



# Regulatory Tools for Coastal Floodplain Resiliency

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**H a r w i c h   C o n s e r v a t i o n   C o m m i s s i o n**

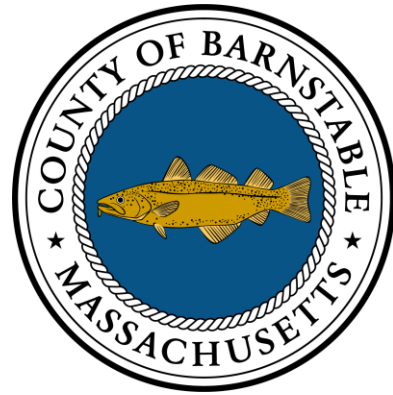
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# Project Partners



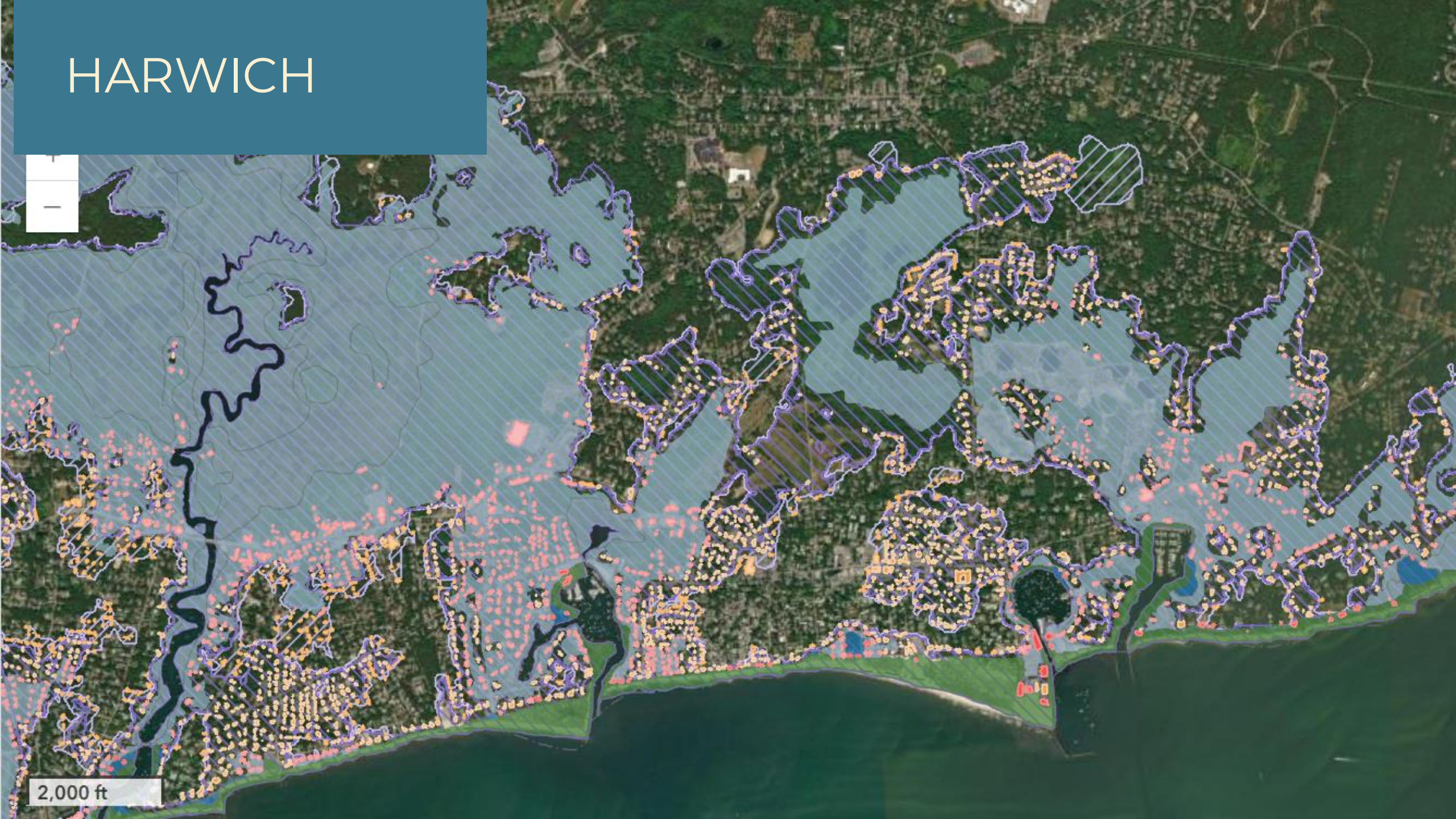
CAPE COD  
COMMISSION



Funding provided by



# HARWICH



2,000 ft

# | FLOODPLAIN REGULATORY MODELS



## COASTAL RESILIENCY BYLAW

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Consistent with Wetlands Protection Act, protects natural resources from the impacts of development within the current floodplain, and allows for regulation of future floodplain to support natural resource function

