Image: Baltimore Business Journal

How Ellicott City, Baltimore plan for climate change flooding - Baltimore Business Journal

By Julekha Dash – ContributorFeb 20, 2025

Editor's Note: The Baltimore Business Journal is embarking on a series of stories focused on efforts to address social and economic challenges in Greater Baltimore. "Elevate Greater Baltimore" will explore the nonprofits, people and businesses that are being creative in improving the quality of life in the region. Stay tuned for monthly installments of "Elevate Greater Baltimore" throughout 2025.

STORY HIGHLIGHTS

Ellicott City faces frequent flooding due to its sloped valley location.

Howard County's $150 million plan aims to mitigate flood risks.

Plans for the Harborplace redesign along Baltimore's waterfront include a tiered promenade to deal with sea level rise.

Established in the late 18th century as a mill manufacturing town, Ellicott City draws diners and shoppers to its walkable Main Street with historic buildings that house dozens of independently owned restaurants, boutiques and galleries. But its downtown is located in a sloped valley and when creeks and the Patapsco River converge during heavy rains, it's prone to devastating floods.

“As you go downhill in a bowl, the water gains velocity and volume as it goes toward the Patapsco River from the top of Main Street,” said Howard County Executive Calvin Ball.

The town has experienced a total of 15 floods, most recently in 2018 and 2016.

To combat this threat, the county has embarked on a more than $150 million flood mitigation plan to retain and divert water away from Main Street. The initiative, dubbed Ellicott City Safe and Sound, is one of many efforts underway around the state to address flooding from climate change.

Baltimore's Inner Harbor and coastal communities along the Eastern Shore are just some areas that will be vulnerable in the coming years. The state’s shorelines will see between one and two feet of sea level rise by 2050 and four or more feet by the year 2100, according to the University of Maryland Center for Environmental Science.

“Flooding in coastal communities is kind of a national problem, but we're seeing it at an accelerated scale here in Maryland,” said Julie Luecke, a Maryland coastal resource scientist at the Chesapeake Bay Foundation (CBF). CBF helps protect the 64,000-square-mile watershed, which covers six states

and is home to 3,000 plants and animal species.

Here's a look at how CBF, Howard County and the Waterfront Partnership of Baltimore are tackling flooding amidst climate change.

A view of Main Street two days after it was torn apart by flood waters. Expand to read more

Melody Simmons

Ellicott City Safe & Sound

Billed as Howard County's most significant public works project, Ellicott City's flood mitigation plan is centered around an underground, mile-long tunnel that diverts water away from Main Street to the Patapsco River at a rate of 26,000 gallons per second. Construction started in June and will wrap up in fall 2027. Additionally, five stormwater retention ponds capture rainwater and deter runoff during storms, while two pipes on lower Main Street will channel water to the Patapsco.

The plan came about after the county evaluated dozens of best practices nationwide and had the Army Corps of Engineers peer review it, Ball said. In February, the county announced an additional $38 million in state funding to go toward these efforts. An additional $75 million comes from a U.S. Environmental Protection Agency loan, which Ball hopes will remain intact amid federal funding freezes.

"We are implementing a transformational flood mitigation strategy that has not been implemented on this scale," he said.

Howard County Executive Calvin Ball speaks at the site of the county's flood mitigation project.

Eric Stocklin for BBJ

One of the challenges in getting the project off the ground was preserving the town's historic character — its main draw. Initially, Ellicott City's flood prevention efforts called for demolishing 10 landmark buildings downtown. But the county wound up removing four and rehabbed the others.

"We wanted to balance respecting and celebrating the historic nature of a town that's approximately 250 years old with implementing an effective flood mitigation strategy," Ball said.

The Inner Harbor and Fells Point

With an upcoming redevelopment of Harborplace set to inject $500 million into the Inner Harbor, addressing the area's persistent flooding has become increasingly urgent.

"Anyone who visits the harbor, lives at the harbor, and owns a business here can see the flooding that occurs at increasing rates each year," said Waterfront Partnership of Baltimore President Laurie Schwartz.

Hurricane Isabel in 2003 cost Baltimore $4.8 million and left 15 businesses uninhabitable. And the city's waterfront isn't just vulnerable during significant storms. A report from Scape Landscape Architecture prepared for the Waterfront Partnership in 2023 says that rising sea levels make low-lying areas like the harbor prone to "sunny day flooding," or flooding even on days with little to no rain. It also estimates that in 2050, the harbor could get 36 days per year of moderate flooding.

This photo from 2020 shows flooding near Harborplace at the Inner Harbor.

Michael P. Sullivan

The state granted the partnership $67.5 million to plan and build a new harbor promenade as MCB Real Estate leads an ambitious makeover of Harborplace that was approved by voters this past fall.

“If a major investment is going into rebuilding Harborplace, it's in our community's best interest to ensure the public pathways and promenade that everyone uses is rebuilt,” said Schwartz, who will retire from the nonprofit this summer after 20 years.

Construction on the current Inner Harbor Promenade began almost 50 years ago, so the goal is to have the new promenade last for another 50 years or more, she added. MCB’s design calls for a two-tiered promenade with an elevated promenade and a floating one closer to the water, which would likely get raised during floods.

“It’s a nice feature because it brings people closer to the water. But if there's a major rain event, the upper promenade would not be flooded,” Schwartz said.

A rendering of a Harborplace promenade on the Pratt Street waterfront in the plans by MCB Real Estate.

Gensler

The Chesapeake Bay

Throughout the Chesapeake Bay, you have the double whammy of rising sea levels and receding land, impacting communities like Annapolis, Crisfield and Smith Island, Luecke said.

Marshes can act as buffers for reducing flood impact since they can absorb more incoming flood water and filter out pollutants. But in many coastal communities, the marsh gets drowned out by rising sea levels, leaving them less protected from flooding and endangering animals and birds like the salt marsh sparrow. CBF is working with the National Audubon Society, the Nature Conservancy and other conservation groups to restore marshes, which involves taking clean sand from dredged material and placing it on marshes to help them keep up with rising sea levels.

A big part of the CBF's role is acting as a conduit between coastal homeowners and resources available in the state. Luecke says she connects one to two homeowners a month with the Maryland Department of the Environment, which can help them with marsh restoration, also referred to as a living shoreline. MDE will send someone to determine if a living shoreline is good for their property and walk them through the steps involved, including designing it, finding a contractor and applying for a permit. CBF is also in the process of publishing a website that features a step-by-step guide for Maryland homeowners.