

3.3.4. MARSHFIELD, MA

Population Density	881/ sq. mi.
Form of Government	Town
Category	Bayfront Suburban
CRS Rating	10

Median Household Income	Median Per Capita Income	% Owner Occ	Population	2000-2010 Pop Growth Rate	% White	% Hispanic	% Minority	% Seasonal Housing
85503	39538	70.8	25132	0.33	96.8	1%	4.0%	9.9

Adaptations	Status	Incorp orates CC	Type	Impact	Standard Costs	Funding Source
Coastal Advisory Committee	In Progress	Yes	Procedural	Recommendation	Unique Low (Staff)	Town
Comprehensive Plan - Incorporates Climate Change	Completed	Yes	Procedural	Recommendation	Unique Low (Staff)	Town; UMass
South Shore Coastal Hazards Adaptation Plan	Completed	Yes	Procedural	Recommendation	Unique \$15,000	SRPEDD - DLTA

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GEOGRAPHY AND COASTAL ISSUES

The Town of Marshfield is located 30 miles south of Boston in the South Shore region (NOAA, n.d.). The town has about 12 miles of shoreline directly exposed to the ocean, with 3.9 miles of with coastal structures (e.g., bulkheads and jetties) (MAPC, 2011). Marshfield is currently exposed to coastal flooding and storm surge hazards associated with hurricanes and nor'easters. Nor'easter impacts are more frequently significant as Cape Cod usually protects the town from the full force of hurricanes (MAPC, 2011). The population is just over 25,000, and is largely a year-round community. The town does have a small seasonal population, as the census statistics report almost 10% of the housing stock as seasonal. The median per capita income is just under \$40,000 and the population is almost 97% white.

ADAPTATIONS

The Town of Marshfield has implemented several ongoing low-cost adaptation activities. The town is currently most active in planning for potential change in coastal flood risk. Recent planning-related projects include a vulnerability assessment, student participation in writing the town master plan, and a proposed coastal advisory committee specifically charged to address climate adaptation. The table provides adaptation information, followed by brief project summaries.

Regional Coastal Adaptation Study

Marshfield has coordinated with the neighboring towns of Duxbury and Scituate to submit a successful joint proposal for funding to study coastal flood vulnerability and adaptation options. The study was produced by the Metropolitan Area Planning Council (MAPC), and was completed in late 2011 (see MAPC, 2011). This multi-town study is cost-effective in at least three ways: 1) it pools resources between towns, making study participation comparatively less costly than if towns act alone; 2. regional bottom-up actions attract funding and other support involving higher political levels (e.g. SFRCCC, 2011) as it did for this study (pers. comm. Barry Keppard, MAPC, July 20, 2012); and 3) regionally consistent vulnerability assessments involving, for example, a single set of sea level rise scenarios have been viewed as a critical need to develop effective regional adaptation strategies at the local level (SFRCCC, 2011). This best practice is documented here for Marshfield, but credit also extends to the towns of Duxbury and Scituate as collaborators.

While the towns' collaboration to attract adaptation study resources is cited here as a local-level best practice, the plan itself developed by the MAPC with support from the state CZM office contains best practice guidance that may be transferable to other locations. For example, other towns or regions may consider adopting a similar cost-effective study design. With \$15,000, the MAPC identified current and future potential coastal hazard risks including the condition of current coping structures, presented detailed adaptation strategies, documented funding and adaptation support resources, and held public workshops to communicate study findings.

The MAPC report (2011) includes extensive information that may be useful not only for managers in the study area, but also for other U.S. coastal towns. In particular, the funding and adaptation resources section is extensive and written with the local manager's perspective in

mind with examples of how towns have used the resources. While some resources are specific to Massachusetts towns, most apply to any U.S. town. Additionally, the report provides recommendations for cost-effective adaptation planning, including specific actions towns can take to make use of the available resources.

Student Participatory Town Master Plan

Students in the Student Participatory Town Master Plan – UMass-Amherst Regional Planning Studio wrote the climate adaptation chapter for Marshfield’s new town master plan. This project was in progress at the time of this writing, but initial plans indicate potential cost-effectiveness. Customized climate projections were prepared for the town, which can be used for policy decision-making by all town departments, such as public works and the harbor master. A multi-hazard planning approach is used, which economizes on efforts that could meet multiple adaptation objectives instead of duplicating efforts with a piecemeal approach. Alternatives to expensive and costly repairs to the sea wall are proposed, including elevating homes, improving on-site stormwater management, and installing living shoreline treatments. Multi-hazard plan components will provide a base reference for inserting climate change concerns into official town management decisions, increasing the likelihood of adaptive actions.

Coastal Advisory Committee

Marshfield is assembling an interdisciplinary town committee with an explicit goal to foster a more comprehensive approach to coastal planning to address the challenges of climate adaptation (Marshfield, Mass. 2012). Like many towns in the U.S. Northeast, hazard mitigation plans and long-term planning efforts are developed and administered separately, a consequence of financial constraints, sometimes involving town departmental “turf wars” as town staff compete for responsibility to secure funding. As a result, many hazard mitigation plans do not adequately account for long-term hazard risk change. A specific motivation for forming the advisory committee was to help integrate the hazard mitigation and long-term plans by dissolving this administrative divide (Pers. Comm. Paul Halkiotis, Town of Marshfield, July 19, 2012). The specific charges of the proposed advisory committee are as follows (see Marshfield, Mass. 2012):

- Proactively promote a research-based approach to making local decisions about various sea level rise adaptation strategies that include but are not limited to: flood-proofing, beach nourishment, armoring sea walls, tactical retreat, and land acquisition.
- Develop policies that will help to minimize the town’s exposure to coastal storms in an effort to protect public safety, infrastructure, natural resources, and private property.
- Develop various benchmark indicators to measure sea level rise and coastal storm frequency and intensity.
- Evaluate the costs and benefits of various adaptation measures.
- Work with Planning, Conservation and DPW staff on long-range planning for the coastal zone in an effort to obtain projections on sea level rise, to determine what areas in the coastal zone will be subject to inundation of flood waters.

- Identify federal, state, and privately funded grant opportunities to study and plan for adaptation to sea level rise.
- Work with neighboring South Shore communities on regional solutions for coastal infrastructure management.
- Work with state legislators to support new legislation that will: (a) provide funding sources for coastal infrastructure management and (b) provide flexibility in spending money for repairs/replacements, when needed, such as a revolving fund.
- Educate citizens on sea level rise predictions, adaptation strategies, impacts to natural resources, and the potential costs associated with taking no action. This should include establishing and maintaining a website and organizing seminars and presentations by outside experts.
- Promote communication and collaboration among various town boards, committees, and departments on coastal management issues.
- Perform a cost-benefit analysis on the cost of new seawalls with revetments versus flood proofing structures.
- Advise the Capital Budget Committee and Advisory Board on coastal infrastructure management expenditures recommended by the Board of Public Works.