## COASTAL RESILIENCY REGULATIONS

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Supports the Coastal Resiliency Bylaw, provides guidance and performance standards for development in the current floodplain (Land Subject to Coastal Storm Flowage) and areas likely to be vulnerable in the future

## ZONING FLOOD RESILIENCY BYLAW

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Exceeds minimum requirements and based on documented challenges, floodplain zoning standards to protect public health/safety/welfare from the effects of coastal flooding and to promote resiliency

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## OVERVIEW

# Model Coastal Resiliency Bylaw and Regulations

Preamble and Purpose

Jurisdiction

Definitions

Presumptions

General performance standards:  
**Coastal Resilience Zone or CRZ**

Standards for the V Zone,  
Coastal A Zone (MoWA), and A Zone (MiWA)

*General Comment: These regulations presume that the Town has adopted a Wetlands Bylaw that authorizes the Conservation Commission to promulgate regulations. The regulations focus on provisions that the Town may decide to change over time as new data and relevant information becomes available. Because these regulations are adopted by the Conservation Commission, instead of at Town meeting, there is greater flexibility to update the regulations, as needed. Provisions that may change over time include performance standards.*

### **1. Preamble.**

Wetlands resources support biodiversity, recreation, and scenic beauty within the Town. These resources also serve as natural protections against flood damage by slowing the velocity of waves and storm surge and providing storage for heavy precipitation and flood waters. Shoreline features such as beaches, marshes, and dunes are inherently dynamic systems. Infrastructure built in or adjacent to these resources are impacted by and can impact the movement of the resource(s). For example, shorelines can

## 2. Purpose of the Regulations.

The purpose of these Regulations is to protect wetland resource areas by controlling activities that are likely to have a significant individual or cumulative effect on wetland resources. These Regulations aim to protect wetland resources today and into the future, as the intensity of storms and flooding increases. In protecting the wetlands resources from future flood damages, these regulations can provide an additional layer of flood protection for private and public property and vulnerable infrastructure. These regulations are critical to the preservation of the unique environment of [TOWN].

These Regulations are authorized by and supplement and complement the Massachusetts Department of Environmental Protection (“MassDEP”) wetlands regulations (310 CMR 10.00) including the regulations governing Land Subject to Coastal Storm Flowage (“LSCSF”) and the [TOWN’S] Wetlands Bylaw by providing additional performance standards. All activities within the Coastal Resilience Zone (“CRZ”) must comply with these regulations and [TOWN’S] Floodplain Zoning Bylaw. The Floodplain Zoning Bylaw governs uses and dimensions in the floodplain and incorporates the minimum requirements for compliance with the National Flood Insurance Program.



### 3. Jurisdiction.

The area subject to protection under this Coastal Resilience Zone Model Regulation is the Coastal Resilience Zone which includes Land Subject to Coastal Storm Flowage (“LSCSF”).

#### 4. Definitions.

*Comment: These definitions could be streamlined by referencing the definitions that are in the Bylaw or in the DEP regulations, instead of including the full definition. In electronic versions of these regulations, a link to the Bylaw can be added. Note that if the same definitions are repeated in the Bylaw and the regulations, then if one is updated, the other will need to be updated as well.*

The following terms shall have the meaning set forth below for purposes of these Regulations. All terms not otherwise defined in this Section shall have the meaning set forth in the Bylaw, the Act, or the DEP Regulations.

**Act** – The Massachusetts Wetlands Protection Act, M.G.L. c. 131 §40.

**Activity** – Construction, development, renovation, or any modification to an existing structure or excavation, filling, grading, paving or other modification to land that will alter a Project Site located within the Coastal Resilience Zone.

**Bylaw** – The Wetland Protection Bylaw of the Town of [NAME].

**Coastal Resilience Zone (CRZ)** – The CRZ shall include the following resources areas: (a) any Land Subject to Coastal Storm Flowage; (b) any land which is subject to inundation caused by 1% annual chance coastal storms and sea level rise; and (c) the buffer zone of any Other Coastal Wetland Resource located in whole or in part within (a) or (b). The CRZ shall include within its boundaries one or more of the following subareas: Velocity (V) Zone; A Zone (including the Zone A subareas: Moderate Wave Action Area and Minimal Wave Action Zone).

