WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS
1 Riverside Road, Sandy Hook, CT 06482

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# PLANNING FOR A CHANGING COAST

*Strategies for Implementing Resiliency Improvement Districts*

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# II. INTRODUCTION

A key challenge faced by municipalities is determining how to respond to climate change. Public Act 25-33 gives Connecticut municipalities new authority in the form of resiliency improvement districts (RIDs) to manage these and other climate-related impacts. While climate change presents a broad range of impacts, this white paper focuses on a trifecta of such impacts to which coastal municipalities are disproportionately exposed: rising sea levels, more frequent high tides, and more intense storms.

The Connecticut Institute for Resilience & Climate Adaptation (CIRCA) projects that sea levels along the Connecticut coast will rise 20 inches by 2050. By 2100, CIRCA estimates the sea to rise to between 2 and 7 feet. How to address that rise may be the defining land use, infrastructural, and economic challenge for coastal municipalities. Should a community stay in place by hardening, should it retreat from the coast, or should it develop an approach that lies somewhere between these options?

The purpose of this report is to identify the range of impacts that sea level rise will have on Connecticut's 24 coastal municipalities and to present distinct coastal climate resiliency improvement district (RID) concepts that support the legislative direction given in PA 25-33.

This report builds on two previous WestCOG publications. *Flooding in Connecticut: A Status Report on Municipal Flood Prevention Standards* (2022) documents the evolution of municipal flood prevention regulations throughout Connecticut, while *Local Zoning Innovations for Coastal Flood Resilience: Responding to a Changing Environment through Flexible Strategies* (2026) examines zoning techniques that enable property-level adaptation, including building elevation, freeboard, flexible dimensional standards, and flood-resilience overlays. Together, these reports provide complementary resources for municipalities implementing RIDs and other local climate resilience initiatives.

### *Global and Local Sea Level Rise*

Before any efforts are made to develop countermeasures to rising seas, it is critical to understand the current state of climate science, its impact on Connecticut's coastline, and legislative requirements.

Connecticut now requires municipalities to address the most recent climate hazards and climate projections established by NOAA, FEMA, EPA, and the University of Connecticut.

- NOAA projections can be found in its 2022 report *Global and Regional Sea Level Rise Scenarios for the United States.*[1] This document was sponsored by FEMA, EPA, and the U.S. Army Corps of Engineers and therefore represents a best practice endorsed by all the key federal agencies identified as sources to be used by Connecticut's municipalities in developing their plans of conservation and development when

[1] National Oceanic and Atmospheric Administration, Global and Regional Sea Level Rise Scenarios for the United States, February 2022

adopted after October 1, 2027. NOAA estimates that sea levels in the Northeast will rise 1.3 feet based on the intermediate low scenario presented in Table 1. However, sea levels could rise to 2.3 feet above sea levels that existed in the baseline year 2000 under the worst-case scenario.

- CIRCA has also developed sea level rise projections and flood hazard projections. These include 2019's report *Sea Level Rise in Connecticut.* While this report may not represent the same broad federal consensus as NOAA's, it specifically focuses on the Connecticut shoreline and its tide gauge stations to provide the most relevant data for the state's governments. CIRCA arrives at similar conclusions as NOAA.[2] (Whether the Connecticut data should be considered as uniquely different than broader regional trends for the Northeast has not yet been verified.[3])

*Table 1: Regionalized Global Mean Sea level Scenarios Based Estimates, in Feet, of Relative Sea Level in 2050 Relative to a Baseline of 2000 for Northeast Region of the United States*

| Scenario Estimates | Median | Low | High |
|---|---|---|---|
| Observation Extrapolations | 1.3 | 1.0 | 1.5 |
| Low | 1.2 | 0.9 | 1.5 |
| Intermediate-Low | 1.3 | 1.0 | 1.6 |
| Intermediate | 1.4 | 1.1 | 1.8 |
| Intermediate-High | 1.6 | 1.2 | 2.1 |
| High | 1.8 | 1.3 | 2.3 |
| Median Bounding Scenarios | Intermediate-Low | | |

Source: National Oceanographic and Atmospheric Administration, Global and Regional Sea Level Rise Scenarios for the United States, February 2022, Table 2.2, p. 19.

PA 25-33 requires municipalities to use the latest climate projections. This means the 2022 NOAA report referenced in footnote 1 is the appropriate reference to be used by Connecticut municipalities (absent more up to date estimates by another party, such as CIRCA).[4]

The short-term future of federally sponsored climate change assessments is uncertain. According to Politico's E&E News,

> *"The Trump administration removed all five previous National Climate Assessments from federal websites in June and deleted the website for the U.S. Global Change Research Program, the government body that publishes the reports. POLITICO's E&E News reported*

[2] James O'Donnell, Sea Level Rise in Connecticut, Figure 1, Connecticut SLR Projections, 2019
[3] There are only two tidal gauge stations in Connecticut (New Haven and New London) with long-term data on mean sea levels. This is a limitation in making estimates at other locations on the Connecticut coast.
[4] These discrepancies were recognized in a report by William R. Rath titled, Statutory Adoption of Updated Sea-Level Rise Scenarios, UConn Law School, May 1, 2018.

*in December that the Trump administration had tapped a group of climate contrarians to helm the next installment."*[5]

Given the uncertainty of if or when a new federal climate change assessment will be published, NOAA's 2022 *Global and Regional Sea Level Change Scenarios* and CIRCA's work may remain the only accessible localized climate change estimates for use by municipalities in Connecticut. As a matter of state policy, zoning commissions concerned with updating their regulations should rely on the CIRCA estimates of sea level rise.

While Connecticut municipalities should rely upon NOAA and CIRCA for localized climate change estimates and planning assumptions, they may also benefit from examining international experience in climate resilience planning. Planning frameworks developed in countries such as the United Kingdom, Australia, and New Zealand illustrate a variety of methods for selecting, sequencing, and implementing long-term resilience strategies under conditions of uncertainty. These international examples are valuable as models of planning and decision-making rather than as sources of localized climate projections.

### *A Note on FEMA Data*

FEMA has never had the resources to maintain its studies or maps in compliance with federal requirements for five-year updates. For example, the latest flood insurance study for Fairfield County was completed in 2013, thirteen years ago. The validity of FEMA's flood insurance rate maps is also strongly influenced by human factors. The ongoing increase in impervious surfaces from new development, new roads and compacted soils – such as can be found in heavily used recreational and athletic fields – contributes to higher rates of runoff that in turn affects the height and intensity of flooding along the estuaries leading to the Connecticut coast. These climate-related and human-induced changes to flooding are not captured in real time by FEMA flood maps.

At least three types of climate-related flood hazards are not captured by FEMA FIRMs:

1. Anticipated sea level rise (add 20 inches to FEMA base flood elevations to estimate the likely 2050 flood heights);
2. Anticipated higher tide levels coinciding with severe storm events (add a freeboard buffer of at least 2 feet to factor in this uncertainty factor)
3. anticipated sea level rise by the year 2100 (add at least 24 inches or up to seven feet above base flood elevations identified by any given flood insurance rate map (FIRM) covering the Connecticut coast.

[5] Chelsea Harvey, All the climate info that disappeared under Trump. And how it's being saved, E&E News, January 7, 2026. There are numerous other websites that have documented the dismantling of climate change data including the Union of Concerned Scientists in its March 27, 2025 post concerning climate literacy in the Trump administration.

# III. STRATEGIES FOR COASTAL RESILIENCY

The first element of any effort to manage the impacts of a changing coastal climate is planning. During planning, municipalities determine their climate vulnerabilities and then develop strategies to determine the economic, environmental, and land use consequences that can be anticipated to occur over the next 25-, 50-, and 75-year horizons. Potential strategies fall into four general categories:

1. Adapt — accept that some hazards cannot reasonably be prevented and instead modify infrastructure, operations, and public services to accommodate changing conditions.
2. Protect — maintain existing land uses by resisting coastal hazards through engineered improvements.
3. Transition — gradually shift development patterns and public investment toward more sustainable locations while maintaining community continuity.
4. Retreat — recognize that continued occupation or infrastructure investment may no longer be practical and plan for the orderly withdrawal of development from vulnerable areas.

This white paper presents a range of conceptual strategies under each category. These are not recommendations that every municipality adopt every strategy but are intended to stimulate a discussion about what municipalities can and should do in a changing climate. The story of King Cnut is as relevant to local governments today as it was a millennium ago to kings: King Cnut commanded the rising sea to halt – presumably to teach his courtiers on the limits of his royal power. While we cannot command the tide, we can choose how we prepare for it.

### *Adapt*

Adaptation recognizes that it may not always be practical, economical, or environmentally desirable to eliminate every consequence of coastal flooding. Rather than attempting to maintain existing levels of service indefinitely, municipalities may choose to modify infrastructure, emergency response, and public expectations so communities can continue to function safely under changing conditions.

The strategies described below do not prevent flooding. Instead, they acknowledge that flooding will occur and seek to reduce its impacts through planning, communication, and operational changes.

#### Emergency Evacuation Zones

One consequence of a "stay in place" strategy is recognizing that some coastal neighborhoods may become temporarily isolated during severe storms, exceptionally high tides, or future sea level rise. Rather than attempting to eliminate every instance of roadway inundation through increasingly costly infrastructure improvements, municipalities may instead choose to accept periodic isolation while ensuring that residents have the emergency notification, evacuation, and response capabilities necessary to remain safely in these locations.

Connecticut already has forty-eight inhabited islands located within nine municipalities. Together they contain 766 dwelling units on approximately 973 acres (Appendix 4). While many are seasonal residences, others are occupied year-round. Some, such as Saugatuck Island in Westport[6] and Mason's Island in Stonington, are connected to the mainland by bridges or causeways that themselves may become vulnerable during extreme coastal events. Residents of these communities have long understood that living in geographically isolated areas requires a different level of municipal service, including emergency notification procedures, evacuation planning, specialized transportation, and emergency response capabilities.

As sea levels rise and tidal flooding becomes more frequent, portions of Connecticut's mainland coastline may increasingly function much like these inhabited islands. Roads that are presently flooded only during major storms may eventually become impassable several times each year, temporarily isolating neighborhoods until floodwaters recede. In some locations, long-term sea level rise could make such isolation increasingly frequent or even permanent. The planning challenge is therefore not entirely new; rather, it is adapting the emergency management practices long used for island communities to mainland neighborhoods that gradually acquire island-like characteristics.

For municipalities choosing a stay-in-place strategy, emergency preparedness should become an integral component of climate resilience planning. A Resiliency Improvement District (RID) may be used to finance enhanced emergency notification systems, evacuation planning, transportation arrangements, emergency communications, and other services needed to support continued occupancy of these vulnerable areas. Potential improvements could include direct electronic notification systems, confirmation procedures for vulnerable residents, designated evacuation routes and transportation resources, emergency docking or ferry facilities where appropriate, and coordination with local and state emergency responders.

These services represent an ongoing public cost associated with continued occupancy of areas subject to periodic isolation. Just as a RID may finance roadway improvements, flood protection infrastructure, or drainage systems, it may also provide a mechanism for financing the enhanced emergency preparedness and response capabilities needed to support continued development in vulnerable coastal areas. The objective is not to eliminate risk entirely, but to acknowledge that communities choosing to remain in these locations will require a different—and often higher—level of public service than neighborhoods not exposed to coastal isolation. These emergency preparedness measures should be incorporated into each municipality's emergency management program consistent with applicable state and federal emergency planning requirements.

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[6] Saugatuck Island was created by the Army Corps of Engineers in the late 19th century out of an area once known as the Greater Marsh Shoes of Saugatuck. A history of that island can be found at the Saugatuck Island website: https://www.saugatuckisland.com/history-if-the-island/

### Temporary Road Closure

Connecticut has traditionally designed bridges and culverts to keep roads passable during an established design flood, with larger events evaluated as check or failure conditions. Other states, particularly in arid and lightly populated regions, have made greater use of overtoppable or low-water crossings, accepting periodic road closure where traffic volumes, available detours, and risks to life and property make that approach reasonable.

As sea levels rise and coastal flooding becomes more frequent, municipalities may wish to consider whether all coastal roads must continue to remain passable during every storm event. Rebuilding every vulnerable roadway to withstand future flood conditions may not always be economically justified or physically feasible. In some locations, accepting periodic roadway inundation may represent a reasonable adaptation strategy, provided that it is the result of deliberate planning rather than deferred maintenance or infrastructure failure.

The scale of this challenge may be larger than many municipalities realize. According to CIRCA, by 2055 approximately 53.56 miles of Connecticut coastal roads are projected to flood at least once every thirty days, compared to only 6.32 miles in 2025 (Table 2). As roadway inundation becomes increasingly common, municipalities may find that operational responses—including planned temporary closures—become as important as traditional infrastructure improvements.

A temporary road closure strategy requires substantially more than simply allowing roads to flood. Municipalities should identify alternate routes, ensure emergency vehicle access, establish clear public notification systems, install automated road closure gates and warning signs where appropriate, and design roadways, utilities, and drainage infrastructure to withstand repeated overtopping without significant damage. Emergency services, school transportation, utility providers, and neighboring municipalities should all understand how access will be maintained during temporary closures. Such a strategy may also require water-level monitoring, automated flood sensors, roadway cameras, and real-time traveler information systems to ensure closures occur safely and efficiently.

Temporary road closure also represents a shift in the expected level of municipal service. Rather than promising continuous roadway access under all conditions, municipalities acknowledge that access may occasionally be interrupted while ensuring that such interruptions are predictable, well managed, and of limited duration. This approach is already common in other parts of the United States where periodic flooding is accepted as part of normal roadway operations.

A Resiliency Improvement District (RID) may provide a mechanism for funding the planning and infrastructure needed to support this strategy, including roadway hardening, intelligent transportation systems, flood monitoring equipment, automated warning devices, detour signage, and public communication systems. In some cases, periodic road closures may provide a practical intermediate step between maintaining continuous access and permanently abandoning a roadway as sea levels continue to rise.

