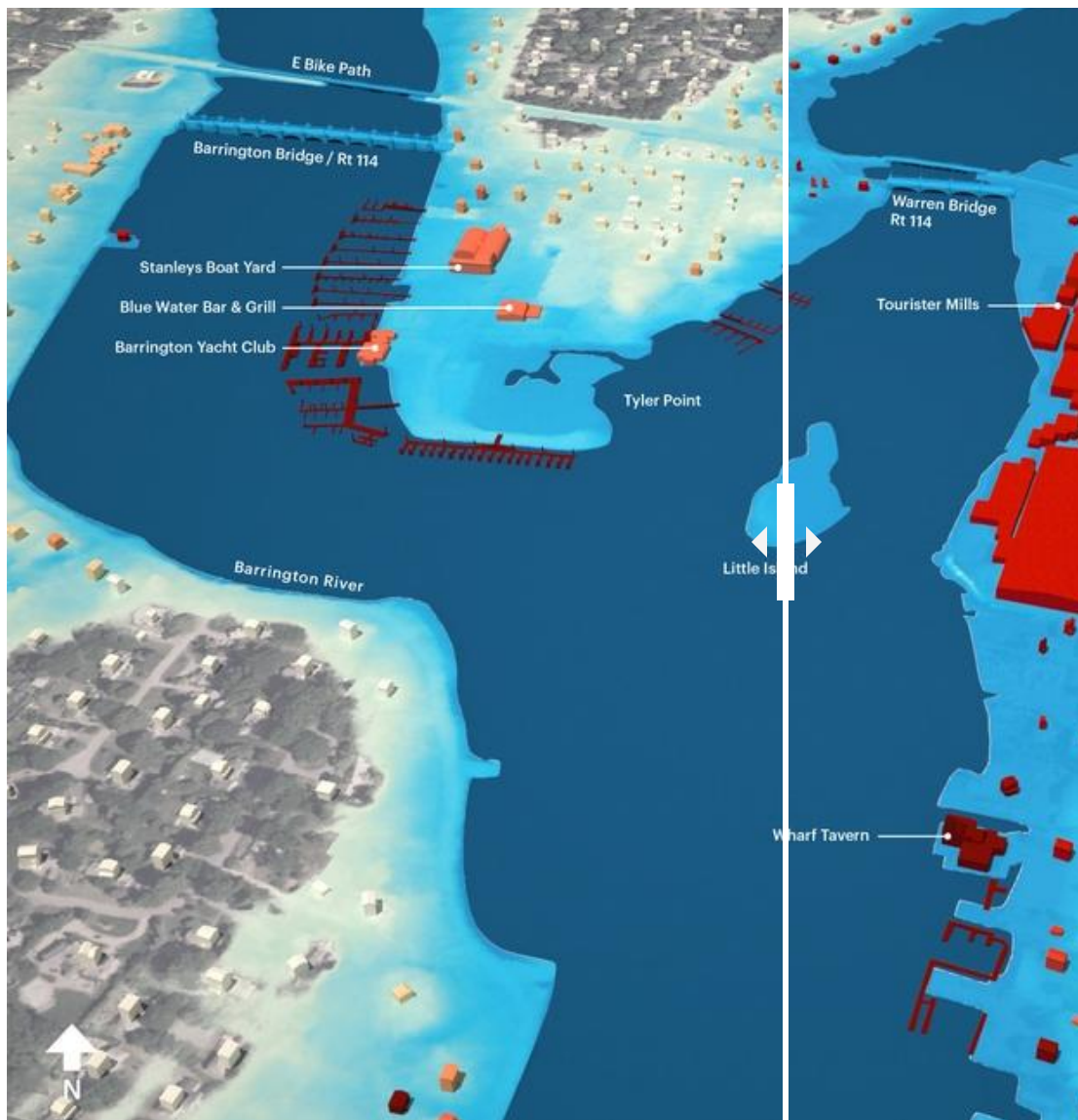
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If a hurricane were to hit Rhode Island today, Barrington, Bristol and Warren would be among the communities most at risk of flood damage.

And over time that risk will ratchet up with every incremental rise in sea levels.

In its latest effort to demonstrate how vulnerable the Ocean State is to the impacts of climate change, the Coastal Resources Management Council and the University of Rhode Island have just finished creating visualizations of potential storm damage in the three East Bay towns that all sit along the shore of Narragansett Bay.

