

**3.5.3. GUILFORD, CT**

Population Density	450 /sq. mi.
Form of Government	Town
Category	Suburban Soundfront
CRS Rating	Not Participating

Median Household Income	Median Per Capita Income	% Owner Occ	Population	2000-2010 Pop Growth Rate	% White	% Hispanic	% Minority	% Seasonal Housing
97134	47745	77.1	22375	0.45	94.7	3%	7.8%	5.0

Adaptations	Status	Incorporates CC	Type	Impact	Standard Costs	Funding Source
Coastal Climate Change Project	Completed	Yes	Procedural	Recommendation	Unique Very Low (< \$1,000)	Other
Incorporated Climate Change into Public Works/Infrastructure Decision Guidance	Completed	Yes	Procedural	Recommendation	Unique Low (< \$10,000)	None
Community Coastal Resiliency Plan	Completed	Yes	Procedural	Recommendation	Unique Medium (<\$100,000)	NOAA
Comprehensive Plan - Incorporates Climate Change	Completed	Yes	Procedural	Recommendation	Above Required Low (< \$10,000)	Other
Formal resolution recognizing climate change	Completed	Yes	Procedural	Recommendation	Unique Zero	None
Hazard Mitigation Plan - Incorporates Climate Change	Completed	Yes	Procedural	Recommendation	Above Required Low (< \$10,000)	FEMA

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## POPULATION AND GEOGRAPHY

The town of Guilford is located in central coastal Connecticut along the Long Island Sound shore, about 15 miles east of New Haven and due south of Hartford. The town is 47 square miles with approximately 15 miles of shoreline.

Guilford is bordered by the towns of Madison to the east, Durham to the north, and Branford and North Branford to the west. Its population is just over 22,000. It is a wealthy community, with a median household income of \$97,000 as it is primarily a commuter suburb of New Haven and Fairfield County. The population is almost 95% white and 77% of residents own their homes. The town is a permanent resident community, with only 5% seasonal occupancy.

### COMMUNITY COASTAL RESILIENCE PLAN SEA LEVEL RISE RISKS

1. A continued increase in the rate of rising sea levels will inundate low areas, increase erosion of beaches and tidal marshes, increase the incidence of flooding from storm surges, and enable saltwater to advance upstream and intrude further into estuaries and aquifers.
2. Future sea level rise could result in the disappearance of a large percentage of Guilford's tidal wetlands unless they can advance as quickly as the rising level. Saltwater advancing upstream along estuaries can alter the point at which sedimentation leads to the creation of shoals and other features.
3. FEMA's coastal base flood elevations will progressively rise along with sea level. This means that the 100-year and 500-year flood levels will affect lands and structures that are currently at unaffected elevations.
4. As sea level rises, storm surges from hurricanes and nor'easters will reach further inland as they are starting from a higher base level

Most of Guilford's shore is developed. There are many single family homes ranging from multimillion-dollar mansions to small cottages. Many were summer cottages winterized and converted to year-round use. According to George Kral, Town Planner, many are vulnerable to coastal storms (Personal Communication, Jul. 18, 2012).

## COASTAL ISSUES

Guilford is at risk from coastal hazards that will increase as sea level rises. "More frequent coastal storms, storm surges, and flooding can cause a wide range of outcomes, from minor property damage to injury and loss of life. Even the indirect outcomes of increased flooding can cause a range of problems, from the slight inconvenience of waiting for low tide to traverse a key intersection, to being unable to mobilize an ambulance to the home of a person in need of medical attention." (Guilford, Conn., Community Coastal Resilience Plan (CCRP), p. 24)



**Figure 3.5.3:1 - Waterways and wetlands intersperse the town of Guilford. This photo was taken from the Amtrak Corridor train**

Guilford has 4,363 acres located within the 100-year floodplain, and 354 acres in the VE flood zone. In addition, nuisance flooding occurs near streams and rivers throughout the town as a result of poorly functioning drainage; low-lying roads; bridges and culverts with insufficient capacity; and other factors.

