FLOOD RESILIENCE: RECOMMENDATIONS AND BEST PRACTICES

DATE: FEBRUARY 2025

TO: TOWN OF COHASSET

PROVIDED BY THE METROPOLITAN AREA PLANNING COUNCIL (MAPC):

Avanti Krovi, Senior Regional Land Use Planner
Rodoshi Sinha, Environmental Planner II
Jiwon Park, Regional Land Use Planner II

INTRODUCTION

The purpose of this memo is to provide a list of recommendations for Cohasset, to enhance its floodplain regulations in response to its unique geographical risks and vulnerability to coastal flooding hazards. The recommendations will aim to strengthen flood resilience and community safety while ensuring compliance with state requirements. The goal is to proactively address coastal risks by going beyond the minimum standards of existing state or federal regulations, to equip the town to be better prepared in protecting the community from flooding and other related environmental threats.

Flood planning differs between inland and coastal communities due to their distinct environmental risks and geographical characteristics. While inland communities are more likely to experience flooding from heavy rainfall, river overflow, or snowmelt, coastal communities like Cohasset also face unique challenges from coastal storm surges, rising sea levels, nor'easters and hurricanes, which can lead to more frequent and severe flooding from both tides and extreme weather events, in addition to inland flooding. While both types of communities prioritize drainage, land use planning, and flood mitigation measures, coastal communities often need specialized strategies to address their proximity to the ocean and the added risk of tidal and storm-related flooding. This is why additional measures beyond existing regulatory requirements could be a crucial tool in reinforcing infrastructure in floodplains against flooding and storm surges.

CURRENT STATE OF COHASSET'S FLOODPLAIN BYLAW

The objective of reviewing Cohasset's Floodplain Bylaw was to update them in accordance with the 2020 MA State Model Floodplain Bylaw. This model helps communities understand the National Flood Insurance Program (NFIP) requirements not already covered by existing Massachusetts regulations, like building codes or the Wetlands Protection Act. Congress established the NFIP rules, FEMA administers the program, and the State supports enforcement. While NFIP has always required communities to adopt a local Floodplain Zoning Bylaw, FEMA is now requiring those bylaws to meet specific standards, which MEMA has incorporated into its Massachusetts Model Floodplain Bylaw. These requirements are not new, but some Massachusetts communities have not previously adopted them as local bylaws. This effort is to ensure compliance with NFIP regulations. The NFIP regulatory standards are minimal. They may not be appropriate for every local situation or unique circumstances; therefore, states and communities are encouraged to enact more restrictive requirements where needed to better protect people and properties from the local flood hazards.

The team at MAPC reviewed the documents and found that the town's floodplain bylaw was already highly compliant with current standards. As a result, only a few minor edits were needed.

SUMMARY OF IDENTIFIED CLIMATE PRIORITIES IN COHASSET

Flooding (inland and coastal) is a pressing climate change hazard for Cohasset, and strategies to build flood resiliency are top priorities. Multiple planning initiatives such as the 2008 Flood Control Master Plan, the 2018 Municipal Vulnerability Preparedness (MVP) Plan, 2019 Cohasset Master Plan, 2020 Hazard Mitigation Plan Update, 20220 MVP Storm Tide Pathways Study and 2022 Cohasset Harbor Climate Resilience Forums have repeatedly highlighted the need to address and prepare for climate change, especially flood hazards in the town. Inland flooding is a recurring issue in Cohasset, with mitigation strategies being technically feasible but challenging to implement due to factors like cost, property ownership, and permitting. Ongoing improvements aim to enhance flood control and salt marsh restoration efforts. As climate change intensifies, flooding risks to infrastructure, residents, businesses, and natural resources are expected to worsen, particularly from tidal and coastal storm flooding driven by sea level rise. Cohasset has identified 166 coastal flooding pathways.[1] Community engagement has also highlighted significant concerns about flooding and climate change, with town departments, committees, and residents already taking steps toward increasing climate resiliency. Based on these trends and identified needs, it is important for Cohasset to take stringent steps to explore options of adapting regulatory codes to be climate resilient yet flexible to allow accommodation for future climate uncertainties.

RECOMMENDATIONS AND BEST PRACTICES FROM MAPC REGION

Below is a list of recommendations from MAPC for the Town's consideration. These recommendations promote climate resiliency and adaptation within zoning, which extends beyond FEMA's National Flood Insurance Program (NFIP) regulations and the state building code. While some of these recommendations consider additional zoning reform outside the floodplain overlay district, as defined by the Flood Insurance Rate Map (FIRM), they do not comprehensively address all possible zoning reforms for climate resiliency. Rather, they are derived from zoning practices that MAPC is currently observing and researching, building off MAPC's Climate Resilient Land Use Strategies toolkit.