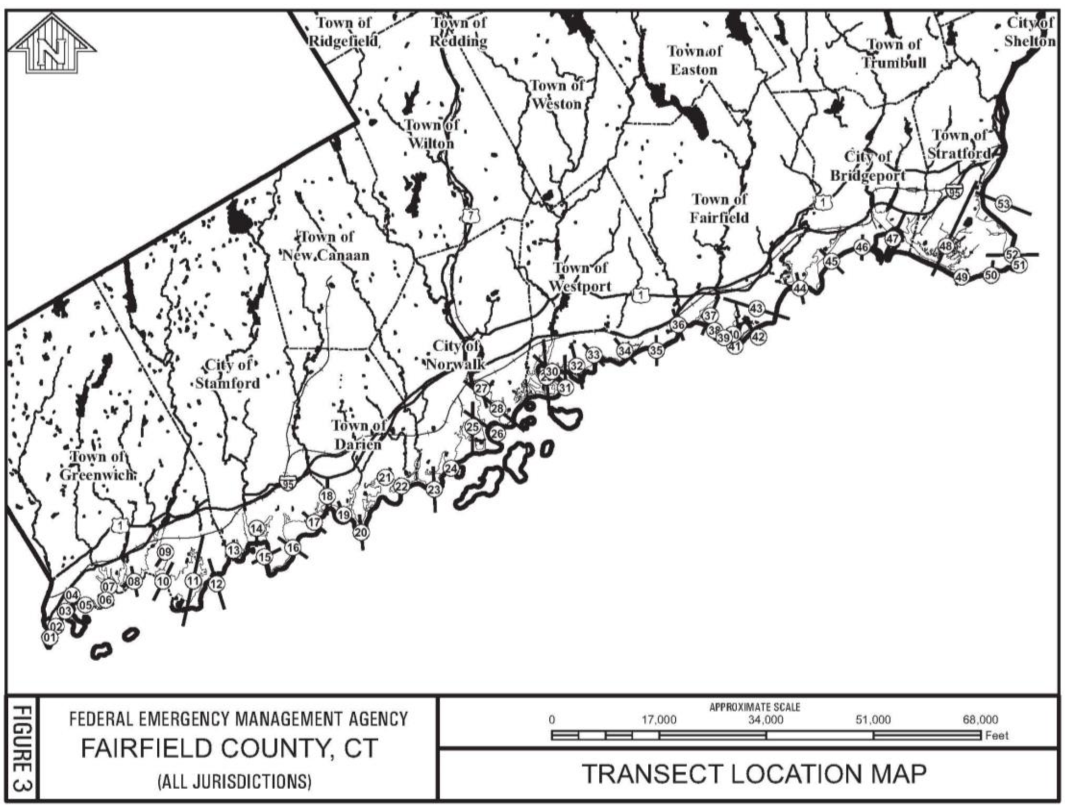
### *Protect*

Protection seeks to maintain existing land uses by resisting coastal hazards through engineered improvements and regulatory standards. Rather than accepting increased flooding or relocating development, these strategies attempt to preserve existing communities by investing in infrastructure, modifying buildings, or reducing flood exposure. While often the most familiar approach to coastal resilience, protection also tends to be the most capital-intensive and may become increasingly expensive as sea levels continue to rise.

### Building Elevation Zones

The threats posed by flooding along the coastline of Fairfield County have been well documented in the FEMA Flood Insurance Study released in October 2013. That study identified the base flood elevations (in feet) associated with the AE and VE zones for 53 locations in Fairfield County including 36 located in Greenwich, Stamford, Darien, Norwalk and Westport. The locations are identified in Figure 1; the data is presented in Appendix 7.[7]

*Figure 1. Fairfield County Transect Location Map*




[7] **Zone AE** is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the Flood Insurance Study (FIS) by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

BFEs in the coastal municipalities vary considerably by the FEMA zone designations as well as in shoreline topography and mean water levels at the shoreline (North American Vertical Data 1988 -NAVD88). Table 1 summarizes the BFEs for the FEMA AE and VE zones for the 53 locations along the Fairfield County coast identified in the 2013 Flood Insurance Study. The most frequent BFE in the AE zones along the Fairfield County coast is 13 to 15 feet. In contrast, due to the wave action associated with the VE zone the most frequent BFE is 15 to 19 feet.

*Table 1. Range of BFE for Fairfield County Coastal Locations in the AE and VE Zones: 2013*

| **Zone** | Range of BFE for Transect Locations (in feet) | No. of Locations with BFE |
|---|---|---|
| **AE Zone 1** | 17 | 1 |
| | 11-13 | 4 |
| | 12-13 | 2 |
| | 12-14 | 15 |
| | 13-14 | 6 |
| | 13-15 | 15 |
| | 13-16 | 1 |
| | 14-15 | 3 |
| | 14-16 | 3 |
| | 15-16 | 2 |
| | **Count** | **52** |

| | | |
|---|---|---|
| **VE Zone** | 13-15 | 1 |
| | 13-16 | 1 |
| | 13-17 | 5 |
| | 14-16 | 2 |
| | 14-17 | 9 |
| | 14-18 | 7 |
| | 15-18 | 4 |
| | 15-19 | 15 |
| | 16-19 | 1 |
| | 16-20 | 3 |
| | 16-21 | 1 |
| | 17-20 | 3 |
| | 17-22 | 1 |
| | **Count** | **53** |

*No Base flood elevation was presented for Transect 2AE Zone in the Flood Insurance Study which accounts for why there are only 52 transect locations in the AE Zone.*

Raising buildings above the FEMA base flood elevation (BFE), preferably at least two feet above the BFE, can reduce flood damage risk over the short-term. However, it reflects historic FEMA flood recurrences, which are based on past experience. For futureproofing, building elevations should consider projected future inundation levels, such as those developed by NOAA, CIRCA, or the Intergovernmental Panel on Climate Change (IPCC).

The decision of how much a building should be raised above the BFE must also consider the costs of imposing a higher freeboard standard for new buildings or those significantly damaged by flood, fire, or natural disaster. FEMA has determined that adding a two-foot freeboard above the base flood elevation only adds about 2% to the cost of a new house.[8] The costs for greater freeboard above the BFE increase with each foot of freeboard that is required. Municipalities may wish to adopt flood protection ordinances that comply with the appropriate consensus-based sea level estimates that apply to coastal municipalities as given in PA 25-33.[9]

Buildings in FEMA-designated VE zones (areas of high velocity, high hazards along the Connecticut coastline) are prime candidates for elevation strategies. Currently, there are 235 dwellings and businesses that fall within a VE zone along Connecticut's coastline.[10] Typically, property owners elevate their building after it is substantially damaged by hurricane-force winds and water. This approach places massive fiscal demands on the nation's flood insurance program – which is at present is underfunded.[11]

Given these uncertainties, it is surprising that only five of the twenty-four coastal municipalities have a two-foot freeboard above the base flood elevation (i.e., BFE plus 2 feet).[12] Nor have any coastal municipalities established freeboard standards unique to properties that fall within the special high hazard VE zone (Figure 2). Arguably, these are the riskiest locations for new development and merit even more conservative elevations above the base flood elevations due to the high velocity wind and wave action experienced during the 100-year storm event.

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[8] Christopher Jones, et. al, Evaluation of the National Flood Insurance Program's Building Standards, National Institute for Research, October 2006, pp. 86-87, 91.

[9] Public Act 25-33 does not require zoning regulations or flood ordinances to address anticipated sea level rise scenarios. It does require sea level rise scenarios to be address within their next Plan of Conservation and Development (POCD). The implications are clear: zoning regulations should be consistent with the municipal POCD.

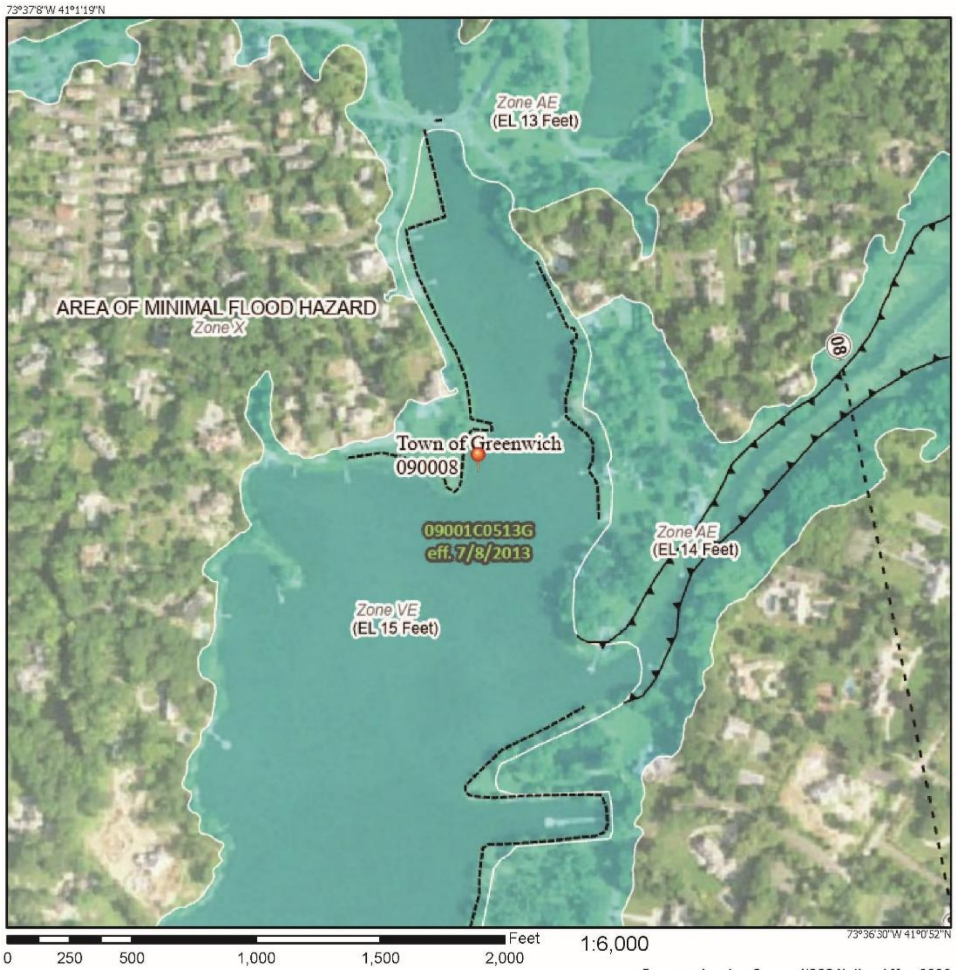
[10] The number of dwellings in the VE zone is derived from a December 31, 2025 report from FEMA provided by Diane Ifkovic, State NFIP Coordinator, Connecticut Department of Energy & Environmental Protection, March 12, 2026.

[11] United States House Committee on Financial Services, Flood: We Need to Abate the Flooding Risk, March 26, 2026. In referring to the National Flood Insurance Program (NFIP), Chairman French Hill reported: "For most of its history, the NFIP borrowed relatively little from the Treasury. However, after a very destructive hurricane season in 2005, Congress increased the borrowing limit for the program to roughly $20 billion to pay claims. Then, after Hurricane Sandy in 2012, Congress increased the borrowing limit for the program again to $30.425 billion. The NFIP has continued to accrue debt in the years that have followed. Most recently, the program borrowed $2 billion in additional funds in February 2025, bringing the program's current debt to $22.525 billion. That leaves just $7.9 billion more in borrowing authority before the program hits its borrowing cap."

[12] WestCOG, Zoning Impediments to Coastal Flood Prevention, Climate Resilient Approaches through Flexible Building Height and Setback Strategies, April 1, 2025, Table 2. (this report is still a draft).

To reduce mid- and long-term risks, municipalities may wish to consider the creation of overlay zone(s) that identify areas that would be inundated by sea level rise estimates for 2050 and 2100. Such zoning districts could be an excellent communication tool to raise awareness of flood risks amongst permanent and seasonal owners of property along the zone fronting the Connecticut coast (see Figure 1: Greenwich Flood Insurance Rate Map).

*Figure 2. Flood Insurance Rate Map for Part of Greenwich, CT. Note narrow VE Zone.*




## Holding Tank Zones

Flooding and sea level rise are not only a threat to buildings along the shoreline; it also adversely impacts underground infrastructure. Rising sea levels will raise the water table, which may result in failure of the septic leaching fields.

There are six coastal municipalities that rely exclusively on septic system leaching fields or mounded engineered leaching fields (Clinton, Guilford, Madison, Old Saybrook, Old Lyme and Westbrook, see Appendix 3); other municipalities may have coastal neighborhoods or individual properties that use septic systems. The six aforementioned municipalities are investigating alternatives to individual septic systems, such as connecting failing systems into community leaching field systems. Coincidentally, several of these municipalities have adopted water pollution control facilities including Old Saybrook and Westbrook. The Four Shore Coastal Resiliency Plan states: "Westbrook is exploring a centralized community septic system for its Town Center and has adopted a Sewer Avoidance Ordinance to effectuate septic upgrades. Clinton is considering wastewater treatment facilities for downtown and in vulnerable areas."[13]

One interim solution is to require holding tanks for land affected by rising sea levels.[14] Holding tanks may allow continued occupancy in locations where traditional septic systems become unreliable because of rising groundwater while avoiding the substantial capital costs associated with immediate sewer construction. Although not intended as a permanent solution, they may provide municipalities with additional time to evaluate longer-term wastewater strategies.

While these may be a viable technical solution for the short term, longer term may be unacceptable to some property owners. Municipalities concerned about the prospect of septic system failure due to rising water tables may wish to consider the development of holding tank zones as a short- and mid-term solution.

### Protective Barrier Zones

Protecting Connecticut's entire coastline through engineered barriers is neither economically nor environmentally feasible. However, sea walls may be able to protect selected locations. This is the approach New Orleans took. New Orleans factored in 2050 sea level rise estimates along with land subsidence estimates to determine the appropriate height of its sea walls. While this option does not factor in exponential changes in sea level rise, it represents a 'bet' that sea level projections for 2100 are worst case *and* that economic investment should focus on short term solutions – not unpredictable long-term estimates.

There are several sub-options to this scenario including 1) hardening the coastline where vulnerable housing exists, 2) avoiding embankments around coastal tidal marshes, marine and bird habitats and similar ecologically sensitive areas, and 3) sea gates like that in Venice, Italy to stop extreme tidal events. In contrast with building elevation and holding tank systems, which are paid for by property owners, a seawall is often a public expense. To avoid socializing costs for private benefit, municipalities may wish to financially structure infrastructure as seawalls so that beneficiaries pay, such as through a RID. An exception would be the protection of coastal infrastructure including vulnerable Publicly Owned Treatment Works (POTW) facilities and coastal harbors that play a vital role in supporting the multi-billion-dollar marine economy.

### Road Improvement Zones

One response to periodic road flooding will be municipal and state efforts to elevate and improve drainage on coastal roads. By 2055, CLEAR estimates that nearly 79 miles of

[13] Clinton, Old Saybrook, Borough of Fenwick, Westbrook, Four Shore Coastal Resiliency Plan, March 2025
[14] A corollary problem will be salt intrusion into private or publicly owned groundwater wells. Saltwater intrusion can be remedied by 1) bottled water as an interim solution and/or 2) installation of reverse osmosis systems for the affected wells. These remedies are expensive and merely delay the inevitable retreat from the shoreline.

Connecticut coastal roads will be inundated at least every ninety days (Table 2). By 2100, flooding impacts from rising sea levels and higher tides will impact 359 miles of local and state coastal roads under the 10-year and 100-year storm floods.

