

3.3.2. BREWSTER, MA

Population Density	427/ sq. mi.
Form of Government	Town
Category	Seasonal Bayfront
CRS Rating	Not Participating

Median Household Income	Median Per Capita Income	% Owner Occ	Population	2000-2010 Pop Growth Rate	% White	% Hispanic	% Minority	% Seasonal Housing
59663	35547	45.4	9820	-0.28	96.7	2%	4.6%	39.6

Adaptations	Status	Incorp orates CC	Type	Impact	Standard Costs	Funding Source
Hazard Mitigation Plan - Incorporates Sea Level Rise	Completed	Yes	Procedural	Recommendation	Above Required Low (< \$10,000)	None
Incorporates climate change into Water Resource Management Plan	Completed	Yes	Procedural	Recommendation	Unique High (<\$1,000,000)	None
Minimum Lot Size Restricts Development in Floodplain	Implemented	No	Prevention	Mandatory	Unique Zero	None
Wetlands Buffers Includes Performance Standards and Sea Level Rise Considerations	Implemented	Yes	Prevention	Mandatory	Above Required Medium (<\$100,000)	None

CONTACTS

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POPULATION AND GEOGRAPHY

Cape Cod is a 70-mile-long sandy peninsula that extends out 35 miles from mainland New England in the shape of a hook. Cape Cod has 586 miles of natural shoreline and is world famous as a summer resort destination. The town of Brewster is located on the northern half of the lower cape, about midway to Provincetown.

Brewster has a land area of 23 sq mi and an year-round population of just under 10,000 giving it a population density of 427 people per square mile, but that number is much higher in the summer. The median household income is just under \$60,000 and the population is almost 97% white. The town has 8.3 miles of shoreline, which is characterized by extensive tidal flats. Brewster also contains the largest freshwater pond on Cape Cod. The town does not have a downtown area or commercial district of any appreciable size.

Its maritime boundary on the north is the Cape Cod Bay, and Brewster has land borders with the towns of Orleans on the east, Harwich to the south, and Dennis to the west. More than one-third of the town is protected in conservation or open space.

COASTAL ISSUES

Brewster had been integrating sea level rise and climate change into its administrative and planning processes. The town's hazard mitigation plan identifies hurricanes, flooding, and sea level rise as significant hazards. It states that coastal and inland flooding is one of the major risks faced by citizens and visitors and can result in damage to public and private property. The hazard plan ranks wind hazards as "highly likely" and flood hazards as "likely." (Brewster, Mass. (2011) Hazard Mitigation Plan.) Flood hazards are seen to only concern a small area and with less impact than wind related hazards.

32% of the town's land is developed, 17% is protected uplands, and 15% protected wetlands. 4.4 square miles, or 19%, is in the FEMA A or V zone and 6% is located in the SLOSH zone. There are no repetitive loss properties in the town and, despite the relatively large percentage of land in the flood zones, the town only has 94 NFIP policies in force, and only 15 losses claimed under NFIP between 1978 and 2009. Coastal erosion is a significant problem, mostly occurring during



Figure 3.3.2:1 - Brewster's shoreline

storms. Areas of coastal flooding include Cape Cod Bay beaches and beach parking lots. Infrastructure failure caused by coastal storms is considered a significant hazard.

A number of tidal restricted areas and one road and park are considered to have deficient infrastructure. This problem, unique to Brewster, is caused by physical restrictions in tidally influenced water bodies that cannot exchange water freely during tidal cycles. The plan states that removing these restrictions would provide many hazard reduction benefits, including increased flood mitigation potential and reduced risk of wildfire.

The town has recognized issues of sea level rise and climate change in a number of documents. The town's Water Resources Management Plan summarizes the issues expected to impact the town: "It is expected that the climate change effects for Brewster will focus on coastal areas and include inundation of low-lying areas, inland migration of flood zones, and higher groundwater levels near the ocean" (Brewster, Mass. Water Resources Management Plan, p. 90). Although specifics are not enumerated, the language further acknowledges awareness "that future infrastructure improvements will need to take flood zones into account and the potential for expansion of the flood zones due to climate change and rising sea levels ..." According to other documents, the town has made progress in addressing climate risks and setting in motion processes to adapt to those risks.