Town of Barrington, RI Marina & Bridges 100-year storm/ Marina & Bridges 100-



The images color-code buildings by level of estimated damage, from yellow to red, depicting what could happen if a storm like Hurricane Carol in 1954 were to hit again.

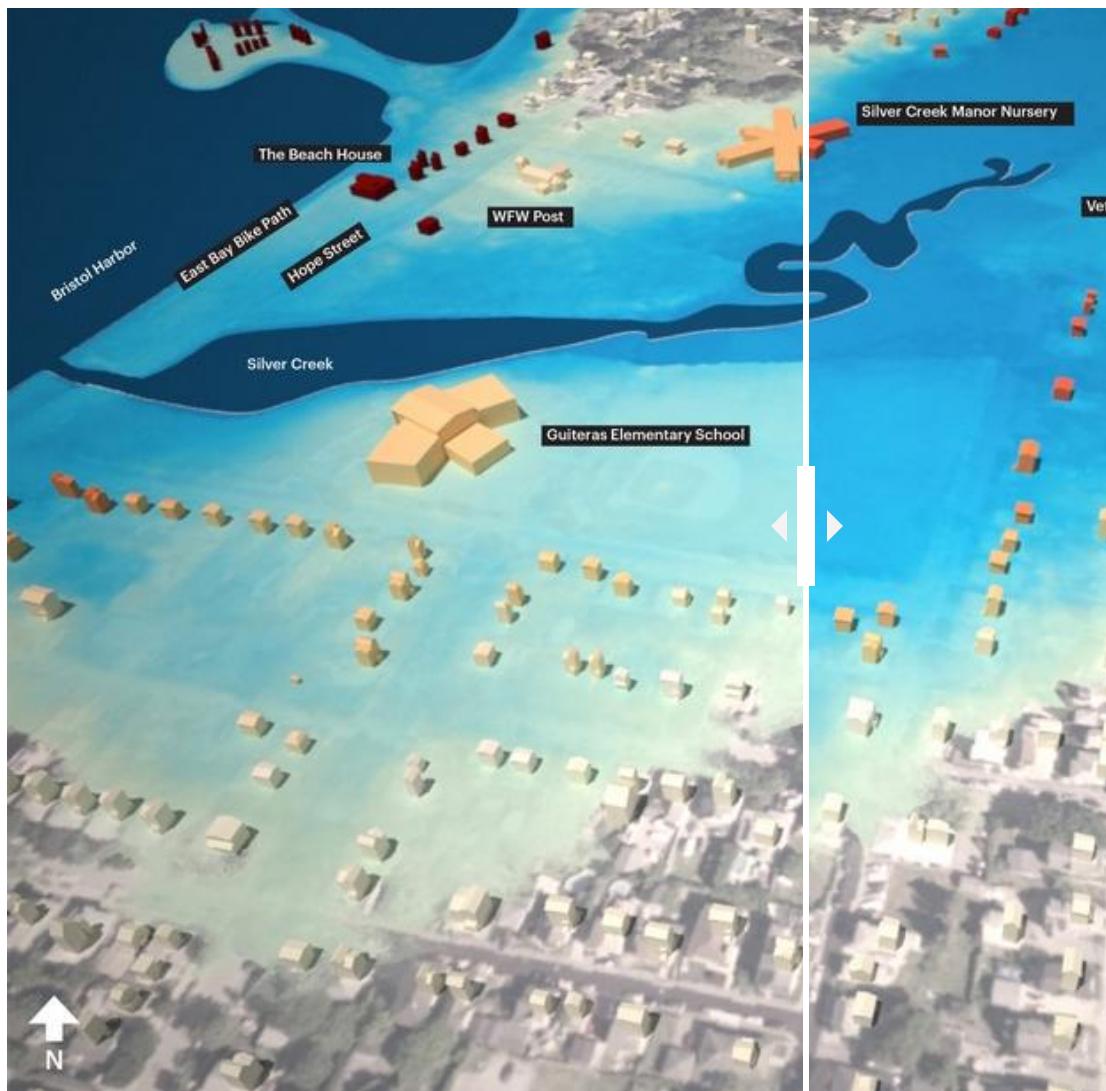
Such a storm, what's considered a 100-year event — one that has a one-in-100 chance of happening in any given year — could send a 15-foot surge of water up the Bay that would wash over parts of the three communities.