Anyone who owns property along Long Island Sound is aware of the growing impacts of tidal flooding as a phenomenon outside of extreme storm events, such as "king tides" that happen a few times a year. These tides are expected to be 16 times more frequent in 2100 than those experienced in 2025. In 2025, only 16.5 miles of coastal roadway were affected by tides under the 30-, 60-, or 90-day return frequency. In contrast, by 2100, such tides are expected to impact 271.6 miles of coastal roadways.

Lack of access to roadways, even if only intermittently, will affect property values for homes located on the impacted highways or that require these highways to reach their homes. Devalued property may lead to the outmigration of residents from the coastline. However, a more likely immediate scenario will be a public call for hardening the coastline in low lying areas where high tides create the greatest threat to property values and municipal infrastructure.

*Table 2. Tidal and Storm Flooding Frequencies for Roads in Connecticut Coastal Municipalities: 2026*

| Year | Tidal Flooding Frequency (Days) and Extent (Miles) | | | Total Tidal Flooding | Storm Flooding | |
|---|---|---|---|---|---|---|
| | 30 Day | 60 Day | 90 Day | | 10 Year | 100 Year |
| **2010** | N/A | 2.50 | 3.24 | 5.75 | 139.84 | 218.93 |
| **2025** | 6.32 | 5.38 | 4.78 | 16.48 | 164.92 | 216.25 |
| **2040** | 24.32 | 9.73 | 8.41 | 42.46 | 180.33 | 214.92 |
| **2055** | 53.56 | 12.28 | 13.47 | 79.31 | 185.13 | 208.76 |
| **2085** | 173.35 | 16.33 | 13.91 | 203.59 | 175.83 | 193.93 |
| **2100** | 242.21 | 16.76 | 12.61 | 271.58 | 169.89 | 189.16 |

Source: Sea Level Rise Effects on Roads & Marshes, Connecticut Environmental Conditions Online, University of Connecticut, accessed, February 25, 2026

Roads are public infrastructure that benefit private properties. As with protective barriers, municipalities may wish to consider financial mechanisms – such as RIDs – that ensure that the costs of road elevation and drainage projects are borne by their beneficiaries. Municipalities may wish to delineate road improvement zones based expected inundation, route availability, and emergency access.

The UConn website, Sea Level Rise Effects on Roads & Marshes,[15] identifies the specific names and locations of all affected roadways and can be an excellent tool to identify locations where critical infrastructure should not be located. This is an important planning tool to

[15] Sea Level Rise Effects on Roads & Marshes website: https://maps.cteco.uconn.edu/projects/slamm/

identify where not to place sewage treatment plants, police and fire stations and medical centers or hospitals.

### *Transition*

Transition strategies recognize that communities are constantly evolving. Buildings are renovated, infrastructure is replaced, businesses change, and public investments are made every year. Rather than attempting to preserve existing development patterns indefinitely, municipalities can use these routine decisions to gradually redirect growth, infrastructure, and investment toward more resilient forms. Unlike protection strategies, which seek to maintain existing conditions, transition strategies reshape communities over decades without requiring immediate abandonment or large-scale relocation.

#### Critical Infrastructure Overlay Zones

Public and private infrastructure provides the essential services upon which modern communities depend. Roads, bridges, hospitals, emergency medical services, fire and police facilities, electrical substations, public water and sewer systems, telecommunications infrastructure, supermarkets, fuel distribution facilities, and other critical infrastructure must remain operational during and after coastal storms and flooding events.

Historically, much of Connecticut's critical infrastructure was constructed without consideration of long-term sea level rise. As these facilities reach the end of their useful lives, require major rehabilitation, or are replaced through normal capital investment cycles, municipalities should evaluate whether reconstruction at the existing location remains appropriate or whether relocation to less vulnerable areas would improve long-term resilience.

A Critical Infrastructure Overlay Zone can identify those facilities that should ultimately be relocated outside areas vulnerable to sea level rise or the one-hundred-year floodplain. Rather than requiring immediate relocation, the overlay establishes a long-term planning framework so that future capital investments gradually reduce community vulnerability as infrastructure is replaced over time. Where communities adopt a "stay-in-place" strategy, the overlay may instead identify facilities that should be floodproofed, elevated, or otherwise protected to ensure continuity of essential services.

Critical Infrastructure Overlay Zones should distinguish between critical infrastructure and vulnerable resources. Critical infrastructure includes the utilities, transportation facilities, emergency services, communications systems, and other essential functions required for the entire community to withstand and recover from major disasters. Vulnerable resources represent a broader category that may include nursing homes, homeless shelters, emergency shelters, schools, Meals on Wheels providers, and other facilities serving populations requiring additional assistance during emergencies. While both should be considered when establishing a RID, they serve different planning purposes and may warrant different resilience strategies.

Rather than reacting to infrastructure failures after major storms, Critical Infrastructure Overlay Zones encourage municipalities to align long-term capital investment with future flood risk. By identifying facilities for eventual relocation, protection, or replacement, municipalities can improve community resilience while taking advantage of normal infrastructure renewal cycles rather than undertaking costly emergency projects.

### Village District Zones

Communities are not rebuilt all at once. Buildings are renovated, elevated, expanded, or replaced over decades as they reach the end of their useful life or are damaged by flooding or storms. A transition strategy recognizes that these incremental investments provide an opportunity to gradually reshape vulnerable coastal neighborhoods while preserving the qualities that make them desirable places to live and work.

Although Village Districts are often associated with preserving historic character and architectural aesthetics, Connecticut General Statutes § 8-2j provides municipalities with one of the state's most powerful place-making tools. Unlike conventional zoning, which primarily regulates land use and dimensional standards, Village Districts allow municipalities to guide the physical form of neighborhoods through coordinated standards for building design, site layout, landscaping, streetscapes, circulation, and public spaces.

Village District regulations may govern building height, massing, architectural style, façade materials, window placement, building orientation, and the relationship of buildings to the street. They also provide extraordinary authority to address building placement, public views, viewsheds, tree canopies, landscape design, roadway design, sidewalks, lighting, signage, and other elements that collectively define the character and function of a place. While municipalities may not regulate building technology governed by the Connecticut State Building Code, Village Districts can shape nearly every visible aspect of how neighborhoods evolve.

This flexibility makes Village Districts particularly well suited to climate resilience. For example, a coastal Village District could require buildings to be elevated on piles while ensuring that redevelopment maintains a cohesive architectural character. It could require enhanced landscaping, expanded tree canopy, reduced impervious surfaces, green infrastructure, shoreline buffers, coordinated pedestrian facilities, and streetscapes designed to accommodate future flooding. Rather than allowing adaptation to occur through unrelated site-by-site decisions, Village District standards can guide the coordinated transformation of an entire neighborhood.

Village Districts also allow specialized review of development proposals by an architect or Village District Commission, providing municipalities with professional oversight of design decisions as vulnerable neighborhoods transition from pre-FEMA development patterns to elevated structures compatible with current or anticipated base flood elevations. This review process can help communities adapt to rising sea levels while preserving the visual identity and sense of place that make Connecticut's coastal villages distinctive.

Thirteen of Connecticut's twenty-four coastal municipalities have adopted one or more Village Districts. Several—including Branford's Stony Creek and Town Center Village Districts, Clinton's East Main Street District, East Lyme's Niantic Village Design District, Old Lyme's Sound View Village District, Waterford's Mago Point District, and Norwalk's Rowayton District—are already located adjacent to vulnerable coastal areas. To date, however, no Connecticut municipality appears to have used Village District authority specifically as a climate resilience strategy. As communities confront sea level rise and more frequent coastal flooding, Village Districts represent a significant but largely untapped opportunity to guide neighborhood-scale adaptation using authority that municipalities already possess.

### Water-Dependent Use Zones

Sea level rise is likely to change the highest and best use of portions of Connecticut's coastline over time. While many developed waterfront areas have historically transitioned from marine and industrial uses to residential and commercial development, rising sea levels and more frequent coastal flooding may gradually reverse this trend. As vulnerable properties are redeveloped, municipalities may wish to encourage a transition toward water-dependent uses that derive value from direct access to Long Island Sound and can better coexist with periodic flooding than intensive residential or commercial development.

Water-dependent uses are activities, facilities, or developments that require direct access to coastal waters to function. These include commercial fishing, shellfish operations, marinas, boat launches, ferry facilities, marine services, and other waterfront activities. Public beaches, waterfront parks, fishing access, and recreational boating facilities also represent important water-dependent uses that provide public access to Long Island Sound while generally being more compatible with periodic coastal flooding than many forms of permanent development.

Based on a 2026 WestCOG analysis of coastal zoning regulations, seventeen of Connecticut's twenty-four coastal municipalities have established one or more Water-Dependent Use Zones (Appendix 10). Milford has two such districts, while New London has four. In total, twenty-one of the 185 zoning districts adjacent to the Connecticut coastline are classified as water-dependent.

Water-dependent uses also play an important role in Connecticut's coastal economy. Marine and marine-related industries contribute an estimated $66 billion to the economies of Fairfield, New Haven, Middlesex, and New London Counties (Appendix 6). Although many tourism and recreation businesses are not technically classified as water-dependent under Connecticut's Coastal Management Act, they nevertheless rely upon access to the waterfront and benefit from maintaining a vibrant working and recreational coastline. Protecting and expanding appropriate waterfront uses therefore supports both climate resilience and long-term economic vitality.

Several coastal municipalities—including Branford, Clinton, Darien, East Haven, East Lyme, Fairfield, Madison, and Westport—have not adopted Water-Dependent Use Zones, representing an opportunity to better align future redevelopment with changing coastal conditions. In addition, several predominantly residential shoreline communities, including the Fenwick Borough in Old Saybrook, the Groton Long Point and Noank Fire Districts within Groton, the Pine Orchard Association in Branford, and the Crescent Beach Association in East Lyme, may also benefit from establishing Water-Dependent Use Zones to protect or expand public waterfront access and recreation.

Municipalities with flexible definitions of water-dependent uses, such as Groton, provide an additional advantage by allowing zoning commissions to consider future marine industries, recreational activities, ecological restoration projects, and other waterfront uses that may not yet be specifically identified in zoning regulations. Such flexibility allows communities to respond to changing economic opportunities and evolving climate conditions without requiring frequent amendments to the zoning regulations.

RIDs provide an opportunity to support this long-term transition through strategic land acquisition, infrastructure investment, and redevelopment incentives. As sea levels rise, municipalities may find it appropriate to gradually transition selected waterfront areas from uses that require complete protection from flooding toward uses that can accommodate periodic inundation while continuing to provide economic, recreational, ecological, or public benefits. Rather than attempting to preserve every existing pattern of coastal development indefinitely, Water-Dependent Use Zones can help guide the long-term evolution of Connecticut's shoreline toward uses that are inherently more compatible with a changing coastal environment.

### *Retreat*

Retreat represents the point at which continued protection or adaptation is no longer technically, economically, or socially practical. Unlike emergency evacuation, retreat is a long-term planning strategy in which development, infrastructure, or public investment is gradually relocated away from areas subject to chronic flooding. In most cases, retreat occurs incrementally over decades through redevelopment, infrastructure replacement, land acquisition, and voluntary relocation rather than through immediate abandonment.

#### Managed Infrastructure Retirement

Public infrastructure has a finite service life. Roads, bridges, water and sewer lines, and other municipal facilities must eventually be rehabilitated, replaced, or retired. As sea levels rise and coastal flooding becomes more frequent, municipalities may determine that rebuilding certain infrastructure in its existing location is no longer the most prudent long-term investment. Instead, capital funds may be better directed toward facilities in less vulnerable locations.

Managed infrastructure retirement is a deliberate asset management strategy that aligns long-term capital investment with changing environmental conditions. Rather than automatically reconstructing infrastructure following storms or at the end of its useful life, municipalities evaluate whether continued public investment remains justified based on anticipated flood risk, maintenance costs, service demands, and the availability of alternative facilities. Where appropriate, infrastructure may be permanently removed, relocated, or repurposed rather than replaced in kind.

Roadways provide one of the clearest examples. Some low-lying roads may eventually experience such frequent tidal flooding that maintaining year-round vehicular access is no longer practical or economically sustainable. As these facilities reach the end of their useful lives, municipalities may elect not to reconstruct them, instead removing the roadway, restoring natural drainage or coastal processes, or converting the corridor to another appropriate public use. Similar decisions may eventually apply to other public infrastructure serving areas where long-term occupancy is no longer feasible or where continued public investment provides diminishing public benefit.

Managed retirement should generally be considered only after evaluating opportunities for protection, adaptation, or transition. It is most appropriate where flooding is chronic, infrastructure serves relatively few users, alternative access or facilities exist, or the cost of continued public investment is disproportionate to the public benefit received. RIDs can provide a framework for identifying infrastructure approaching these thresholds and for integrating retirement decisions into long-term capital improvement programs.

### Infrastructure and Landscape Reimagining

Climate resilience planning should not assume that every road, public facility, or parcel of land will continue serving its original purpose indefinitely. Public infrastructure has a finite service life, and municipalities face limited financial resources to maintain, rehabilitate, and replace aging assets. As sea levels rise and flooding becomes more frequent, the cost of preserving every existing roadway, utility, and public facility may exceed available public resources. Climate resilience therefore requires municipalities to think not only about how infrastructure is protected, but also where long-term public investment will provide the greatest benefit.

Rather than viewing vulnerable infrastructure solely as assets to be protected or retired, municipalities may find opportunities to reimagine how those corridors and landscapes serve the public. Former roadways may become waterfront promenades, bicycle trails, wetlands, living shorelines, or public open space. Flood-prone properties may transition into parks, ecological preserves, or restored coastal habitats that provide flood storage while expanding public access to Long Island Sound. Industrial sites that no longer serve their original purpose may become recreational assets, mixed-use waterfront districts, or restored natural areas.

Communities are already demonstrating this approach. New York City's West Side Elevated Highway was removed rather than replaced with another elevated expressway, allowing the corridor to evolve into a waterfront boulevard, park system, bicycle facilities, and significant redevelopment. Along San Francisco's Great Highway, coastal erosion and changing transportation priorities have led the city to reconsider whether a shoreline roadway should remain a roadway, with portions already converted to public open space while other segments face increasing pressure from the advancing Pacific Ocean. Connecticut has likewise begun reimagining former waterfront properties, including Great Island in Darien, Manresa Island in

Norwalk, and English Station in New Haven. These projects demonstrate that communities routinely redefine the purpose of land and infrastructure as conditions and public priorities evolve.

RIDs provide municipalities with a framework for guiding these transformations deliberately rather than waiting for crisis or disinvestment. By incorporating long-term resilience into capital planning, communities can evaluate whether rebuilding existing infrastructure in place represents the best use of limited public funds, or whether different public uses would provide greater long-term environmental, economic, and community benefit.