The hazard mitigation plan identified a number of critical roads that are subject to nuisance flooding because of poor drainage, low elevation, and bridges and culverts without sufficient capacity. The town also has 11 repetitive loss properties and many coastal structures vulnerable to flooding. One unique challenge in Guilford is that some neighborhoods—including Old Quarry, Sachem's Head, Little Harbor, Leetes Island, Vineyard Point, Indian Cove, Mulberry Point, and Tuttle's Point—are subject to isolation when flooding cuts these areas off from the rest of town. (Guilford, Conn., Natural Hazard Mitigation Plan (NHMP), p. 2-61) All of the tidal marshes are vulnerable to sea level rise. The town has a number of neighborhoods at significant risk from encroachment of seawater in a number of the scenarios generated by the coastal resilience plan. The plan reports that "developed areas of Guilford that are most vulnerable to sea level rise include those at low elevations and those characterized by a lack of near-surface

competent bedrock ... these include at-grade roads, certain neighborhoods, and larger areas adjacent to marshes." (NHMP p. 4-19)

Commercial properties were also shown to be at risk. In particular, 13 businesses along the Soundview Road corridor are presently in hurricane surge zones, and the plan states that risks will increase over time. In addition, some hazardous materials are stored at these businesses, which the plan states causes vulnerability to surrounding properties. (CCRP p. 28)

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## ADAPTATIONS

### **Formal Resolution Recognizing Climate Change**

The Guilford Board of Selectmen passed a resolution in 2007 recognizing climate change. It directed town departments, boards, and commissions to “formally consider impacts of this phenomenon on planning, management, procurement and budgetary decisions, and regulations relating to the objective of reducing greenhouse gas emissions, and mitigating negative effects projected to evolve from climate change” (Guilford, Conn. Resolution of the Board of Selectmen Feb. 5, 2007). Unfortunately, the resolution was not followed with any specific policies and was reported by George Kral as fairly ineffectual (Personal Communication, July 18, 2012).

### **Coastal Community Resiliency Plan**

The town is in the process of drafting a Coastal Community Resiliency Plan, which is to be incorporated into the town's comprehensive plan. The plan was supported by a grant from NOAA and supported by Yale University and The Nature Conservancy. Broad goals of the project include raising awareness of coastal vulnerability, assessing risks, examining options to address those risks, and creating an action plan.

#### **COASTAL RESILIENCE PLAN KEY STRATEGIES**

1. Generating public awareness and understanding of coastal resilience issues and increasing support for town action to address it;
2. Assuring public safety;
3. Identifying plans to compatibly protect, rehabilitate or relocate critical infrastructure;
4. Amending Town coastal development policy to assure greater resilience of structures and natural resources;
5. Adopting post-storm redevelopment which respects property rights and provides for greater coastal resilience, and sustains coastal habitats such as tidal marsh and barrier beaches through protection of adjoining upland areas and provision for the migration of these habitats

The Nature Conservancy used their Coastal Resilience Tool to study storm and sea level rise predictions to determine how climate change will affect the tax base, residential and commercial development, public and private properties, natural habitats, and infrastructure (such as septic systems).

The four basic steps of the Coastal Resilience Program are:

1. Generate awareness of coastal risk (already underway and largely complete)
2. Assess coastal risks and opportunities (the current effort)
3. Identify options or choices for addressing priority risks and vulnerabilities (future effort)
4. Develop and implement an action plan to put selected options or choices into

place (future effort)

The town followed a deliberate participatory planning process to engage neighbors and town agencies. Mr. Kral emphasized the importance of this engagement. "The process is the most important thing—not just the document—to get the key people who have to implement it on board ... so they have sense of ownership in what it says," he said (Personal Communication, July 18, 2012).

The Risk and Vulnerability Assessment portion of the report was released in September 2012. The report discusses the relationship between risk, vulnerability, and resilience and reviews the history and relationship to previous planning efforts as well as to other towns and regional planning. It also looks at existing capabilities and strengths, current municipal regulations, and boards and commissions that deal with coastal vulnerability concerns. It addresses vulnerabilities to social, economic, utility, emergency services, and natural systems and then concerns itself with specific vulnerability assessments for neighborhoods along Guilford's coastline.