In the maps showing the area around Massasoit Avenue and County Road in Barrington, the buildings are mostly colored pale yellow, showing a low level of damage from the surge, when no sea level rise is considered. But with five feet factored in — a scenario that's possible in the next three decades — the buildings become a mixture of orange and red. The high school suffers almost 50 percent damage. Barrington Congregational Church is closer to 80 percent.

“It’s pretty striking,” said Barrington Town Planner Phillip Hervey. “When you factor in sea-level rise, there’s no scenario that looks good.”

The images were developed as part of the Coastal Environmental Risk Index, a joint project between the CRMC and URI that aims to educate Rhode Islanders about the potential effects of rising seas and severe coastal storms. The idea is that people will be better educated about the risks if they can actually see the amount of damage that flooding could cause. They come in addition to the agency’s statewide STORMTOOLS inundation maps and its coastal erosion maps.

Town of Bristol, RI Silver Creek 100-year storm | 0 feet, RI Silver Creek 100-



Sea level rise in the Northeast is three to four times higher than the global average because of a slowdown in ocean currents, higher increases in ocean temperatures and other factors. Rhode Island has seen about 11 inches of sea level rise since 1930, according to recordings by the Newport tide gauge. The rate remained steady until about 1980 or so when it started going up, and that is expected to continue. Recent studies have concluded that ice loss in Antarctica and in Greenland have already or will become bigger drivers of sea level rise.

At the same time, scientists predict coastal storms to become both more intense and more frequent.

The CERI team, led by CRMC executive director Grover Fugate and URI emeritus professor Malcolm Spaulding, first created visualizations for parts of Warwick and Charlestown in 2016. They chose to focus on Barrington, Bristol and Warren next.

“Because in addition to Warwick these areas have the most risk,” Fugate said.

The original CERI visualizations looked at scenarios of up to seven feet of sea level rise, the upper projection by the National Oceanic and Atmospheric Administration by the end of the century. NOAA has since upped its estimates, to as much as 11-and-a-half feet in the Northeast by 2100, but the new images go only to 2050. That was done on purpose, said Fugate, to cover the relevant time period if someone were to take out a 30-year mortgage today.