**Commission** – The Conservation Commission of [TOWN].

**DEP Regulations** – The Wetlands Protection Regulations adopted by the Department of Environmental Protection, 310 CMR 10.00, pursuant to the Act.

**FEMA** – The US Federal Emergency Management Agency.

**Fill** – To deposit any material so as to temporarily or permanently raise an elevation, fill wetlands or depressions or to provide a barrier to flood waters. Fill shall not include beach nourishment, repairs (but not expansion) to existing revetments or seawalls; nature-based flood protection projects that allow for the movement of sediment, and low impact stormwater systems approved

**Redevelopment Site** – The area of a project that involves replacement, renovation, restoration or expansion of an existing structure, improvement of existing roads, repairs to existing drainage systems or utilities and as it may be further defined in the DEP Regulations definition of “*redevelopment*” as applied to a project within the CRZ.

*Comment: 310 CMR 10.04 defines “Redevelopment” but does not define “Redevelopment Site.”*

**Sea-Level Rise Base Flood Elevation (SLR-BFE)** – The elevation of surface water resulting from any inundation caused by coastal storms up to and including that predicted to be caused by the 1% annual storm

**Segment or Segmentation** – The completion of any project including, without limitation, construction, renovation, repair, site work or other Activity in phases or segments.

**Special Flood Hazard Area (SFHA)** – The area with a current 1% flood risk, identified on FIRMs as the A zones and V zones. The SFHA only applies to areas identified on current FIRMs.

**State Building Code** – The Massachusetts State Building Code (MSBC), 780 CMR.

**Substantial Damage** – Damage that has occurred as a result of any origin where the total cost of repairs is 50 percent or more of the structure's *assessed value* before the disaster occurred.

*Comment: The State Building Code defines Substantial Damage as damage that is greater than 50% of the market value of the structure. We have elected to use assessed value because the assessed value is more likely to provide a consistent basis for valuing properties throughout the Town.*

**Substantial Improvement** – Any repair, reconstruction, rehabilitation, alteration, addition or other improvement to a structure where the cost is 50 percent or more of the structure's *assessed value* prior to commencing the improvement. This term includes any alteration of a historic structure, except to the extent that the alteration would preclude the structure's continued designation as a historic structure.

*Comment: Substantial Improvement of a building or structure is defined in the State Building Code as the repair, reconstruction, rehabilitation, alternation, addition or other improvement with a cost equal to or exceeding 50% of its market value. As noted above, we elected to use assessed value in place of market value. We also note that a threshold*



6. **Presumptions.**

- a. A project that involves filling, dredging, or constructing one or more buildings, or other structures within the CRZ or otherwise altering the CRZ, is presumed to have a significant effect on wetlands resources, flood control, erosion and sediment control, and water quality.

(v) Placement of fill material.

**7. General Performance Standards.**

When the Commission determines that a proposed project or activity is located within the CRZ, the following performance standards apply. The applicant shall demonstrate that it has met the following performance standards and has also met the performance standards set forth in Sections 8 through 11, as applicable to the Project location.

- a. Any project that involves construction, expansion, or repair of an existing structure shall be designed to prevent any exacerbation of current or future flood conditions and prevent any harm to wetland resources.

**V Zone**

**A Zones**

**X Zone**

Coastal A Zone  
(MoWA)

A Zone  
(MiWA)

Wave Heights  
 $\geq 3$  feet

Wave Heights  $< 3$  feet and  $\geq 1.5$  feet

Wave Heights  
 $< 1.5$  feet

Landward of the  
100-year flood

Base Flood Elevation

100-Year Stillwater Elevation

LiMWA →

Elevated building

Unelevated building

## 8. Additional Performance Standards within V Zone.

The following performance standards shall apply in the V Zone, in addition to the General Performance Standards and applicable provisions of the DEP Regulations.

- a. Except as permitted herein for relocation of utilities and as permitted in Section 11(a) for Redevelopment Sites, no new construction or expansion of any building or other structure, including sheds, garages, pools, septic systems or other structures may be permitted. An expansion for the sole purpose of relocating utilities above anticipated flood levels may be allowed provided that the expansion is no more than 100 square feet or as may be permitted by the conservation commission on a case by case basis and is elevated to or above the requirements of the State Building Code. No new construction or expansion of roads, parking lots, public shared use paths or other impervious surfaces shall be permitted within the V Zone, except within a Redevelopment Site or as permitted as a Limited Project in accordance with the requirements of 310 CMR 10.24(7)-(9). Subject to all other applicable performance standards of these Regulations, maintenance and repair of roads and parking lots, conversion of at grade roads to elevated roadways and bridges shall be allowed, and upgrading without expanding and repair of existing septic systems shall be allowed.