The town already has a number of initiatives, mostly focused on land preservation, that have enhanced its resiliency. The town actively encouraged cluster development and fees in lieu for open space preservation. The town maintains an active land acquisition fund, largely funded from rent from telecommunications towers, and recently issued \$18 million in bonds.

The costs of the project to the town are nebulous. Mr. Kral said that it was hard to figure out what the costs are, since two of the major players—The Nature Conservancy and Yale University—are providing services for free. He also said it would be difficult to account for staff time and even more difficult to measure volunteers' time. They paid \$25,000 to consulting firms for parts of the work (Personal Communication, July 18, 2012).

### **Comprehensive Plan Incorporates Climate Change**

Guilford has a long and rich history of planning. Its first Plan of Development was adopted in 1959, and in 1966 the first Comprehensive Plan of Development and Conservation was approved. In 1978 and 2002 the town adopted an updated plan. The town first adopted a plan unique to coastal issues in 1982. The Municipal Coastal Program created plans and procedures for protecting coastal resources and promoting public access that were incorporated into Guilford's Zoning Regulations. Guilford is currently working on the fifth update to the plan of conservation and development. A consultant has been contracted to write the report, and they are currently working on the risk and vulnerability section. The second phase will focus on implementation strategies. The coastal community resiliency plan will be incorporated into the updated comprehensive plan.

### **Coastal Area Overlay District**

The town of Guilford adopted amendments to Section 273-91 of the Zoning Code, the Coastal Site Plan Review, and the Coastal Area Overlay District on December 16, 2009.

The Coastal Area Overlay District is coincident with the Coastal Area Management Boundary. As the vulnerability analysis states, "one of the objectives of revising the section of the

regulations was to strengthen resiliency from coastal hazards." (Guilford, Conn. Town Code, Sec. 273-91)

The code requires certain uses, such as multi-family dwellings and certain commercial uses, to apply for a special permit. Certain uses are prohibited in the Coastal Area Overlay District because they pose too great a risk to coastal resources: foundries, painting shops (except when accessory to boat repair), waste transfer operations, motor vehicle washing establishments, and oil and propane filling stations, except as accessory to a water-dependent principal use.

### **Hazard Mitigation Plan Incorporates Climate Change**

Guilford is one of a few towns in our study to have funded and drafted its own Hazard Mitigation Plan and incorporated climate change and sea level rise. The plan was approved by FEMA in spring 2012 and adopted in June 2012.

The Nature Conservancy's Coastal Resilience Tool was used in the plan and included 27 separate maps. The coastal resilience tool was used to map potential flood scenarios for the decades of the 2020s, 2050s, and 2080s under three sets of conditions: no storm (in other words, only the impacts of sea level rise), Category 2 hurricane, and Category 3 hurricane (NHMP p. 4-24). The plan explains the challenge to the town:

Increases in the rate of sea level rise will increase the incidence, severity, and adverse effects of erosion and shoreline change as well as flooding. Sea levels are currently rising along the Atlantic coast. Many believe that this is a result of climate change, which may be attributable to greenhouse gases or may be at least partly related to natural warming and cooling cycles that the Earth experiences. Regardless, a continued increase in the rate of rising sea levels will inundate low areas, increase erosion of beaches and tidal marshes, increase the incidence of flooding from storm surges, and enable saltwater to advance upstream and intrude further into estuaries and aquifers. (NHMP p. 4-5)

However in the Existing Programs, Policies, and Mitigation Measures section, the plan notes:

Like many communities, the Town lacks existing policies and mitigation measures that are specifically designed to address sea level rise. Although Guilford does not currently have a comprehensive plan to address sea level rise, important pieces are in place in the form of the codes and regulations cited in Section 2.9 that have been enacted to minimize storm, erosion, and flood damage. (NHMP p. 4-13)

The plan suggests a number of mitigation measures to specifically address sea level rise. Among them, the plan suggests:

- Adopt V-zone standards in A-zones
- Adopt Freeboard standards in the building code
- Reform of Evacuation Procedures and/or Establishment of Satellite Shelters