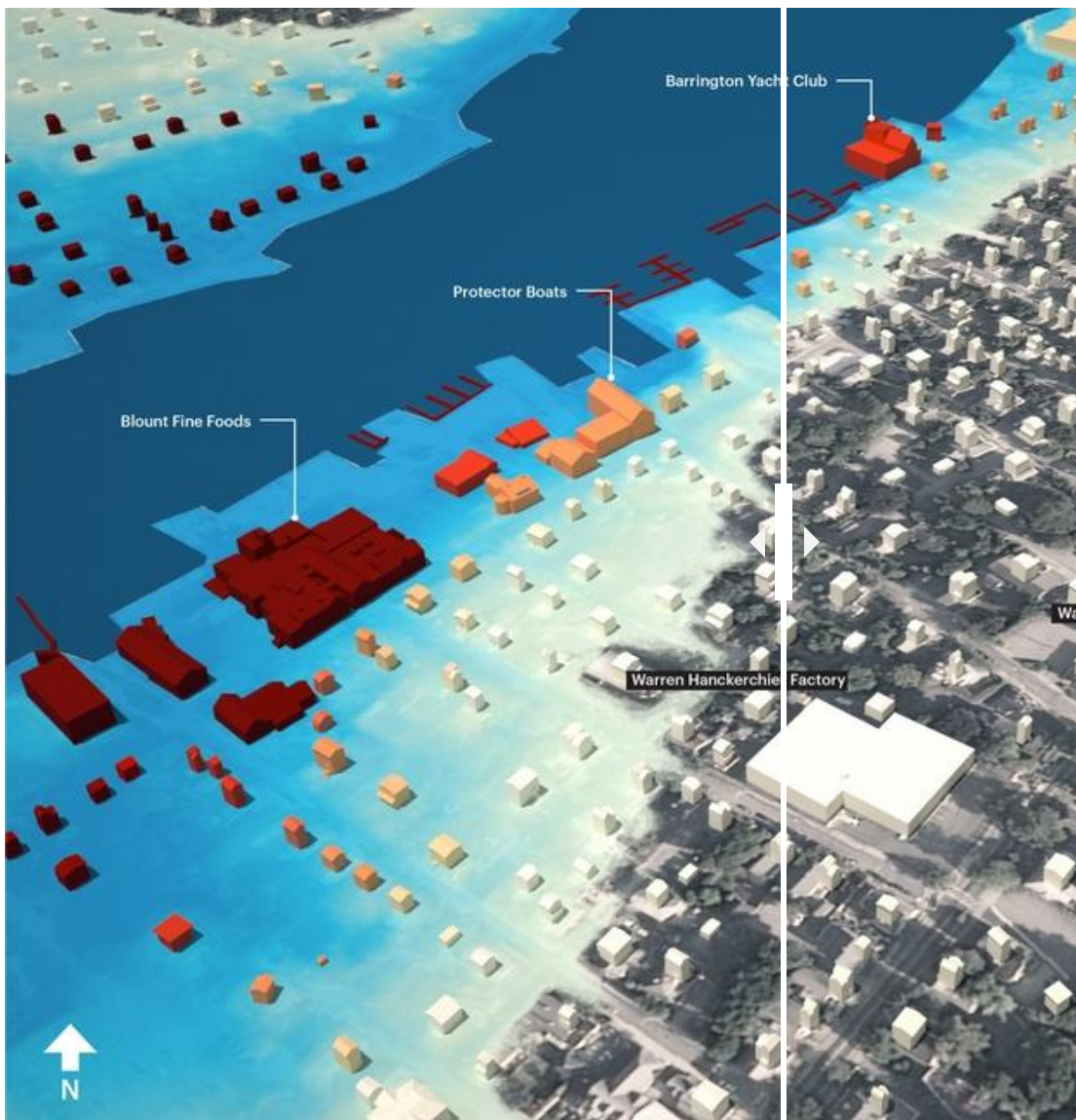
Flooding risk, especially as it increases, could become an important factor in deciding home values. New research released earlier this week estimated that Rhode Island lost \$44.7 million in values between 2005 and 2017 because of more frequent tidal flooding caused by rising seas.

The study conducted by scientists at Columbia University and First Street Foundation, a New York nonprofit, found that Warwick, Westerly, Charlestown and Newport had experienced the highest communitywide losses, but the three homes that suffered the most loss relative to their total value are all in Warren, near the Palmer River and Belcher Cove.

The CERI maps for that area show it underwater in the event of a 100-year storm even with no sea level rise. With five feet, nearly every building around Jamiel Park is shaded orange or red, including the Cutler Mill complex, which houses a number of small businesses, the East Bay Chamber of Commerce and the Army National Guard facility on Market Street.

“Warren is probably going to be one of the canaries in the coal mine for nuisance flooding and how a town can deal with that,” said Fugate.

Town of Warren, RI Waterfront 100-year storm | +5 feet in, RI Waterfront 100



The images have added to discussions around sea level rise in the town that include the possibility of buying out flood-prone homes, said Warren Planning Director Bob Rulli.

“You’re not going to stop the flooding from happening,” he said. “You just have to live with it.”

The visualizations, which were funded by a grant from the U.S. Department of Housing and Urban Development, raise other questions for the towns. Under nearly every scenario considered by the researchers, key stretches of Route 114,

the main route in and out of the towns, would be flooded, impeding possible evacuations.

And in Warren, the wastewater treatment plant would suffer escalating damage. The town has already taken steps to shore up the plant, embarking on a series of improvements to withstand three feet of sea level rise, but the CERI maps make clear that if water levels go higher, the plant may need to be moved.

“We’re going to experience conditions that are going to force us to make really hard decisions,” said Town Manager Kate Michaud.

In the short term, the projections of flooding could mean raising structures off the ground. The U.S. Army Corps of Engineers has come up with a plan to elevate 357 homes in Washington County, and is set to embark on a study of roads and other coastal infrastructure throughout Rhode Island. Fugate said his agency has suggested making Route 114 a priority.

Communities can’t take action until they understand what’s at stake, he said.

“We’re stepping in because the towns lack this kind of expertise,” Fugate said.

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