RECOMMENDATION 1: ENCOURAGE THE ELEVATION OF BUILDINGS OR UTILITIES IN THE SPECIAL FLOOD HAZARD AREA (SFHA)

The Town of Cohasset could explore Recommendation 1 in several ways. Firstly, the Town of Cohasset could consider language additions or amendments that would allow for new and existing structures to exceed zoning height limits to elevate structures up to a specific number of feet in the SFHA. The Town could potentially allow for such an incentive through additions or amendments to Article 5, "Dimensional Regulations", of the zoning code.

- The Town of Winthrop's Dimensional Regulations (Chapter 17.16) specifies exemptions to maximum height regulations, noting that existing buildings within the SFHA may be elevated up to three feet beyond the flood elevation requirements of the building code (780 CMR).[2]

The City of Boston measures allowable building height from base flood elevation (BFE) or higher. This allows developers to incorporate freeboard and floodproof buildings in a more feasible manner.

- The City of Boston's Coastal Flood Resilience Overlay District (Section 25A-6) includes use and dimensional regulations, in which allowed building height for proposed projects is measured from the building's grade, or two feet above sea level rise – base flood elevation (SLR-BFE)—whichever is higher.[3]

The Town of Cohasset could also consider a certain level of encroachment into setbacks to allow for the elevation of key utilities above base flood elevation. While the state building code already requires the elevation of main utilities[4], some towns and cities are looking to make this more feasible for developers

through this regulation. The degree of encroachment for a proposed project should consider the critical functions of the setback while allowing for more buildable land for the developer.

- The Town of Winthrop's Dimensional Regulations (Chapter 17.16) allow for the construction of an "attached covered structure to house utilities" in the side or rear setback of an existing residential building in FEMA flood zones VE, AO, and AE, for the purposes of elevating utilities above base flood elevation. This regulation further specifies the footprint of such a structure, what kinds of utilities may be housed, and the level of encroachment allowed.[5]

RECOMMENDATION 2: RESTRICT DEVELOPMENT IN THE DISTRICT

Currently, the construction of buildings within the floodplain district (as defined by Section 9.4, "Floodplain & Watershed Protection Overlay District") in the Town of Cohasset is not permitted by right. But it is allowed by Special Permit, with affirmative evidence that proposed structures will not be damaged by flooding; will not be less than 10 feet above mean sea level; will not obstruct or divert flood or reduce natural flood storage to an extent; will not cause pollution or endanger public health; and will not deviate substantially from the purposes of the District.[6]

This language allows for more discretion in which developments may be allowed in the floodplain district. If the Town wants deeper or more explicit restrictions, the Town could consider language amendments to Section 9.4 that restrict, or even prohibit, new construction in parts of floodplain district, thus minimizing the threat of flooding to the Town's residents and properties.

There are a few options the Town could consider. The Town could amend or add a subsection within Section 9.4 to explicitly prohibit types of construction in specific zones:

- The City of Gloucester's Floodplain Overlay District (Section 5.5), which covers SFHA flood zones as designated on the FIRM, explicitly prohibits new residential construction in VE zones.[7]

- The Town of Rockport's Coastal Flood Plain District (Section IX), which covers SFHA flood zones as designated on the FIRM, prohibits the new construction of buildings or substantial improvements to existing buildings in the floodplain district.[8]

- The Town of Scituate's Flood Plain and Watershed Protection District (Section 470.7), which is not necessarily defined by the FIRM but covers similar areas, includes language that explicitly prohibits the construction of new structures that do not fall within uses allowed by-right or by special permit.[9]

- The Town of Braintree's Floodplain Protection District (Section 135-608), which covers SFHA flood zones as designated on the FIRM, prohibits the construction of critical facilities within SFHA and/or the 500-year floodplain.[10]

The Town could also focus on limiting the expansion of existing structures in the floodplain:

- The Town of Swampscott's Coastal Flood Area Overlay District (Section 4.2), which covers SFHA flood zones as designated on the FIRM, prohibits the expansion of existing uses/structures located on land below the base flood elevation.[11]

- The City of Quincy's Floodplain Overlay District (Section 8.1), which covers SFHA flood zones as designated on the FIRM, specifies that dwellings existing in the district prior to this adoption can only be enlarged in area up to 25% of actual ground coverage.[12]

RECOMMENDATION 3: INCORPORATE SEA LEVEL RISE AND OTHER FACTORS IN FUTURE PLANNING AND DEVELOPMENT GUIDELINES

National Flood Insurance Program (NFIP) regulations, reflected in Section 9.4 of Cohasset's zoning code, are based on 1%-chance base flood elevation (BFE). Many communities find that such calculations are an inadequate measure at predicting future flooding. Because such calculations also determine the boundaries of the SFHA floodplain, this imperfect measure may be excluding flood-prone areas that should be regulated but are not.