History also reminds us that infrastructure is far more adaptable than we often assume. Venice, Italy, did not simply inherit its famous canals—they were created over centuries as land and marshes were reshaped into a city whose transportation system was based on water rather than roads. Conversely, Venice, California, was originally developed with an extensive canal network inspired by its Italian namesake, but many of those canals were later filled to accommodate the rise of the automobile. These two cities illustrate that infrastructure reflects the needs and priorities of its time rather than representing a permanent condition. As Connecticut's coastline evolves over the coming century, future generations may likewise choose to reshape portions of the landscape in ways that today seem unconventional. The role of long-range planning is not to predict those choices, but to preserve the flexibility to make them thoughtfully.

### Relocatable Development

Given the enduring appeal of Connecticut's coastline, rivers, and lakes, municipalities may wish to accommodate continued development in vulnerable locations while recognizing that these areas may not remain permanently suitable for occupancy. One potential RID strategy is to encourage or require new construction—and the substantial reconstruction of flood-damaged buildings—to incorporate design features that facilitate future relocation. Rather than treating buildings as permanent fixtures, this approach recognizes that structures may eventually need to move as environmental conditions change.

Designing buildings for relocation is not a new concept. Throughout the nineteenth and much of the twentieth century, houses, schools, churches, and commercial buildings were routinely moved throughout the United States to accommodate road widening, railroad construction, institutional expansion, changing land uses, and neighborhood redevelopment. Specialized house-moving contractors relocated entire structures, often preserving valuable buildings that otherwise would have been demolished. In fact, the home of the grandparents of one of the authors of this report was moved (Figure 3). As construction methods evolved and development patterns became more permanent, building relocation became less common. Climate change, however, may once again make designing buildings for future relocation an economically practical strategy.

*Figure 3. Example of historic relocated structure (Princeton, New Jersey)*

Relocatable construction may include modular, panelized, or other building systems designed to be disassembled, transported, and reconstructed with substantially less cost and disruption than conventional construction. Although relocation may never become necessary, designing for that possibility preserves future options while allowing continued use of desirable waterfront properties during their remaining practical lifespan.

This approach recognizes that the principal challenge posed by sea level rise is often not the building itself, but continued access to it. Buildings may be elevated above future flood levels, yet eventually become inaccessible as surrounding roads, utilities, and infrastructure experience increasingly frequent flooding. Designing buildings for future relocation provides municipalities and property owners with an alternative to demolition should retreat eventually become necessary.

An instructive precedent can be found at the Freie Universität Berlin, which one of the authors of this report attended. The university's main complex, the *Rost- und Silberlaube,* designed in the 1960s as a modular "Building of Change", was conceived as an adaptable structure capable of future expansion and reconfiguration. During construction of Norman Foster's *Philologische Bibliothek* (philological library)—popularly known as *das Gehirn* ("the Brain")—in the early 2000s, portions of the existing building were dismantled to make room for the new building. Rather than discarding the structural components, many of the steel members and floor elements were preserved and later reused to construct additional stories elsewhere within the complex. Because the original building relied primarily on bolted steel connections and had been structurally designed to accommodate future vertical expansion, major portions of a permanent institutional building constructed decades earlier could be disassembled and repurposed rather than demolished (Figure 4).

*Figure 4. Example of modern, relocated structure (Freie Universität, Berlin)*

To build the Philological Library (the glass spheroid in the rear), existing parts of the surrounding building were removed and reattached to other parts of the Rost- und Silberlaube complex.

While a university campus differs substantially from a residential neighborhood, the underlying design philosophy is directly applicable to climate resilience. Buildings can be designed as adaptable assets rather than permanent, immovable structures. Future residential construction in vulnerable coastal areas could similarly incorporate design features that facilitate eventual relocation should changing environmental conditions make continued occupancy impractical.

Relocatable development is particularly well suited to properties undergoing substantial reconstruction following flood damage, where communities are already making significant reinvestment decisions. A RID could encourage this approach through zoning incentives, expedited permitting, density bonuses, reduced setbacks, or other development incentives rather than relying solely on regulatory mandates. Village District regulations may complement this strategy by establishing architectural and design standards that preserve neighborhood character while accommodating building forms compatible with future relocation.

Relocatable development does not eliminate the need for long-term planning, nor does it resolve the limited availability of inland receiving sites. Instead, it extends the useful life of coastal development while preserving flexibility for future generations. Rather than assuming that buildings and their sites must remain permanently linked, this approach treats buildings as long-lived assets that can adapt as communities evolve. As municipalities identify suitable receiving areas through comprehensive planning and Climate Resiliency Improvement

Districts, relocatable construction provides a practical mechanism for implementing orderly, incremental retreat if and when it ultimately becomes necessary.

### Transfer of Development Rights

Transfer of Development Rights (TDR) is a land use technique that allows development potential to be transferred from one property (the sending site) to another property (the receiving site). Traditionally, TDR has been used to preserve farmland, open space, environmentally sensitive resources, and historic properties while directing development toward locations better suited for growth. In most TDR programs, the transaction occurs between private property owners. A landowner in a designated sending area sells development rights to a developer or property owner seeking additional development capacity in a designated receiving area. The sending property is permanently restricted from future development, while the receiving property is permitted to develop at a greater intensity than would otherwise be allowed under local zoning.

PA 25-33 builds upon this well-established planning concept by encouraging municipalities to incorporate transfer of development rights into their plans for reducing risks associated with climate change. While the traditional objective of TDR has been to preserve land, the same planning tool may also assist municipalities in gradually directing future development away from areas facing increasing long-term hazard risks and toward locations better suited for future growth.

Connecticut has authorized transfer of development rights for many years, and municipalities such as Windsor and Avon have incorporated TDR or Transfer of Residential Density (TRD) regulations into their zoning ordinances. Windsor's program protects agricultural land by transferring residential density to more appropriate development locations, while Avon's overlay regulations direct development rights from environmentally sensitive areas to designated receiving sites. These programs demonstrate that the legal framework for TDR already exists within Connecticut, although relatively few transfers have occurred compared to some of the nation's best-known TDR programs.

One of the most successful examples is Montgomery County, Maryland, where the Agricultural Reserve has used TDR since 1980 to preserve tens of thousands of acres of farmland while directing development toward designated growth areas. Montgomery County demonstrates that TDR can become an effective long-term planning tool when supported by clearly defined sending and receiving areas, meaningful development incentives, and sustained administrative commitment.

PA 25-33 further expands Connecticut's TDR authority by authorizing regional and intermunicipal transfer of development rights programs and transfer banks. Expanding TDR beyond the boundaries of a single municipality has the potential to create a larger pool of both sending and receiving sites, increasing opportunities for successful transfers and allowing municipalities to cooperate in addressing regional planning objectives. However, expanding the geographic scope of TDR may not, by itself, address one of the principal reasons that TDR has seen relatively limited use in Connecticut. Traditional TDR programs depend upon a willing seller of development rights and a willing purchaser seeking those rights at approximately the same time. In many municipalities, development activity occurs too infrequently for these transactions to occur on a regular basis. While a regional TDR program creates a larger market, it does not necessarily create a more active one if buyers and sellers are still unable to complete transactions when each is ready.

Municipalities interested in TDR may therefore wish to consider additional administrative approaches. One possibility would be a development rights bank administered by a municipality, council of governments, or other public or quasi-public entity. Rather than requiring property owners and developers to negotiate directly, such an entity could purchase development rights from willing property owners in designated sending areas and hold those rights until they are needed for development within designated receiving areas. By separating the purchase and resale of development rights over time, a development rights bank could reduce one of the principal practical barriers that has historically limited the use of TDR programs.

Unlike Connecticut land banks, which generally acquire and redevelop real property, a development rights bank would primarily acquire, hold, and transfer development rights. The objective would not be to speculate in development rights, but to facilitate voluntary transactions that might otherwise never occur. Municipalities could explore this concept individually or, consistent with Public Act 25-33, through regional partnerships that create a larger and more efficient marketplace for development rights.

Municipalities may also wish to consider expanding beyond traditional private-sector TDR transactions by incorporating additional public-sector implementation tools. For example, municipalities could establish voluntary land exchange programs in which participating property owners receive a municipally owned building lot in a designated receiving area in exchange for conveying ownership of a hazard-prone property to the municipality. Existing homes could be relocated where practical, particularly if designed for future relocation as described in the previous section. Alternatively, municipalities could purchase vulnerable properties while providing replacement housing or relocation assistance elsewhere within the community. Municipal housing trust funds, RID revenues, state and federal grants, or other public financing mechanisms could support these activities. Over time, municipal land banking could also help assemble suitable receiving areas capable of accommodating the gradual relocation of homes, businesses, or even neighborhoods.

Transfer of development rights should therefore be viewed not as a single zoning technique, but as one component of a broader resilience strategy. When combined with municipal land banking, relocatable development, infrastructure planning, housing trust funds, and Climate Resiliency Improvement Districts, TDR provides municipalities with a flexible framework for gradually reducing development in hazard-prone areas while preserving property values, expanding housing opportunities, and enabling voluntary, orderly community adaptation over many decades.

## IV. RID PLANNING PROCESS

No municipality is expected to implement every strategy described in this report. Communities differ in their topography, development patterns, fiscal capacity, environmental resources, and tolerance for risk. Some neighborhoods may warrant adaptation, others protection, others transition, and still others eventual retreat. In many municipalities, all four approaches may be appropriate in different locations.

For this reason, PA 25-33 requires a municipality to create a RID Master Plan to establish a RID. The Master Plan identifies the combination of strategies that best reflects local conditions and community objectives. While none of the 24 coastal municipalities have created a master plan as directed by PA 25-33, more than 70% have published climate resilience plans during the period 2013 to 2025 (Appendix 9). These plans primarily address sea level rise, flood and hurricane vulnerabilities rather than specific strategies for developing climate resiliency improvement districts. Despite that shortcoming, a significant amount of baseline municipal and regional analysis has been undertaken to identify hazard vulnerabilities through state and federal grants – establishing important baseline hazard assessments that support the development of a climate resiliency improvement district master plan.

A complete list of relevant coastal municipal and regional climate resilience plans remains in a state of continuous updating and revision across the state's coastline. Those that have published resiliency plans (as opposed to resiliency Master Plans) include the three town consortium of Clinton, Westbrook and Old Saybrook (including the Borough of Fenwick) which released its Four Shore Coastal Resiliency Plan in March 2025; Guilford released its Community Coastal Resilience Plan in 2013; Town of Waterford, released its Climate Change Risk Vulnerability Risk Assessment and Adaptation Study in 2015; Town of Madison released its Coastal Resilience Plan in 2016; Milford, released its Climate Resiliency Plan in 2016; Stonington released its Climate Resilience Plan in 2017; City of West Haven Coastal Resiliency Plan in 2017; East Lyme released its Coastal Resilience, Climate Adaptation, and Sustainability Study in 2018; Town of Westport Public Works released its Downtown Resilience and Recovery Plan in October 2018; New Haven released its Climate and Sustainability Framework in 2018; Greenwich Conservation Commission released its Sustainability and Climate Resilience Plan, in December 2023; Town of Groton released its Downtown Mystic Resiliency and Sustainability Plan in January 2024; and Fairfield released its Resilient Fairfield, Resilient Corridor Analysis in March 2024 (Appendix 9).

In addition, the Governor's Council on Climate Change released the Connecticut Climate Change Preparedness Plan in 2011; MetroCOG and SCRCOG released the Southern Connecticut Regional Framework for Coastal Resilience, Final Report in June 2017; The Nature Conservancy released its Regional Framework Coastal Resilience Final Report in June 2017; and the Southeastern Connecticut COG released the Hazard Mitigation and Climate

Adaptation Plan in 2023.[16] These documents provide examples of progressive strategies to address coastal climate change challenges that should be relevant to coastal municipalities in the Western Connecticut planning region interested in developing climate resiliency improvement districts – especially the Groton Resiliency and Sustainability Plan for Downtown Mystic.

Best practices concerning climate resiliency can also be found in other eastern seaboard municipalities including South Kingston, Rhode Island. South Kingston has adopted a climate resiliency improvement district like that called for in PA 25-33. Creating a taxing district focused on land within the VE and AE zones would be a means to focus fiscal investments on flood prevention where they will be most needed. The drawback to this concept is the limited number of dwellings within VE zone among the 24 coastal municipalities – making a combined VE and AE zone a more appropriate zone for a climate resiliency improvement district. Yet a district based on these two flood zones may not garner sufficient taxing authority without the inclusion of other areas of a municipality. Public Act 25-33 limits the tazing authority of a resiliency district to less than 10% of the municipal tax base – an unlikely limitation for coastal municipalities which suggests non-flood-prone areas will be needed within a climate resiliency improvement district to financially support planned improvements (Appendix 8).

PA 25-33 lays out what constitutes a Master Plan for any municipality that wishes to establish a resiliency improvement district. That law defines the basic elements of the master plan, the workplan elements of the plan and the procedure for obtaining approval from the legislative body of the municipality. To be consistent with PA 25-33, a Master Plan must address the following.

### *Supporting Actions (Required)*

A municipality must complete the following steps prior to, or simultaneous with, the development of a RID Master Plan.

1. POCD Update: Update or amend the Municipal Plan of Conservation and Development to identify a potential resiliency improvement district;
2. Hazard Mitigation Plan Update: Amend existing municipal or regional hazard mitigation plans if such plans do not address climate-related vulnerabilities associated with the proposed district;

[16] City of New Haven, Climate and Sustainability Framework, January 2018; Town of Guilford, Community Coastal Resilience Plan, 2013; Clinton, Old Saybrook, Borough of Fenwick, Westbrook, Four Shore Coastal Resiliency Plan, March 2025; Governor's Steering Committee on Climate Change, Connecticut Climate Change Preparedness Plan, 2011; Town of Stonington, Coastal Resilience Plan, August 2017; Town of Waterford, Climate Change Risk Vulnerability Risk Assessment and Adaptation Study, 2015; Town of Madison, Coastal Resilience Plan, June 2016; East Lyme, Coastal Resilience, Climate Adaptation, and Sustainability Study, December 2018; Greenwich Conservation Commission, Sustainability and Climate Resilience Plan, December 2023, Fairfield, Resilient Fairfield, Resilient Corridor Analysis, March 2024; Town of Westport Public Works, Downtown Resilience and Recovery Plan, October 2018; Town of Groton, Downtown Mystic Resiliency and Sustainability Plan, 2024; MetroCOG & SCRCOG, Southern Connecticut Regional Framework for Coastal Resilience, Final Report, June 2017; Southeastern Connecticut COG, Hazard Mitigation and Climate Adaptation Plan, 2023.