ADAPTATIONS

Wetlands Regulations Include Performance Standards and Sea Level Rise Considerations

The conservation commission of the town regulates coastal and inland wetlands. The commission raised standards recently to include a limitation on site disturbance and an undisturbed buffer zone of natural vegetation between wetlands resources. Sea level rise is explicitly discussed as rationale for these stricter regulations.

The town code states "The concern for continued efficacy...[of resources] in buffering, storing, or containing floodwaters has recently been elevated in [due to] predictions of sea level rise...only the relative rate of increase in sea level is being debated, not the tendency to sustained increase in the coming decades...The effect of an accelerated rate of rise in sea level will be an appreciable acceleration in coastal erosion processes and their notable manifestations: land erosion, storm damage, flooding and loss of coastal wetlands." (Brewster, Mass. Town Code, Ch. 704, E(2))

The regulations require a 35-foot setback from wetlands and 50 feet from coastal areas. When the slope of an undisturbed setback exceeds 18%, or in any instance where the scope of the project is likely to require a greater spatial offset to wetland areas, the commission reserves the right to increase the setbacks.

The zoning code minimum required lot dimensions includes the following restriction: "No building, except a boathouse or building used for agricultural purposes, shall be within 50 feet of any water body, watercourse or wetland area or, if subject to flooding, within 50 feet beyond its flood line to the higher elevation." (Brewster, Mass. Town Code, Ch, 179)

Incorporates SLR into Hazard Mitigation Plan

Sea level rise is addressed in the hazard mitigation plan as one of the nine significant hazards facing the town.

Sea level rise is described in the plan as potentially causing shoreline change, long-term coastal erosion, and flooding. (Brewster, Mass. 2011 Hazard Mitigation Plan) Because it affects these other risks, which are analyzed as separate but interrelated threats, sea level rise is weaved throughout the plan and is discussed as an exacerbation of other risks.

In the natural hazards ranking, sea level rise is mentioned under flood hazards along with coastal storm surge, storm tides, wave action, and erosion. It is also mentioned under the heading of geologic hazards along with shoreline erosion, long-term shoreline change, storm-caused change, and landslides of coastal banks. Sea level rise is also predicted to have exacerbating impacts on the problem of shoreline erosion. Although not specified as a separate threat, the list of nine hazards is followed with the following language concerning climate change:

"In addition climate change can exacerbate these events, causing impacts such as increased frequency and intensity of heavy downpours. Rising sea levels are expected to continue while new impacts will likely emerge, such as increased intensity of hurricanes. This could result in an increase in storm surge"(p.9).

The hazard plan suggests specific mitigation actions. Action #17, which suggests the town “continue to participate in marsh restoration projects to remediate tidally restrictive infrastructure which affects the retention time of floodwaters or impound stormwater,” contemplates mitigating the threats of sea level rise, erosion, fires, and floods.

The plan also projects Action #20—to “conduct an educational workshop for coastal and riverfront landowners and contractors on hazard mitigation”—will mitigate sea level rise as well as floods, wind, and erosion.

Water Resource Management Plan Incorporates Climate Change

The Town of Brewster developed a Water Resource Management Plan, which assesses surface and groundwater issues and prioritizes issues and needs to protect water resources through the year 2030. Of particular concern is nitrogen and phosphorous loads in the town's drinking and surface waters. The town was required to draft a plan by state law to meet water pollution regulations.

Minimum Developable Lot Requires 60,000 sq ft of Uplands

The town of Brewster set a town-wide minimum lot size of 60,000 sq ft of buildable uplands for any lots subdivided after the date of effectiveness of the bylaw. This bylaw has effectively limited further subdividing of land and reduced development in the town. The code also prohibits new temporary housing and bans all mobile homes not in trailer parks or camps. This has implications for affordability, but is also a significant coastal resilience measure, since such structures are much more vulnerable to the effects of wind and floods.

The language of the code is as follows:

A. No premises in the Town of Brewster shall be used for the following purposes: residing in (i.e., occupying) any tents, trailers, mobile units, except in commercial trailer parks or camps.

B. No lot in the Town of Brewster shall be used for residential building purposes unless there is at least 60,000 square feet of contiguous buildable uplands as defined in the Zoning Bylaw or unless the lot existed as a lot on May 1, 1986, and satisfied the May 1, 1986, requirements for a buildable lot. June 30, 1987, shall be set as the effective date for all aspects of this subsection (Brewster, Mass. Town Code, Sec. 179-13).