If the Town of Cohasset seeks to enhance flood protection for buildings or expand which areas are protected, the Town could explore other measures that incorporate sea level rise:

- The Town of Swampscott's Coastal Flood Area Overlay District (Section 4.2.0.0), which covers SFHA flood zones as designated on the FIRM, establishes sea level rise estimates based on the U.S. National Climate Assessment. These estimates must be considered when determining additional freeboard height above the minimum required by the building code.[13]

- The Town of Hull's Floodplain District (Section 410-4.2), which covers SFHA flood zones as designated on the FIRM, mandates that permit applicants for development in the district "shall be made aware of future flood risk" based on Hull's Massachusetts Coast Flood Risk Model's (MC-FRM) "2.4 Foot Sea Level Rise" map and "1.2 Foot Sea Level Rise Flood Depth" map.* This section further specifies that a narrative and if relevant, the 1%-chance BFE predicted for 2.4 Foot Sea Level Rise, must be submitted.[14]

The Town could also consider expanding the floodplain district to areas outside of the SFHA so that development restrictions and/or special permit requirements apply to other areas with high flooding risk. The Town could redefine the Floodplain and Watershed Protection Overlay in Section 9.4 to include two subdistricts—one subdistrict could cover SFHA flood zones as designated on the FIRM, which must adhere to NFIP requirements. The other district would include other areas that are not part of the SFHA but are a priority for the Town's flooding concerns. Some cities and towns have done this to allow considerations for sea level rise projections:

- The Town of Winthrop's Flood Plain Overlay District (Chapter 17.40) is comprised of two areas: the Federal Floodplain District and the Future Flood Risk District. While the Federal Floodplain District is defined by the SFHA flood zones designated on the FIRM, the Future Flood Risk District includes the areas projected to be subject to future flooding with 2.4 Foot Sea Level Rise, as defined by MC-FRM.[15]

- The Town of Gloucester's Floodplain Overlay District (Section 5.5) consists of two sub-districts: the Federal Floodplain District and the Future Flood Risk District. The former includes all SFHAs as defined by the City's FIRM. The latter includes areas projected to be subject to future flooding with 2.4 feet of sea level rise. The exact boundaries of the Future Flood Risk District are defined by the Massachusetts Coast Flood Risk Model "2.4 Foot Sea Level Rise" map.[16]

It should be noted that the incorporation of future sea level rise in zoning districts that are also trying to adhere to NFIP requirements could be legally complicated. As part of our work on climate resilient regulations at MAPC, we are aware that potential legal implications must be considered when communities want to go beyond state and federal requirements. However, if the Town of Cohasset has locally identified areas of flooding that are not currently encapsulated in the FIRM-defined floodplain, there is another option that could avoid legal complications. The Town could consider an entirely separate district, rather than dividing its current floodplain district into two, which would allow for deeper standards and more coverage beyond the SFHA.

- The City of Salem created a Coastal Resilience Overlay District, which establishes new standards for resiliency and adaptation to projected worsening coastal flooding. This is separate from the City's Flood Hazard Overlay District, which was adopted to maintain the City's NFIP designation and covers SFHAs designated on the FIRM.

RECOMMENDATION 4: PROTECT FLOOD STORAGE VOLUME

Flood storage volume considers the volume to water that can be absorbed or stored within a floodplain. Because development in floodplains can reduce flood storage volume (which in turn increases runoff and flooding), the state's Wetlands Protection Act regulations require compensatory storage in the SFHA. Compensatory storage refers to practices that offset the loss of flood storage volume due to development. These practices and the measures mentioned below can also apply to inland areas and riverine floodplains within the Town.

The Town of Cohasset's current floodplain overlay district, Section 9.4, allows construction by Special Permit, provided that it will not "reduce natural flood storage capacity to the extent of substantially raising the high water level in the same or adjoining districts."[17] The Town may want to consider firmer language that will not allow for any reduction in flood storage capacity (100% maintenance of flood storage volume). The Town could also specify additional compensatory storage. Restricting development (Recommendation 2) should also substantially help in preserving flood storage.