3. Zone Change if Needed: Identify land areas that already have at least one of the following uses or are suitable for one of the following uses; commercial, industrial, mixed use, transit-oriented development. Since Public Act 25-33 includes the word "suitable" those responsible for the district Master Plan may need to request the zoning commission to modify existing zoning classifications to create one of these non-residential uses if none exists in an area where a resiliency improvement district is appropriate.
4. Update Zoning and/or Flood Prevention Ordinance: Municipalities that do not require a two-foot freeboard above the base flood elevation must do so to meet the minimum conditions for a district Master Plan.
5. Identify Local Inundated Roads: The District Master Plan must provide road access to all properties within the district. Since sea level rise may result in the abandonment of some local roads due to long-term costs for road upgrades, it is prudent to complete an economic analysis of anticipated sea levels for the year 2050 and 2100. Those costs should be compared to the cost of removing vulnerable buildings that would be without road access to determine an internal rate of return on a road abandonment or upgrade project. Adopting an economic analysis using internal rates of return allows a municipality to assess the feasibility of a road upgrade project against alternative scenarios (e.g., buyout of houses that would be isolated by road closure, or other related alternatives).
6. Limit Value of Resiliency District: The land and buildings in a single resiliency district must not exceed 10% of the town's total assessed value. Among all the other prerequisites for creating the district, the assessor must determine the total assessed value of all proposed district properties is 10% or less of the total assessed value of the municipality. This criterion should not be too difficult to complete since properties that fall into the high hazard flood zones (i.e., the VE and AE zones) are also some of the most expensive properties in virtually every Connecticut coastal municipality. A WestCOG analysis compared the value of flood insurance policies in the 24 coastal municipalities to the net equivalent grand list for each municipality. That analysis revealed that the value of the flood insurance policies did not exceed 10% of the net equivalent grand list for any coastal municipality (Appendix 8). Noncoastal municipalities are even less likely to exceed the 10% threshold where development in the 100-year floodplain may adversely affect property values more than the same buildings on the Connecticut coastline.[17]

### *Plan Conditions (Required)*

For a Master Plan to qualify a municipality for a RID, it must demonstrate a:

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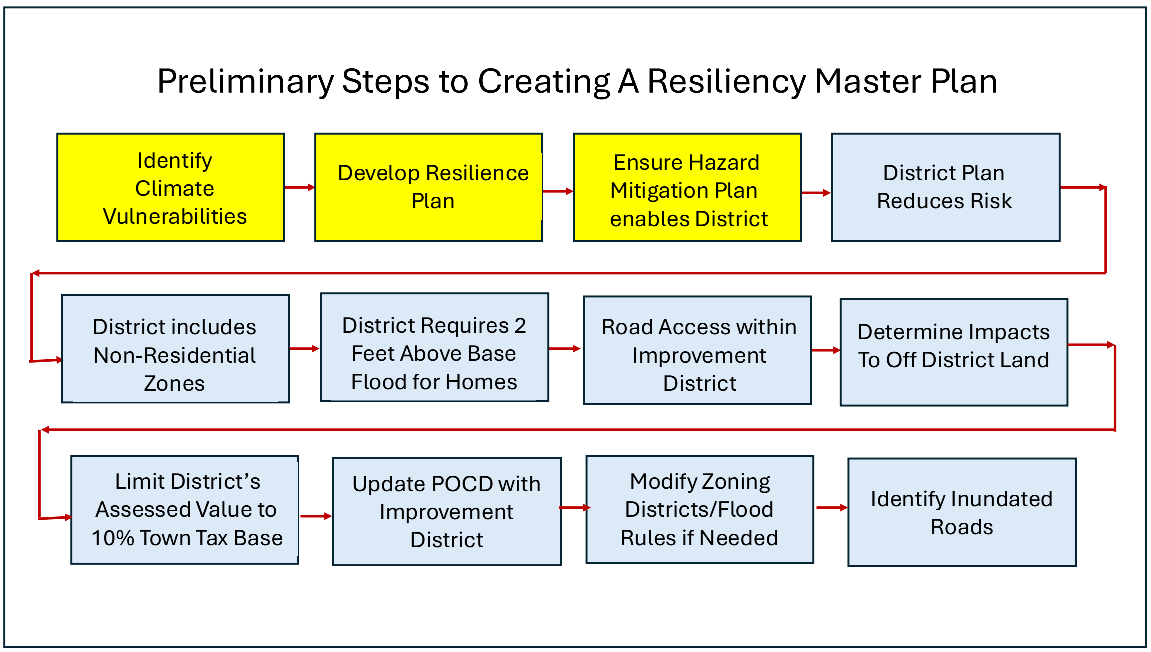
[17] Anna Zarra Aldrich, "Should We Stay or Should We Go? Shoreline Homes and Rising Sea Levels in Connecticut" UConn Today, June 15, 2021. This article presents the results of work done by the University Connecticut College of Agriculture, Health and Natural Resources. That study found homes directly on the coast see a 40% increase in value, while those across the street from the coast see a 27% increase. However, homes located on floodplains next to a river see a 2.5% decrease. The original study can be accessed as follows: Charles Towe, et. al, Real Estate Values, Tax Revenues, and Climate Change – Induced Retreat from Flood Zones, June 2021, p. 5.

1. Purpose – contributes to well-being of the municipality or betterment of health, welfare or safety of inhabitants
2. Master Plan Consistency with municipal plan of conservation and development,
3. Master Plan Must Meet Eight Necessary Conditions for creating the district (see Figure 3 for the planning Steps to create the Master Plan).
    a. District is vulnerable or likely or like to experience flooding, sea level rise, high groundwater, extreme heat or wildfire;
    b. District is identified in a hazard mitigation plan;
    c. Demonstrates reduction of risk within district from identified hazards;
    d. Portion of district property is suitable for commercial, industrial, mixed use or retail uses or transit-oriented development;
    e. Residential development must meet 2-foot freeboard above base flood elevation;
    f. Vehicle access to residential buildings in flood-prone portion of district;
    g. Doesn't adversely impact land adjacent to the district; and;
    h. Limits district's assessed value to 10% of the town's taxable value.

*Figure 5: Planning Steps Required to Create a Resiliency Improvement District*




### *Plan Elements (Required)*

A Master Plan must include:

1. **Legal description of district boundaries**;
2. **List of tax identification numbers for all lots**;

3. **Description of present uses and descriptions of land and buildings** and how construction or improvements of physical facilities will reduce or eliminate risks from existing or expected hazards;
4. **Description of existing or expected hazards**;
5. **Description of public facilities, improvements or program** to be undertaken and financed;
6. **Rehabilitation, construction or replacement plan** of any existing housing consistent with Section 8-37t including efforts to reduce displacement plans;[18]
7. **Financial plan;**
8. **Maintenance and operation plan** after improvements are completed and;
9. **Duration of district** provided it doesn't exceed fifty years.

### *Selecting and Sequencing Climate Resilience Strategies*

As part of the RID Master Plan, municipalities must determine which resilience strategies are appropriate for inclusion in the district. The resilience strategies presented in Chapter III represent a range of planning and implementation options that municipalities may consider when establishing a RID. Not every strategy will be appropriate for every community, nor will every strategy become necessary at the same time. Local geography, development patterns, infrastructure, fiscal capacity, and projected climate impacts will influence both the selection of strategies and the timing of their implementation.

Table 3 summarizes the resilience strategies presented in this report by category and provides an illustrative implementation horizon for each. The matrix is intended to assist municipalities in sequencing resilience investments rather than prescribing a specific course of action. While some strategies, such as emergency planning, zoning amendments, and capital planning, can often be initiated immediately, others may become appropriate only as sea level rise, recurrent flooding, and redevelopment create new challenges and opportunities. Because land use planning, infrastructure replacement, and redevelopment occur over decades, municipalities should begin evaluating long-term strategies well before they become necessary to preserve future options and avoid decisions made under emergency conditions.

The Strategy Selection Matrix should not be used as a substitute for local analysis. Before defining the purpose, boundaries, projects, or financing structure of a RID, a municipality should evaluate the anticipated impacts of sea level rise, higher tides, coastal storms, groundwater elevation, roadway inundation, infrastructure deterioration, and changing emergency access requirements. The concepts presented in this report are intended to broaden the range of options considered in municipal resilience planning, including approaches that may not yet appear in conventional hazard mitigation or resilience plans. Because every coastal community is different, strategies should be selected based on local conditions rather than applied uniformly across Connecticut. A densely developed urban

[18] Section 8-37t refers to the Connecticut Consolidated Plan for Housing and Community Development. This document is submitted to HUD and outlines the state's strategy for utilizing federal funds to address housing and community needs, including producing affordable units and expanding economic opportunities for low-income residents including considerations for housing affordability, accessibility, and economic development.

waterfront, a seasonal beach association, a working harbor, and a low-density neighborhood dependent on private septic systems will likely face different risks and may require different resilience strategies.

*Table 3. RID Strategy Selection Matrix*

| Category | Strategy | Immediate | Next 10–15 Years | Mid-Century | End of Century |
|---|---|---|---|---|---|
| **Adapt** | Emergency Evacuation Zones | ✓ | ✓ | ✓ | ✓ |
| **Adapt** | Temporary Road Closure | ✓ | ✓ | ✓ | |
| **Protect** | Building Elevation Zones | ✓ | ✓ | | |
| **Protect** | Holding Tank Zones | | ✓ | ✓ | |
| **Protect** | Protective Barrier Zones | | ✓ | ✓ | |
| **Protect** | Road Improvement Zones | ✓ | ✓ | ✓ | |
| **Transition** | Critical Infrastructure Overlay Zones | ✓ | ✓ | ✓ | ✓ |
| **Transition** | Village District Zones | ✓ | ✓ | ✓ | |
| **Transition** | Water-Dependent Use Zones | ✓ | ✓ | ✓ | ✓ |
| **Retreat** | Relocatable Development | | ✓ | ✓ | |
| **Retreat** | Managed Infrastructure Retirement | | | ✓ | ✓ |
| **Retreat** | Infrastructure and Landscape Reimagining | | | ✓ | ✓ |
| **Retreat** | Relocatable Development | | ✓ | ✓ | |
| **Retreat** | Transfer of Development Rights | | ✓ | ✓ | ✓ |

### *Financial Feasibility*

A RID is not only a planning and regulatory framework but also a mechanism for financing public improvements. Consequently, municipalities should evaluate the financial feasibility of proposed resilience strategies as part of the RID master planning process. Different strategies impose substantially different capital, operating, and maintenance costs, and some may require recurring expenditures extending over many decades.

This report does not estimate the costs of the resilience strategies presented in Chapter III. Actual costs will vary considerably depending on local conditions, project design, permitting requirements, construction methods, the extent of public improvements, and the planning horizon over which they are implemented. Rather than providing generalized cost estimates that may not be applicable to individual municipalities, this report is intended to identify the range of resilience strategies available for consideration during the planning process.

As part of preparing a RID Master Plan, municipalities should develop planning-level cost estimates for the strategies proposed within the district, identify anticipated funding sources, and evaluate whether projected revenues are reasonably capable of supporting implementation over time. In some locations, redevelopment, increasing property values, or other revenue sources may support substantial resilience investments. In others, the costs of protecting vulnerable areas may exceed the revenues reasonably expected to be generated within the district, requiring a different combination of strategies, outside financial assistance, or a phased implementation approach.

Financial feasibility should not determine a municipality's resilience objectives, but it should inform the timing, sequencing, and scope of implementation. Ultimately, successful coastal resilience planning requires integrating land use planning, infrastructure investment, and public finance into a coordinated long-term strategy.

## V. CONCLUSION

Climate change presents Connecticut's coastal municipalities with long-term planning challenges that cannot be addressed through any single policy, project, or regulation. Public Act 25-33 recognizes this by providing municipalities with a flexible framework for developing Climate Resiliency Improvement Districts tailored to local conditions.

The concepts presented in this report are not intended as a checklist or a uniform set of recommendations. Rather, they represent a planning toolkit from which municipalities may select, combine, and sequence strategies that adapt, protect, transition, and retreat in response to local conditions, community priorities, and available resources. Different neighborhoods within the same municipality may ultimately require different approaches, and those approaches will likely evolve over time.

The objective is not to predict the future, but to preserve the flexibility to respond thoughtfully as conditions change.

# VI. REFERENCE MATERIALS

### *Glossary of Flood and Climate Related Terms*

1-percent annual chance flood – The type of flood that has a one-in-100 or 1% chance of occurring in any given year. Synonym of *base flood*. See also *base flood elevation*.

Base flood – The type of flood that has a one-in-100 or 1% chance of occurring in any given year. Synonym of *1-percent annual chance flood*. See also *base flood elevation*.

Base flood elevation (BFE) – The predicted height of the water surface resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. See also *1-percent annual chance flood* and *base flood*.

Coastal resilience – The ability of a coastal community to adapt to changing conditions and withstand—and recover from— a societal, physical, economic, or ecological disruption.

Design flood elevation (DFE) – The elevation required by jurisdictional building codes for the construction of a building's lowest floor to protect against the *1-percent annual chance flood*. The design flood elevation is generally the *base flood elevation* plus *freeboard* in jurisdictional ordinances.

Floodplain – Any area susceptible to *inundation* by water from any source. See also *regulatory floodplain*.

Floodwall – A primarily vertical artificial barrier engineered to contain the waters of a river or other waterways which may rise during seasonal or extreme weather events.

Floodway – Portion of the *regulatory floodplain* that must be kept free of development so the *base flood* can be discharged without cumulatively increasing the water surface elevation beyond a maximum of one foot according to NFIP guidelines. A floodway usually consists of the stream channel and land along its sides.

Flood Insurance Rate Map (FIRM) – an official map of a community, on which the Federal Insurance Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

Flood Insurance Study (FIS) – an official technical report produced by FEMA that analyzes a community's flood hazards, defining special flood hazard areas (SFHAs), base flood elevations (BFEs), and risk premium zones. It acts as a comprehensive engineering study used for determining flood insurance rates and regulating floodplain development.

Functionally Dependent Use – means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Global Mean Sea Level – the average height of the entire ocean surface. Global mean sea level rise is caused primarily by two factors related to global warming: the added water from melting land-based ice sheets and glaciers and the expansion of seawater as it warms (NASA definition).

Heat Island – An urban area characterized by temperatures higher than those of the surrounding non-urban area. As urban areas develop, buildings, roads, and other infrastructure replace open land and vegetation. These surfaces absorb more solar energy, which can create higher temperatures in urban areas.

High Tide Flooding – The flooding that occurs in the absence of a storm when sea water floods typically dry land due to higher-than-average high tides (occurs when the moon is new or full - see *spring tide*; and when the moon and/or sun is closest to earth - see *perigean spring tide* and *proxigean spring tide*) and/or strong onshore winds. High tide flooding is sometimes referred to as nuisance flooding, sunny-day flooding, blue-sky flooding, or shallow coastal flooding but these four latter terms are not recommended for use.