## 8. Additional Performance Standards within V Zone.

The following performance standards shall apply in the V Zone, in addition to the General Performance Standards and applicable provisions of the DEP Regulations.

- No Berms or Seawalls
- No new septic
- No new impervious patio
- No hazardous materials
- Provisions to allow for Substantial Damage or Improvement
- Fill

Except as permitted herein for relocation of utilities and as permitted in Section 11(a) for Redevelopment Sites, no new construction or expansion of any building or other structure, including sheds, garages, pools, septic systems or other structures may be permitted. An expansion for the sole purpose of relocating utilities above anticipated flood levels may be allowed provided that the expansion is no more than 100 square feet or as may be permitted by the conservation commission on a case by case basis and is elevated to or above the requirements of the State Building Code. No new construction or expansion of roads, parking lots, public shared use paths or other impervious surfaces shall be permitted within the V Zone, except within a Redevelopment Site or as permitted as a Limited Project in accordance with the requirements of 310 CMR 10.24(7)-(9). Subject to all other applicable performance standards of these Regulations, maintenance and repair of roads and parking lots, conversion of at grade roads to elevated roadways and bridges shall be allowed, and upgrading without expanding and repair of existing septic systems shall be allowed.

## 9. Additional Performance Standards within MoWA Zone.

The following performance standards shall apply within MoWA, in addition to the General Performance Standards and applicable provisions of the DEP Regulations.

- a. Except as permitted in Section 11(a) for Redevelopment Sites, any new construction or expansion, repair or modification of any building or other structure, including sheds, garages, pools, septic systems or other structures, may be allowed only if the applicant demonstrates that (i) the project will not redirect, channelize or exacerbate flood conditions in wetlands resources or at other properties, and (ii) the new structure and the expanded portion of an existing structure shall be elevated to the requirements of the State Building Code.

*Comment: In the Floodplain Zoning Bylaw, towns could elect to prohibit or restrict the dimensions of any new construction or expansion of a building structure, or septic system in the MoWA. In that case, the Performance Standard for the V Zone (Section 8.a) could also be used here instead of this Section 9.a.*

- b. In the event of any Substantial Repair of the Foundation, any Substantial Improvement, or any repair or restoration after Substantial Damage, the lowest horizontal structural member of the building or structure shall be elevated above the requirements of the State Building Code. A historic structure shall not be required to be elevated if the structure complies with the Floodplain Zoning Bylaw and such alteration will preclude the structure's continued designation as a historic structure.

*Comment: Towns and applicants should consult with the Historic District Commission or consult with a Historic Preservation Specialist in weighing the potential loss of historic designation against the likelihood of Substantial Damage or destruction of the building or structure when determining whether, and to what extent, to elevate or otherwise protect a historic structure.*

- c. No new construction or horizontal or vertical expansion of seawalls, berms or other engineered flood or coastal barriers shall be allowed unless the applicant can demonstrate that the seawall, berm or other barrier will not deflect, redirect, or increase the velocity of wave action or flood waters in a manner that impairs wetlands resources or other properties.

**10. Additional Performance Standards within MiWA Zone.**

- a. Except as permitted in Section 11(a) for Redevelopment Sites, any new construction or expansion, repair or modification of any building or other structure, including sheds, garages, pools, septic systems or other structures, may be allowed only if the applicant demonstrates that

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*DRAFT FOR DISCUSSION*

- (i) the project will not redirect, channelize or exacerbate flood conditions in wetlands resources or at other properties, and (ii) the new structure and the expanded portion of an existing structure shall be elevated consistent with the requirements of the State Building Code.

The background image shows a coastal scene with several houses built on stilts. In the foreground, there is a sandy beach with a wooden signpost. The water is visible on the left side. The entire image is overlaid with a semi-transparent dark teal rectangle.

# Discussion

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## Decision Points

# Model Coastal Resiliency Bylaw and Regulations

Options within the models allow towns to be more or less restrictive:

- Types of allowable development in each coastal zone (V, Coastal A, A, etc.)
- How to define what is a “substantial improvement” or “substantial damage”
  - Use of assessed value v market value
  - Inclusion of historic structures
- Elevation of structures: to what height requirements?