- The Town of Dedham's Flood Plain Overlay District (Chapter 280, Article 8.1, Section V), which covers SFHA flood zones as designated on the FIRM, explicitly prohibits certain uses within the district. This includes "land fill or dumping in any part of the District without proper volumetric compensation at a ratio of 2:1 for every cubic foot filled." The 2:1 ratio for compensatory flood storage is important for not only replacing lost capacity but also accounting for potential increases in flood heights.[18]

- The Town of Wilmington's Flood Plain District (Section 6.2) allows for uses in the underlying district by Special Permit, provided that "at least 100% of the flood storage volume of the site (the volume of water which could be stored between the elevation(s) of the property as it existed on 15 June 1982 and the elevation(s) of the base flood)" is maintained.[19]

RECOMMENDATION 5: REQUIRE VEHICULAR AND PEDESTRIAN ACCESS

While communities cannot exceed the freeboard requirements for structures, as per the state's building code, municipalities can consider freeboard requirements for vehicular and pedestrian access (driveways, parking lots, etc.). The Town of Cohasset could consider adding similar language into their zoning code, under their current flood plain district (Section 9.4) or other bylaws:

- The City of Marlborough's Floodplain and Wetland Protection District (Section 650-23) allows for construction by Special Permit, provided that such construction will "have street or otherwise appropriate access that shall be at least one foot above base flood elevation."[20]

RECOMMENDATION 6: DEVELOP DESIGN GUIDELINES FOR BUILDINGS IN FLOOD-PRONE AREAS

Outside of zoning, the Town of Cohasset may want to consider creating design guidelines for developers, property owners, and/or other project proponents. Such toolkits can help these groups understand how to (1) approach the flood risks to their projects; (2) design their projects in a way that advances the Town of Cohasset's climate priorities; and (3) align with expectations of the Town's boards and committees (ex. Design Review Board, Conservation Commission).

- The Town of Nantucket created *"Resilient Nantucket Flooding Adaptation & Building Elevation Design Guidelines"*, which lists suggested practices for preserving historic buildings at risk of flooding and serves as an addendum to *"Building with Nantucket in Mind"*.

- The City of Boston's *"Coastal Flood Resilience Design Guidelines"* outlines principles and practices for advancing building resilience, adaptation, and protection from future flood risk. building resilience, adaptation, and protection from future flood risk.

OTHER RESOURCES

- FEMA Community Rating System (CRS), which recognizes and encourages community floodplain management practices exceeding minimum requirements of the National Flood Insurance Program (NFIP).
- U.S. Department of Housing and Urban Development (HUD) published regulations governing floodplain management and the protection of wetlands, which uses a "climate-informed science approach (CISA) for establishing the flood elevation and hazard area in siting, design, and construction."
- MAPC' Low Impact Development Toolkit for more sustainable land development approaches and specific strategies for stormwater management.
- Upcoming resources to look out for:
    - ResilientCoasts Plan from the Massachusetts Office of Coastal Zone Management (CZM)
    - An updated version of the Stormwater Handbook from the Massachusetts Department of Environmental Protection.
    - Proposed Wetlands Resilience 1.0 Draft Regulations from the Massachusetts Department of Environmental Protection.

END NOTES

[1] Flood Vulnerability Assessment & Resiliency Strategies for Cohasset Cove & James Brook Watershed PowerPoint Presentation
[2] See Chapter 17.16.020.D of the Town of Winthrop's Code of Ordinances
[3] See Section 25A-6.2 of the City of Boston's Code of Ordinances
[4] See R322.1.6 "Protection of Mechanical, Plumbing and Electrical Systems": https://www.mass.gov/doc/9th-edition-massachusetts-residential-code-requirements-in-floodplains/download
[5] See Chapter 17.16.020.C.8 of the Town of Winthrop's Code of Ordinances
[6] To read more specifically, see Section 9.4.G.8 of the Town of Cohasset's Zoning Bylaw
[7] See Section 5.5.7 Use Regulations of the City of Gloucester's Zoning Ordinance
[8] See Section IX.C Use Regulations of the Town of Rockport Zoning By-Law
[9] See Section 470.7 Prohibited Uses of the Town of Scituate's Zoning Bylaws
[10] See Section 135-608.H.2 "Uses" of Town of Braintree's Zoning Ordinance. See Section 135-608.B for a clear definition of "Critical Facility".
[11] See Section 4.2.7.2 of Town of Swampscott Zoning By-Law
[12] See Section 8.1.5 of City of Quincy's Zoning Ordinance
[13] See Section 4.2.2.1 "Long Term Sea Level Rise" of Town of Swampscott Zoning By-Law
[14] See Section 410-4.2.C of Town of Hull Zoning Bylaws
[15] See Sections 17.40.020, 17.20.030, and 17.40.040 of Town of Winthrop's Code of Ordinances for explanations of the separate districts.
[16] See Sections 5.5.2, 5.5.3, and 5.5.4 of the City of Gloucester's Zoning Ordinance for explanations of the separate districts.
[17] To read more specifically, see Section 9.4.G.8 of the Town of Cohasset's Zoning Bylaw
[18] See Chapter 280-8.1. V.1 of the Town of Dedham's Zoning Bylaw
[19] See Section 6.2.6.a of the Town of Wilmington's Zoning Bylaw
[20] See Section 650-23.G of City of Marlborough's Zoning Ordinance