Inundation – The process of covering typically dry land with flood water.

King Tide – The highest *astronomical tides* of the year that occur during a new or full moon and a perigee or proxigee.

Levee means a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water to provide protection from temporary flooding.

Mean high water (MHW) – The average of the daily high tide(s) over a 19-year cycle of earth-moon distance changes.

Mean higher high water (MHHW) – The average of the higher of the daily high tide(s) over a 19-year cycle of earth-moon distance changes.

Mean low water (MLW) – The average of the daily low tide(s) over a 19-year cycle of earth-moon distance changes.

Mean sea level (MSL) – The average height of the surface of the sea for all stages of the tides at a given location over a 19-year period, usually determined from hourly height readings. It is **not** a synonym of *mean tide level.*

National Spatial Reference System (NSRS) – A new measurement system that will correct errors associated with NAVD88. Correcting these errors will mean that every existing latitude, longitude, ellipsoid height, and orthometric height in the United States (as reported in the current NSRS) will change by as much as four meters (as reported in the modernized NSRS). Adopting the modernized NSRS is critical, as it finally aligns the NSRS with both international standards, as well as aligning with all Global Navigation Satellite Systems (GNSS), which naturally orbit about, and provide positions relative to, the center of the Earth (**source**: National Geodetic Survey)

North American Vertical Data for 1988 (NAVD88) – A vertical datum used to measure heights, mapping, and engineering projects, replacing the earlier National Geodetic Vertical Datum of 1929 (NGVD 29). The reference point is fixed at a single point (Pointe-au-Père/Rimouski, Quebec), anchored to the International Great Lakes Datum of 1985 (IGLD 85) mean sea level.

Equalized Net Grand List (ENGL) – in Connecticut this term represents the estimated full market value of all taxable real and personal property in a municipality. The state Office of Policy and Management (OPM) calculates this figure to provide an equitable basis for comparison across towns, regardless of when they last conducted a property revaluation.

Regulatory Floodplain – Any area susceptible to *inundation* by water from any source subject to jurisdictional flood damage prevention ordinances to protect against inundation from the *1-percent annual chance flood* but may also include other areas as stipulated in jurisdictional ordinances. See also *floodplain* and *special flood hazard area.*

Resilience – A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

Saltwater Intrusion – Displacement of fresh or ground water by the advance of salt water due to its greater density, usually in coastal and estuarine areas.

Sea Level Change – the change in the ocean's average water level over time. Includes a global rise observed worldwide in the ocean basins and a local component, which can add to or subtract from the global rise. The combination of the global rise and the local component provide the measured relative sea level change at any specific site.

Special Flood Hazard Area – means an area having special flood, mudslide (i.e., mudflow), or flood-related erosion hazards, and shown on an FHBM or FIRM as Zone A, AO, A1-30, AE, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, A99, AH, VO, V1-30, VE, V, M, or E.

Stormwater – Surface water resulting from precipitation. Stormwater runoff occurs when precipitation falls on a surface that cannot absorb water.

Velocity Zone (VE zone) – An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action of 3-feet or greater during the *1-percent annual chance flood.* Sometimes referred to as the coastal high hazard area. Mandatory insurance applies.

Water-Dependent Uses – means those uses and facilities which require direct access to, or location in, marine or tidal waters and which therefore cannot be located inland, including but not limited to: Marinas, recreational and commercial fishing and boating facilities, finfish and shellfish processing plants, waterfront dock and port facilities, shipyards and boat building facilities, water-based recreational uses, navigation aids, basins and channels, industrial uses dependent upon water-borne transportation or requiring large volumes of cooling or process water which cannot reasonably be located or operated at an inland site and uses which provide general public access to marine or tidal waters.

Wave height – The vertical distance between the crest (peak) and the trough of a wave.

Wave Runup – the uprush of water caused by the interaction of waves with the area of shoreline where the Stillwater hits the land or other barrier intercepting the Stillwater level. The wave runup elevation is the vertical height above the Stillwater level ultimately attained by the extremity of the "uprushing water". Wave runup at a shore barrier can provide flood hazards above and beyond those from Stillwater inundation.

Zone AE – Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown.

Zone V – Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory insurance applies.

## *Appendices*

*Appendix 1: 2025 Estimates Miles of Flooding for Coastal Municipalities by Road Inundation Frequency in Descending Order*

| Municipality | At least every 30 Days | Between 30 & 60 Days | Between 60 & 90 Days | Between 90 Days & 10 Years | Between 10 & 100 Years | Grand Total |
|---|---|---|---|---|---|---|
| **Branford** | 0.13 | 0.08 | 0.05 | 5.13 | 6.34 | 11.73 |
| **Bridgeport** | 0.16 | 0.23 | 0.16 | 9.51 | 18.24 | 28.28 |
| **Clinton** | 0.21 | 0.19 | 0.06 | 2.97 | 4.99 | 8.42 |
| **Darien** | 0.38 | 0.23 | 0.32 | 5.25 | 2.20 | 8.38 |
| **East Haven** | 0.19 | 0.41 | 0.11 | 4.94 | 4.96 | 10.61 |
| **East Lyme** | 0.10 | 0.06 | 0.02 | 1.05 | 5.83 | 7.06 |
| **Fairfield** | 0.30 | 0.46 | 0.35 | 18.93 | 8.28 | 28.32 |
| **Groton** | 0.32 | 0.44 | 0.36 | 6.05 | 11.70 | 18.86 |
| **Guilford** | 0.20 | 0.08 | 0.11 | 4.82 | 5.84 | 11.06 |
| **Madison** | 0.12 | 0.21 | 0.11 | 5.95 | 11.37 | 17.76 |
| **Milford** | 0.40 | 0.33 | 0.25 | 7.69 | 10.22 | 18.88 |
| **New Haven** | 0.00 | 0.00 | 0.01 | 5.02 | 11.22 | 16.26 |
| **New London** | 0.00 | 0.00 | 0.00 | 0.51 | 4.46 | 4.98 |
| **Norwalk** | 0.23 | 0.67 | 0.55 | 14.97 | 6.83 | 23.24 |
| **Old Lyme** | 0.04 | 0.02 | 0.02 | 1.07 | 9.97 | 11.13 |
| **Old Saybrook** | 0.57 | 0.27 | 0.15 | 6.01 | 17.17 | 24.17 |
| **Stonington** | 0.56 | 0.36 | 0.30 | 6.38 | 23.43 | 31.03 |
| **Stratford** | 0.17 | 0.07 | 0.16 | 16.03 | 12.09 | 28.52 |
| **Waterford** | 0.01 | 0.03 | 0.02 | 1.16 | 5.08 | 6.31 |
| **West Haven** | 0.07 | 0.03 | 0.02 | 2.48 | 5.02 | 7.61 |
| **Westbrook** | 0.33 | 0.12 | 0.08 | 2.42 | 4.80 | 7.75 |
| **Westport** | 0.40 | 0.42 | 0.63 | 9.12 | 7.49 | 18.06 |
| **Grand Total** | 4.92 | 4.72 | 3.84 | 137.44 | 197.55 | 348.46 |

Source: WestCOG staff work based on map viewer "Sea Level Rise Effects on Roads and Marshes," CTDEEP and UConn Center for Land Use Education and Research (CLEAR), accessed April 14, 2026. https://maps.cteco.uconn.edu/projects/slamm/

Note: The data prepared by the University of Connecticut does not indicate the height of the road inundation. The website has not been validated by the Connecticut Department of Transportation or the Connecticut Department of Energy and Environmental Protection and therefore should be considered provisional data according to the CTECO website.

*Appendix 2: Total Estimated Miles of Inundated State and Local Roads by Flood Frequency: 2055*

| Municipality | At Least every 30 Days | Every 30 to 60 Days | Every 60 to 90 Days | Every 90 days to 10 Years | Every 10 Years to 100 Years | Grand Total |
|---|---|---|---|---|---|---|
| **Branford** | 0.7 | 0.2 | 0.2 | 7.1 | 5.7 | 14.0 |
| **Bridgeport** | 1.1 | 0.2 | 0.5 | 16.4 | 18.6 | 36.9 |
| **Clinton** | 0.9 | 0.2 | 0.1 | 4.0 | 5.2 | 10.4 |
| **Darien** | 2.1 | 0.5 | 0.8 | 4.0 | 1.8 | 9.3 |
| **East Haven** | 1.3 | 0.6 | 0.3 | 5.8 | 5.5 | 13.4 |
| **East Lyme** | 0.4 | 0.1 | 0.1 | 2.1 | 5.9 | 8.6 |
| **Fairfield** | 8.3 | 1.0 | 2.5 | 12.7 | 6.8 | 31.4 |
| **Greenwich** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Groton** | 3.4 | 0.6 | 0.4 | 5.7 | 11.8 | 21.9 |
| **Guilford** | 1.0 | 0.3 | 0.3 | 5.8 | 5.8 | 13.2 |
| **Lyme** | 0.2 | 0.0 | 0.0 | 0.3 | 1.0 | 1.6 |
| **Madison** | 1.6 | 0.6 | 0.3 | 7.7 | 10.5 | 20.9 |
| **Milford** | 1.8 | 0.3 | 0.3 | 11.1 | 9.8 | 23.2 |
| **New Haven** | 0.4 | 0.1 | 0.1 | 8.7 | 12.3 | 21.6 |
| **New London** | 0.1 | 0.1 | 0.0 | 1.3 | 4.2 | 5.7 |
| **Norwalk** | 5.0 | 1.6 | 1.8 | 11.9 | 5.3 | 25.6 |
| **Old Lyme** | 0.3 | 0.1 | 0.1 | 4.6 | 9.3 | 14.4 |
| **Old Saybrook** | 2.6 | 0.8 | 0.4 | 7.2 | 18.4 | 29.5 |
| **Stonington** | 3.1 | 0.7 | 0.6 | 9.0 | 21.2 | 34.6 |
| **Stratford** | 6.8 | 1.3 | 2.1 | 13.4 | 8.8 | 32.5 |
| **Waterford** | 0.3 | 0.1 | 0.1 | 2.1 | 4.8 | 7.3 |
| **West Haven** | 0.3 | 0.1 | 0.1 | 4.2 | 7.8 | 12.5 |
| **Westbrook** | 1.4 | 0.3 | 0.1 | 2.6 | 5.2 | 9.6 |
| **Westport** | 3.6 | 0.9 | 0.8 | 9.3 | 6.2 | 20.7 |
| **Total Miles** | 46.9 | 10.9 | 11.9 | 156.9 | 192.0 | 418.6 |

Source: Sea Level Rise Effects on Roads & Marshes, Connecticut Conditions Online. WestCOG staff work based on map viewer "Sea Level Rise Effects on Roads and Marshes," CTDEEP and UConn Center for Land Use Education and Research (CLEAR), Accessed April 14, 2026

*Appendix 3: Status of Public Sewer Services Along the Connecticut Coastline by Municipality*

| Municipality | Have Sewers in Coastal Zone |
|---|---|
| **Branford** | Yes |
| **Bridgeport** | Yes |
| **Clinton** | No |
| **Darien** | Partial |
| **East Haven** | Yes |
| **East Lyme** | Yes |
| **Fairfield** | Yes |
| **Greenwich** | Yes |
| **Groton** | Yes |
| **Guilford** | No |
| **Madison** | No |
| **Milford** | Yes |
| **New Haven** | Yes |
| **New London** | Yes |
| **Norwalk** | Partial |
| **Old Lyme** | No |
| **Old Saybrook** | No |
| **Stamford** | Yes |
| **Stonington** | Partial |
| **Stratford** | Yes |
| **Waterford** | Yes |
| **West Haven** | Yes |
| **Westbrook** | No |
| **Westport** | Partial |

Source: CT Geodata Portal, Connected Sewer Service Areas, Accessed April 16, 2026

*Appendix 4: Seasonal & Permanent Dwelling Units on Coastal Islands: April 2026*

| Coastal Municipality & Island Name | No. Dwellings | Size of Island in Acres |
|---|---|---|
| Branford | 107 | 91.66 |
| Bear Island | 4 | 6.8 |
| Belden Island | 1 | 1 |
| Cedar Island | 1 | 0.1 |
| Clam Island | 6 | 1.86 |
| Cut-in-Two Island | 2 | 1.6 |
| Davis Island | 2 | 3 |
| Dog Fish Island | 1 | 0.2 |
| East Crib Island | 1 | 0.5 |
| East Stooping Bush Island | 1 | 0.6 |
| Governor Island | 26 | 21.1 |
| Green Island | 1 | 0.7 |
| Horse Island | 1 | 10.3 |
| Jepson Island (AKA Burr Island) | 1 | 0.2 |
| Kidd's Island | 7 | 7.9 |
| Little Curtis Island | 1 | 2.2 |
| Little Pumpkin Island | 1 | 2.2 |
| Long Marsh Island | 1 | 1.4 |
| Money Island | 32 | 5.2 |
| Mother-in-Law Island | 1 | 0.2 |
| Outer Island | 1 | 4.8 |
| Phelps Island (AKA Rogers Island) | 3 | 7.6 |
| Pot Island | 7 | 7.4 |
| Potato Island | 1 | 1 |
| Sumac Island | 2 | 1.8 |
| West Crib Island | 1 | 1.3 |
| Wheeler Island | 1 | 0.7 |
| Clinton | 1 | 0.1 |
| Cedar Island | 1 | 0.1 |
| Darien | 2 | 76.81 |
| Great Island | 1 | 59.51 |
| Hay Island | 1 | 17.3 |
| East Lyme | 13 | 9.97 |
| Brainard Island | 3 | 2.4 |
| Griswold Island | 10 | 7.57 |
| Greenwich | 4 | 2.52 |
| Farwell Island | 2 | 1.12 |
| Game Cock Island | 2 | 1.4 |
| Guilford | 2 | 1.67 |
| Fosdick Island | 1 | 0.92 |

| Coastal Municipality & Island Name | No. Dwellings | Size of Island in Acres |
|---|---|---|
| Zero Horse Island | 1 | 0.75 |
| Norwalk | 1 | 2.73 |
| Tavern Island | 1 | 2.73 |
| Stamford | 5 | 4.87 |
| Greenway Island (AKA Caritas Island) | 4 | 3.5 |
| Vincent Island | 1 | 1.37 |
| Stonington | 229 | 698.9 |
| Elihu Island | 6 | 30 |
| Mason Island | 217 | 600 |
| Andrews Island | 1 | 12.3 |
| Dodges Island | 3 | 10.2 |
| Leeward Island | 1 | 29.4 |
| Ram Island | 1 | 17 |
| Westport | 402 | 84.2 |
| Coops Island | 1 | 4.8 |
| Saugatuck Island | 400 | 72 |
| Sprite Island | 1 | 7.4 |
| **Grand Total** | **766** | **973.43** |

*Appendix 5: Location and Size of Public Beaches along the Connecticut Coastline: April 2026*

| Coastal Beaches in Connecticut | Municipality | Park/Beach in acres | Address |
|---|---|---|---|
| Branford Point | Branford | 54 | 4 Harbor St. Branford |
| Parker Memorial Park | Branford | 6 | Harbor Street, Branford |
| Seaside Park | Bridgeport | 325 | 1 Barnum Dyke, Bridgeport |
| Pleasure Beach | Bridgeport | 37 | 19-1 Central Ave, Bridgeport |
| Clinton Town Beach | Clinton | 1.3 | Waterside Lane, Clinton |
| Esposito Beach | Clinton | 0.11 | Foot of Maplewood Drive, Clinton |
| Pear Tree Point Beach | Darien | 8 | Pear Tree Point Road, Darien |
| Weed Beach | Darien | 22 | 155 Near Water Lane, Darien |
| Cosey Beach | East Haven | 1 | 283 Cosey Beach Ave., East Haven |
| Rocky Neck State Park | East Lyme | 710 | 244 West Main Street, East Lyme |
| McCook Beach and Park | East Lyme | 21 | 8 Atlantic Street East Lyme |
| Harkness Memorial State Park | East Lyme | 237 | 275 Great Neck Rd. Waterford |
| Hole in the Wall Beach | East Lyme | 1.4 | 4 Baptist Lane Niantic |
| Cini Memorial Park & Niantic Bay Beach | East Lyme | 4.6 | 1 River Road, Niantic |
| South Pine Creek Beach | Fairfield | 0.9 | 1424 S. Pine Creek Road, Fairfield |
| Jennings Beach | Fairfield | 27 | South Benson Rd. Fairfield |
| Sasco Hill Beach | Fairfield | 9.9 | 1401 Sasco Hill Road, Fairfield |
| Southport Beach | Fairfield | 2.5 | 1505 Pequot Avenue, Southport |
| Penfield Beach | Fairfield | 3.5 | 323 Fairfield Beach Road, Fairfield |
| Greenwich Point Park | Greenwich | 147.3 | 11 Tods Driftway, Old Greenwich |
| Byram Shore Beach | Greenwich | 30 | 4 Ritch Ave W., Greenwich |
| Island Beach | Greenwich | 3.9 | South Arch Street Ferry area, Greenwich |
| Great Captain's Beach | Greenwich | 17.2 | Arch Street Dock, Greenwich |
| Bluff Point State Park | Groton | 806 | 55 Depot Rd. Groton |
| Esker Point Beach | Groton | 11.7 | 900 Groton Long Point Rd., Groton |
| Eastern Pont Beach | Groton | 2.3 | 1 Beach Pond Rd, Groton |
| Jacob's Beach Park | Guilford | 25 | 140 Seaside Ave., Guilford |
| Hammonasset Beach State Park | Madison | 936 | 1288 Boston Post Rd, Madison |
| Gulf Beach | Milford | 12.6 | 550 Gulf St., Milford |
| Silver Sands State Park | Milford | 297 | 1 Silver Sands Park Way, Milford |
| Walnut Beach | Milford | 1.4 | 113 East Broadway, Milford |
| Lighthouse Point Park | New Haven | 52 | 2 Lighthouse Rd., New Haven |
| Ocean Beach Park | New London | 41 | 98 Neptune Ave., New London |

| Coastal Beaches in Connecticut | Municipality | Park/Beach in acres | Address |
|---|---|---|---|
| Elerin/Elion Beach | New London | 0.04 | 1028 Pequot Ave., New London |
| Guthrie Beach | New London | 0.45 | 902 Pequot Ave., New London |
| Green Harbor Beach | New London | 3 | Pequot Ave. & Converse Place, New London |
| New London Harbor Light | New London | 0.7 | 85 Pequot Ave., New London |
| Ocean Beach Park | New London | 50 | 96 Neptune Ave., New London |
| Calf Pasture Beach | Norwalk | 35 | Calf Pasture Beach Rd, Norwalk |
| Shady Beach | Norwalk | 3.7 | 14 Canfield Ave., Norwalk |
| Bayley Beach | Norwalk | | 1 Pine Point Road, Norwalk |
| White Sands Beach | Old Lyme | 5 | White Sand Beach Road, Old Lyme |
| Soundview Beach | Old Lyme | 44 | 1 Hartford Ave., Old Lyme |
| Harvey's Beach | Old Saybrook | 6 | 29 Plum Bank Rd, Old Saybrook |
| Town Beach | Old Saybrook | 1 | Great Hammock Rd., Old Saybrook |
| West Beach Park | Stamford | 26 | 818 Shippan Ave., Stamford |
| Cove Island Park & Cove Beach North | Stamford | 83 | 363 Weed Ave., Stamford |
| Cummings Park Beach | Stamford | 79 | Shipman Ave., Stamford |
| DuBois Beach | Stonington | 0.5 | Tip of Water St. at Stonington Pt., Stonington |
| Long Beach | Stratford | 63 | Oak Bluff Ave, Stratford |
| Lordship Beach | Stratford | 10 | Lordship Seawall, Stratford, CT |
| Russian Beach Seawall | Stratford | 8 | Beach Drive, Stratford |
| Short Beach Park | Stratford | 30 | 1 Dome Drive, Stratford |
| Waterford Beach Park | Waterford | 100 | 317 Great Neck Rd, Waterford |
| Sea Bluff Beach | West Haven | 17 | Capt. Thomas Blvd/Ocean Ave, West Haven |
| Savin Rock Beach | West Haven | 39 | Captain Thomas Blvd., West Haven |
| Oak Street Beach | West Haven | 3.7 | 435 Captain Thomas Blvd, West Haven |
| South Street Beach | West Haven | 0.57 | Ocean Ave., West Haven |
| Altschuler Beach | West Haven | 39 | Savins Ave., West Haven |
| Bradley Point Beach | West Haven | 20 | 1 Savin Road Trail, West Haven |
| West Beach | Westbrook | 3 | 448-452 Seaside Ave, Westbrook |
| Coral Sand Beach | Westbrook | 0.7 | Seaside Ave. Westbrook |
| Middle Beach | Westbrook | 0.14 | Salt Island Road, Westbrook |

| Coastal Beaches in Connecticut | Municipality | Park/Beach in acres | Address |
|---|---|---|---|
| Old Mill Beach | Westport | 1.8 | 233 Hillspoint Road, Westport |
| Compo Beach | Westport | 29 | 60 Compo Beach Road, Westport |
| Burying Hill Beach | Westport | 2.39 | Burying Hill Rd & Beachside Ave, Westport |
| Sherwood Island State Park | Westport | 238 | 1 Sherwood Dr., Westport |
| Total Estimated Acreage | | 4798.3 | |

Source: WestCOG analysis of municipal and state-owned beach properties including review of municipal assessor records, April 16, 2026

*Appendix 6: Coastal Connecticut Economic Sectors and Industry by Establishments, Employment and Gross Domestic Product; 2024*

| Economic Sector/Industry | Establishments | Employment | Real GDP |
|---|---|---|---|
| Living Resources | 1,498 | 11,869 | $1,459,000,000 |
| Fish Hatcheries and Aquaculture | 176 | 1,589 | $371,000,000 |
| Fishing | 202 | 285 | $145,000,000 |
| Seafood Markets | 1,049 | 9,088 | $621,000,000 |
| Seafood Processing | 71 | 907 | $322,000,000 |
| Marine Construction | 956 | 7,225 | $1,058,000,000 |
| Marine Related Construction | 956 | 7,225 | $1,058,000,000 |
| Marine Transportation | 3,064 | 118,646 | $13,747,000,000 |
| Marine Freight | 396 | 4,398 | $3,244,000,000 |
| Marine Passenger Transportation | 94 | 3,068 | $3,269,000,000 |
| Marine Transportation Services | 661 | 6,140 | $956,000,000 |
| Search and Navigation Equipment | 126 | 5,567 | $661,000,000 |
| Warehousing | 1,787 | 99,473 | $5,617,000,000 |
| Offshore Mineral Resources | 573 | 4,780 | $1,277,000,000 |
| Limestone, Sand and Gravel | 390 | 3,994 | $1,129,000,000 |
| Oil and Gas Exploration and Product | 183 | 786 | $148,000,000 |
| Ship and Boat Building | 398 | 8,568 | $2,183,000,000 |
| Boat Building and Repair | 217 | 2,846 | $438,000,000 |
| Ship Building and Repair | 181 | 5,722 | $1,745,000,000 |
| Tourism and Recreation | 64,228 | 872,355 | $46,959,000,000 |
| Amusement and Recreation Services | 4,625 | 58,141 | $1,789,000,000 |
| Boat Dealers | 764 | 6,212 | $716,000,000 |
| Eating and Drinking Places | 53,510 | 695,794 | $32,661,000,000 |
| Hotels and Lodging Places | 3,061 | 84,352 | $8,747,000,000 |
| Marinas | 1,387 | 14,159 | $755,000,000 |
| RV Parks and Campgrounds | 254 | 2,036 | $145,000,000 |
| Scenic Water Tours | 158 | 777 | $26,000,000 |
| Sporting Goods Manufacturing | 156 | 2,408 | $307,000,000 |
| Zoos and Aquaria | 313 | 8,476 | $1,813,000,000 |
| **Grand Total** | **70,717** | **1,023,443** | **$66,683,000,000** |

Source: National Oceanographic and Atmospheric Administration, NOAA Office of Coastal Management, U.S. Census Bureau, Accessed April 15, 2025. Weblink: https://coast.noaa.gov/digitalcoast/data/enow.html. Real GDP is Gross Domestic Product inflation adjusted.

*Appendix 7: VE Zone Flood Elevations for Fairfield County Coastal Municipalities: 2013*

| Transect | Location | Elevation (ft. NAVD88) | | V Zone mapping method |
|---|---|---|---|---|
| | | Stillwater 1% annual chance | Max. wave crest 1% annual chance | |
| 1 | At the shoreline of Long Island Sound, in the Town of Greenwich, the western corporate limits east of Byram Point | 11.0 | 17 | Primary Frontal Dune |
| 2 | At the shoreline of Long Island Sound, in the Town of Greenwich, to Byram Shore Rd | 11.0 | 20 | Runup |
| 3 | At the shoreline of Long Island Sound, in the Town of Greenwich, West of Byram Harbor to Game Cock Rd | 11.0 | 22 | Wave Overtopping Splash Zone |
| 4 | At the shoreline of Long Island Sound, in the Town of Greenwich, at Byram Harbor Game Cock Rd to Harbor Dr. | 11.0 | 17 | Runup |
| 5 | At the shoreline of Long Island Sound, in the Town of Greenwich, east of Byram Harbor from Harbor Drive to Glenwood Dr. | 9.2 | 20 | Wave Overtopping Splash Zone |
| 6 | At the shoreline of Long Island Sound, in the Town of Greenwich, from Glenwood Drive to Eastern Line of Field Point Circle | 11.0 | 20 | Wave Overtopping Splash Zone |
| 7 | At the shoreline of Long Island Sound, in the Town of Greenwich, at Greenwich Harbor to Smith Cove | 11.0 | 19 | Wave Overtopping Splash Zone |
| 8 | At the shoreline of Long Island Sound, in the Town of Greenwich, East of Indian Harbor, Horse Island and Saw Island, to Nipowin Lane | 11.0 | 19 | Wave Overtopping Splash Zone |
| 9 | At the shoreline of Long Island Sound, in the Town of Greenwich, at Cos Cob Harbor, Nipowin Lane to Indian Point Lane | 10.9 | 16 | Wave Overtopping Splash Zone |
| 10 | At the shoreline of Long Island Sound, in the Town of Greenwich, between Cos Cob Harbor & Greenwich Cove | 10.9 | 18 | Breaking Wave Height |
| 11 | At the shoreline of Long Island Sound, in the Town of Greenwich, at Greenwich Cove including Greenwich Point to Tod's Driftway | 10.9 | 19 | Wave Overtopping Splash Zone |
| 12 | At the shoreline of Long Island Sound, in the Town of Greenwich, east of Greenwich Point between East Point Lane and Rocky Point Rd | 10.8 | 18 | Wave Overtopping Splash Zone |
| 13 | At the shoreline of Long Island Sound, in the City of Stamford, Rocky Point Lane to Dolphin Cove Quay | 10.8 | 17 | Wave Overtopping Splash Zone |
| 14 | At the shoreline of Long Island Sound, in the City of Stamford, at Stamford Harbor, Dolphin Cove Quay to Downs Avenue | 10.8 | 19 | Wave Overtopping Splash Zone |
| 15 | At the shoreline of Long Island Sound, in the City of Stamford, from Downs Ave. to Saddle Rock Rd | 10.8 | 17 | Wave Overtopping Splash Zone |
| 16 | At the shoreline of Long Island Sound, in the City of Stamford, Southwest of Westcott Cove, from Saddle Rock Rd. to Wallacks Dr. | 10.8 | 19 | Breaking Wave Height |
| 17 | At the shoreline of Long Island Sound, in the City of Stamford, east of Westcott Cove at Cove Harbor from Wallacks Drive to Cove Island Park | 10.7 | 19 | Wave Overtopping Splash Zone |

| Transect | Location | Elevation (ft. NAVD88) Stillwater 1% annual chance | Max. wave crest 1% annual chance | V Zone mapping method |
|---|---|---|---|---|
| **18** | At the shoreline of Long Island Sound, in the City of Stamford, at Cove Island and Holly Pond, from Cove Island Park to Pratt Island | 10.7 | 16 | Breaking Wave Height |
| **19** | At the shoreline of Long Island Sound, in the Town of Darien, from Pratt Island to Pear Tree Point Rd | 10.7 | 18 | Wave Overtopping Splash Zone |
| **20** | At the shoreline of Long Island Sound, in the Town of Darien, at Longneck Point, from Pear Tree Point Rd to Long Neck Point Rd | 10.7 | 19 | Wave Overtopping Splash Zone |
| **21** | At the shoreline of Long Island Sound, in the Town of Darien, at Scotts Cove, from Long Neck Point Rd to Contentment Island Rd | 10.6 | 17 | Runup |
| **22** | At the shoreline of Long Island Sound, in the Town of Darien, at the eastern shore of Contentment Island Road to Five Mile River | 10.6 | 19 | Wave Overtopping Splash Zone |
| **23** | At the shoreline of Long Island Sound, in the City of Norwalk, at Crescent Beach, from Five Mile River to Rocky Point Rd | 10.6 | 18 | Breaking Wave Height |
| **24** | At the shoreline of Long Island Sound, in the City of Norwalk, between Wilson Cove & Tavern Island | 10.5 | 19 | Wave Overtopping Splash Zone |
| **25** | At the shoreline of Long Island Sound, in the City of Norwalk, between Hoyt Island and Keyser Point | 10.5 | 16 | Breaking Wave Height |
| **26** | At the shoreline of Long Island Sound, in the City of Norwalk, at Harbor View Beach, from Keyser Point to Neptune Ave. | 10.5 | 19 | Breaking Wave Height |
| **27** | At the shoreline of Long Island Sound, in the City of Norwalk, at Norwalk Harbor, from Neptune Ave. to Charles Creek | 10.5 | 17 | Breaking Wave Height |
| **28** | At the shoreline of Long Island Sound, in the City of Norwalk, east of Norwalk Harbor near Calf Pasture Island, from Charles Creek to Caufield Island Creek | 10.4 | 17 | Runup |
| **29** | At the shoreline of Long Island Sound, in the Town of Westport, between Corporate Limits and Bluff Point including Saugatuck River (Lower Reach) | 10.4 | 19 | Wave Overtopping Splash Zone |
| **30** | At the shoreline of Long Island Sound, in the Town of Westport, between Bluff Point and Saugatuck River (Lower Reach) | 10.4 | 20 | Wave Overtopping Splash Zone |
| **31** | At the shoreline of Long Island Sound, in the Town of Westport, at the shoreline south of Owenoke Park, from Saugatuck River (Lower Reach) to Compo Beach Road | 10.4 | 19 | Wave Overtopping Splash Zone |
| **32** | At the shoreline of Long Island Sound, in the Town of Westport, Compo Beach Road to Compo Road South | 10.3 | 17 | Breaking Wave Height |
| **33** | At the shoreline of Long Island Sound, in the Town of Westport, at Compo Cover, from Compo Rd South to Sherwood Island Connector | 10.3 | 18 | Wave Overtopping Splash Zone |
| **34** | At the shoreline of Long Island Sound, in the Town of Westport, at the shoreline of Sherwood Island State Park, from Sherwood Island Connector to Burying Hill Rd | 10.3 | 18 | Primary Frontal Dune |

| Transect | Location | Elevation (ft. NAVD88) | | V Zone mapping method |
|---|---|---|---|---|
| | | Stillwater 1% annual chance | Max. wave crest 1% annual chance | |
| **35** | At the shoreline of Long Island Sound, in the Town of Westport, from Burying Hill Beach to south of Sasco Creek Beach | 10.2 | 19 | Runup |
| **36** | At the shoreline of Long Island Sound, in the Town of Fairfield, at Southport Harbor, from Beachside Lane to the East Bank of Mill River | 10.2 | 17 | Breaking Wave Height |
| **37** | At the shoreline of Long Island Sound, in the Town of Fairfield, at Sasco Hill Breach, from the East Bank of Mill River to Sasco Hill Rd. | 10.2 | 17 | Breaking Wave Height |
| **38** | At the shoreline of Long Island Sound, in the Town of Fairfield, from Sasco Hill Road to South Pine Creek Rd | 10.2 | 20 | Wave Overtopping Splash Zone |
| **39** | At the shoreline of Long Island Sound, in the Town of Fairfield, at South Pine Creek Beach, from South Pine Creek Rd to Intersection of French Street and Pine Creek Ave. | 10.2 | 19 | Wave Overtopping Splash Zone |
| **40** | At the shoreline of Long Island Sound, in the Town of Fairfield, from the intersection of French Street and Pine Creek Ave. to Fairfield Beach Rd. | 10.2 | 21 | Runup |
| **41** | At the shoreline of Long Island Sound, in the Town of Fairfield, at Pine Creek Point, from Fairfield Beach Rd to Old Dam Rd. | 10.2 | 18 | Breaking Wave Height |
| **42** | At the shoreline of Long Island Sound, in the Town of Fairfield, from Old Dam Road to College Place | 10.1 | 18 | Runup |
| **43** | At the shoreline of Long Island Sound, in the Town of Fairfield, from College Place to the West Bank of Ash Creek | 10.1 | 17 | Breaking Wave Height |
| **44** | At the shoreline of Long Island Sound, in the City of Bridgeport, from the West Bank of Ash Creek to Black Rock Harbor | 10.0 | 19 | Runup |
| **45** | At the shoreline of Long Island Sound, in the City of Bridgeport, from Black Rock Harbor to Iranistan Ave. | 10.0 | 17 | Wave Overtopping Splash Zone |
| **46** | At the shoreline of Long Island Sound, in the City of Bridgeport, at the eastern side of Seaside Park, from Iranistan Avenue to Monument Dr. | 9.9 | 19 | Wave Overtopping Splash Zone |
| **47** | At the shoreline of Long Island Sound, in the City of Bridgeport, at Bridgeport Harbor, from Monument Drive to Pleasure Beach | 9.8 | 18 | Wave Overtopping Splash Zone |
| **48** | At the shoreline of Long Island Sound, in the Town of Stratford, at Long Beach and Lewis Gut, from Pleasure Beach to Oak Bluff Ave. | 9.8 | 17 | Wave Overtopping Splash Zone |
| **49** | At the shoreline of Long Island Sound, in the Town of Stratford, from Oak Bluff Avenue to Jefferson Street | 9.7 | 17 | Runup |
| **50** | At the shoreline of Long Island Sound, in the Town of Stratford, at Lordship Beach, from Jefferson Street to Cove Place | 9.7 | 18 | Breaking Wave Height |
| **51** | At the shoreline of Long Island Sound, in the Town of Stratford, at Stratford Point, from Cove Place to Ryegate Place | 9.6 | 20 | Wave Overtopping Splash Zone |

| Transect | Location | Elevation (ft. NAVD88) | | V Zone mapping method |
|---|---|---|---|---|
| | | Stillwater 1% annual chance | Max. wave crest 1% annual chance | |
| **52** | At the shoreline of Long Island Sound, in the Town of Stratford, from Ryegate Place to Housatonic River | 9.6 | 18 | Wave Overtopping Splash Zone |
| **53** | At the shoreline of Long Island Sound, in the Town of Stratford, from Housatonic River to eastern corporate limits | 9.6 | 15 | Breaking Wave Height |

Note: Because of map scale limitations, maximum wave elevations may not be shown on the FIRM. Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Source: Federal Emergency Management Agency, Flood Insurance Rate Study for Fairfield County, Volume 1, Table 9, Transect Descriptions, pp 99-105

*Appendix 8: Value of Flood Insured Real Estate as a Percentage of the Total Net Equalized Net Grand List for Coastal Municipalities: 2025*

| Coastal Municipality | Total Flood Insurance Coverage 2025 | 2023 Total Equalized Municipal Net Grand List | Flood Insured Property Coverage as Percent of Equalized Net Grand List |
|---|---|---|---|
| **Branford** | $175,406,000 | $8,906,622,967 | 2.0% |
| **Bridgeport** | $187,087,000 | $17,869,754,970 | 1.0% |
| **Clinton** | $89,395,000 | $3,829,088,871 | 2.3% |
| **Darien** | $124,002,000 | $15,878,088,806 | 0.8% |
| **East Haven** | $108,741,000 | $4,581,370,878 | 2.4% |
| **East Lyme** | $74,499,000 | $5,415,301,847 | 1.4% |
| **Fairfield** | $412,864,000 | $24,321,655,691 | 1.7% |
| **Greenwich** | $347,434,000 | $70,216,415,096 | 0.5% |
| **Groton** | $154,122,000 | $10,280,166,980 | 1.5% |
| **Guilford** | $114,096,000 | $7,157,011,466 | 1.6% |
| **Madison** | $99,906,000 | $6,074,723,196 | 1.6% |
| **Milford** | $461,737,000 | $15,142,375,743 | 3.0% |
| **New Haven** | $165,232,000 | $16,963,958,389 | 1.0% |
| **New London** | $51,512,000 | $3,132,011,803 | 1.6% |
| **Norwalk** | $386,387,000 | $29,661,296,147 | 1.3% |
| **Old Lyme** | $86,605,000 | $3,852,832,166 | 2.2% |
| **Old Saybrook** | $231,969,000 | $4,730,658,369 | 4.9% |
| **Stamford** | $440,738,000 | $44,589,865,734 | 1.0% |
| **Stonington** | $162,915,000 | $7,083,904,096 | 2.3% |
| **Stratford** | $267,864,000 | $10,991,996,929 | 2.4% |
| **Waterford** | $49,697,000 | $6,998,245,951 | 0.7% |
| **West Haven** | $153,769,000 | $7,076,573,114 | 2.2% |
| **Westbrook** | $89,331,000 | $2,623,611,238 | 3.4% |
| **Westport** | $263,466,000 | $24,601,750,524 | 1.1% |
| **Grand Total** | $4,698,774,000 | $351,979,280,971 | 1.3% |

Source: WestCOG analysis based on Federal Emergency Management Agency flood insurance coverage as of December 31, 2025 and Connecticut Office of Policy and Management, Total Equalized Net Grand List for 2023.

*Appendix 9: Status of Municipal and Regional Plans, Hazard Mitigation Plans, Plans of Conservation and Development for Coastal Municipalities: 2026*

| Coastal Municipality | Resilience Planning | | | Regional Hazard Mitigation Plans | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Date of Municipal Climate Resiliency Plan | Regional Coastal Resilience Plan | CIRCA Flood Vulnerability Maps | WestCOG | MetroCOG | SCRCOG | SCCCOG | RiverCOG | Town Covered | Date of POCD |
| **Branford** | 2023 | 2017 | Yes | | | Yes | | | 1 | 2019 |
| **Bridgeport** | Pending | 2017 | Yes | | Yes | | | | 1 | 2020 |
| **Clinton** | 2025 | | Yes | | | | | Yes | 1 | 2025 |
| **Darien** | None | | Yes | Yes | | | | | 1 | 2026* |
| **East Haven** | None | 2017 | Yes | | | Yes | | | 1 | 2019 |
| **East Lyme** | 2018 | | Yes | | | | Yes | | 1 | 2020 |
| **Fairfield** | 2024 | 2017 | Yes | | Yes | | | | 1 | 2025 |
| **Greenwich** | 2023 | | Yes | Yes | | | | | 1 | 2019 |
| **Groton** | 2024 | | Yes | | | | Yes | | 1 | 2026* |
| **Guilford** | 2013 | 2017 | Yes | | | Yes | | | 1 | 2026* |
| **Madison** | 2016 | 2017 | No | | | Yes | | | 1 | 2024 |
| **Milford** | 2016 | 2017 | Yes | | | | Yes | | 1 | 2023 |
| **New Haven** | 2018 | 2017 | Yes | | | Yes | | | 1 | 2025 |
| **New London** | None | | Yes | | | | Yes | | 1 | 2017 |
| **Norwalk** | 2023 | | Yes | Yes | | | | | 1 | 2019 |
| **Old Lyme** | Pending | | Yes | | | | | Yes | 1 | 2020 |
| **Old Saybrook** | 2025 | | Yes | | | | | Yes | 1 | 2023 |
| **Stamford** | Pending | | Yes | Yes | | | | | 1 | 2025 |
| **Stonington** | 2017 | | Yes | | | | Yes | | 1 | 2015 |
| **Stratford** | None | 2017 | Yes | | Yes | | | | 1 | 2023 |
| **Waterford** | 2015 | | Yes | | | | Yes | | 1 | 2012 |
| **West Haven** | 2017 | 2017 | Yes | | | Yes | | | 1 | 2017 |
| **Westbrook** | 2025 | | Yes | | | | | Yes | 1 | 2021 |
| **Westport** | 2018 | | Yes | Yes | | | | | 1 | 2017 |

*Pending release. Source: WestCOG analysis of municipal and regional resiliency plans, maps, and Plans of Conservation and Development (POCD), May 4, 2026.

*Appendix 10: Types of Zoning Districts that Abut the Connecticut Coastline: May 2026*

| Coastal Municipality & Political Subdivisions | Central Business Di | Commercial Zones | Conservation Zones | Civic District | Floodplain | Industrial Zone | Mixed Use Zones | Open Space Zone | Residence Zones | Multi-Family Zones | Utility Zone | Water Dependent | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Borough of Fenwick** | | | | | | | | | 1 | | | | 1 |
| **Branford** | | 2 | | | | 1 | | | 4 | 1 | | | 8 |
| **Bridgeport** | | | | 1 | | 2 | 1 | 1 | 4 | | 1 | 1 | 11 |
| **Clinton** | | | | | | 1 | | | 4 | | | | 5 |
| **Crescent Beach Association** | | | | | | | | | 1 | | | | 1 |
| **Darien** | | | | | | | | | 3 | | | | 3 |
| **East Haven** | | 3 | | | | | | | 4 | | | | 7 |
| **East Lyme** | | 2 | | | | | | | 3 | | | | 5 |
| **Fairfield** | | | | | 1 | 1 | | | 5 | | | | 7 |
| **Greenwich** | | | | | | | | | 4 | 1 | | 1 | 6 |
| **Groton** | | 1 | | | | 1 | 1 | 1 | 3 | | | 1 | 8 |
| **Groton Long Point Association** | | 1 | 1 | | | | | | 1 | | | | 3 |
| **Groton, City of** | | | 1 | | | 1 | | | 3 | | | 1 | 6 |
| **Guilford** | | | | | | | | | 5 | | | 1 | 6 |
| **Madison** | | | | | | | | | 5 | | | | 5 |
| **Milford** | | 1 | | | | | | | 5 | 1 | | 2 | 9 |
| **New Haven** | | 1 | | | | 3 | | | 2 | | | 1 | 7 |
| **New London** | | 1 | | | | | | 1 | 2 | | | 4 | 8 |
| **Noank Fire District** | | 1 | | | | | | | 4 | | | | 5 |
| **Norwalk** | 1 | | | 1 | | 1 | | | 4 | | | 1 | 8 |
| **Old Lyme** | | | | | | | | | 5 | | | 1 | 6 |
| **Old Saybrook** | | | | | | | | | 7 | | | 1 | 8 |
| **Pine Island Association** | | | | | | | | | 5 | | | | 5 |
| **Stamford** | | 1 | | | | 2 | | | 4 | 1 | | 1 | 9 |
| **Stonington** | | | | | | 1 | | | 6 | | | 1 | 8 |
| **Stratford** | | | 1 | | | 2 | | | 2 | | | 1 | 6 |
| **Waterford** | | | | | | 1 | | 2 | 6 | | | 1 | 10 |
| **West Haven** | | 3 | | | | | | | 2 | 1 | | 1 | 7 |
| **Westbrook** | | | | | | | | | 2 | | | 1 | 3 |
| **Westport** | | | | | | | | | 4 | | | | 4 |
| **Grand Total** | 1 | 17 | 3 | 2 | 1 | 17 | 2 | 5 | 110 | 5 | 1 | 21 | 185 |

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