



Town Profile

Kittery

Kittery is the southernmost town of the Maine coastline, and is the gateway community for many visitors, tourists, and regular commuters to and from the greater Boston area and beyond. Like many of Maine's larger communities, it mixes widespread commercial development, historic downtowns, rural farms and seaside neighborhoods. In recent years, Kittery has accomplished several initiatives at the municipal level to better plan for and mitigate the effects of climate change and sea level rise. However, given the communities approximately 34 miles of shoreline, continued action remains necessary. Kittery has several areas of economic development, in this historic Foreside district, along Route 1 and in smaller places near the coast along Route 103. Several outlets and bays bisect the community, making it vulnerable to both shoreline inundation, and inland flooding.

The economic analysis suggests that Kittery's population of 9,731 has a median household income of \$78,451, and has the lowest percent of civilian labor force employed in arts, entertainment, recreation, accommodation, and food service among the study area towns. Kittery is also the most diverse community of the study area, with the highest percent population of people of color - higher than York County and the state as a whole.

Land Use Impacts

Based on town zoning data, there are 466.6 acres of land at risk between the extent of the HAT and the extent from the 1.6 ft scenario, and 617.3 acres (or 150.7 additional acres) at risk between the extent of the HAT and the extent from the 3.0 ft scenario. The property values assessment estimates \$140.9 million in assessed value at risk in the 1.6 ft scenario, and \$186.6 million at risk in the 3.0 ft scenario (Table 30). This equates to 3.8% and 5.0% of the town’s entire assessor database, the smallest impacts proportionally among all six towns.

Properties categorized as residential single-family have the highest assessed value at risk in both the 1.6ft scenario (\$80.2 million) and the 3.0ft scenario (\$115.3 million). The values, when compared to the rest of the use type valuations at risk from the 1.6 ft and 3.0 ft scenarios represent 57% and 62%, respectively. Commercial, industrial, and nongovernmental institutions properties have the second highest valuation at risk from the 1.6 ft and 3.0 ft scenarios, \$25.3 million and \$31.1 million, respectively. Municipal properties have the next highest valuations at risk from the 1.6 ft scenario, with \$15.0 million and \$13.0 million at risk, respectively.

Table 30. Kittery Property Value Vulnerability Assessment, GEI

	Kittery					
	1.6' SLR + SS			3.0' SLR + SS		
	Land Only	Building & Land	Total	Land Only	Building & Land	Total
Comm., Indus., Non-Gov. Institutions	\$ 9,656,306	\$ 15,596,800	\$ 25,253,106	\$ 10,686,974	\$ 20,440,300	\$ 31,127,274
Conserved Land	\$ 784,899	--	\$ 784,899	\$ 1,089,220	--	\$ 1,089,220
Government Properties	\$ 2,696,263	\$ 960,800	\$ 3,657,063	\$ 2,939,456	\$ 1,244,600	\$ 4,184,056
Health Facilities	--	--	--	--	--	--
Mobile Homes & Campgrounds	\$ 7,374	--	\$ 7,374	\$ 11,467	--	\$ 11,467
Municipal Properties	\$ 4,036,036	\$ 11,010,300	\$ 15,046,336	\$ 4,403,274	\$ 11,235,400	\$ 15,638,674
Open Space & Agriculture	\$ 41,945	--	\$ 41,945	\$ 64,251	--	\$ 64,251
Residential Multi-Family	\$ 2,963,983	\$ 10,005,500	\$ 12,969,483	\$ 3,774,470	\$ 11,890,700	\$ 15,665,170
Residential Single-Family	\$ 41,225,184	\$ 39,024,900	\$ 80,250,084	\$ 46,495,395	\$ 68,884,600	\$ 115,379,995
Undeveloped	\$ 1,509,960	\$ 1,275,300	\$ 2,785,260	\$ 1,964,017	\$ 1,391,200	\$ 3,355,217
Utilities	\$ 123,279	--	\$ 123,279	\$ 145,543	--	\$ 145,543
Total	\$ 63,045,228	\$ 77,873,600	\$ 140,918,828	\$ 71,574,068	\$ 115,086,800	\$ 186,660,868

Kittery also has 201 properties, assessed at \$204.7 million in value inaccessible due to flooding in the 1.6ft scenario. This decreases to 185 properties, assessed at \$185.2 million in value cut off by flooding in the 3.0ft scenario. In the 1.6ft scenario, the value of properties inaccessible due to road flooding exceeds the impacts to the assessed property value of inundated properties.

Locally Significant Impacted Sites

The GIS-based vulnerability assessment identified several locations in Kittery that are particularly vulnerable to sea level rise and storm surge. These include economic centers, tourism infrastructure and destinations, significant travel routes, as well as public infrastructure and residential areas (Table 31). These sites warrant particular attention as the municipality and region targets adaptation and resilience actions.

Table 31. Locally significant impacted sites in the Town of Kennebunkport.

Site	Impacts
Economic Centers	
Portsmouth Naval Shipyard	Gate 2 access via Route 103 flooded, and significant inundation over the island in both scenarios.
Kittery Foreside Docks	Piers and docks, commercial wharf, along the Piscataqua River between PNS Gate 1 and Memorial Bridge, inundated in both scenarios.
Badger’s Island	Docks and marinas along the shore of the island inundated in both scenarios.
Route 1 Bridge Kittery Outlets	Bridge is completely inundated in 1.6 ft scenario, some outlet parking affected in 3.0 ft scenario.
Town Landing, Pepperell Cove	Landing and business parking inundated in the 1.6 ft scenario, commercial buildings partially inundated in 3.0 ft scenario.
Tourism Infrastructure & Destinations	
Fort McCleary State Park	Access via Crockett's Neck Rd bridge over Barters Creek, and small portions of the park inundated in both scenarios.
Gerrish Island & Fort Foster	Large portions of Gerrish Island, namely parts of Fort Foster, are inundated in low-lying areas in both scenarios. Access via Pocahontas Rd cut off by a small portion of inundation in 3.0 ft scenario only. Fort Foster beaches, walking paths, also impacted.
Cutts Island, Sea Point and Crescent Beach	Cutts Island neighborhood and Seapoint Beach access cut off via Seapoint Rd, and access to Crescent Beach via Tower Rd inundated in both scenarios. Chauncy Creek inundated into low-lying areas near beaches, impacting Crescent and Seapoint beaches, homes, from inland side in both scenarios.
Significant Routes	
Route 103	Inundated in several locations, namely the Main St bridge over Spinney Creek, a critical section of Whipple Rd near PNS Gate 2, and large portions at the York border near Brave Boat Harbor in both scenarios.
Public Infrastructure & Residential Areas	
Municipal Marine Infrastructure	The Town Pier at Frisbee Wharf, Pepperrell Pier, and Harbormaster’s Office are all impacted at Pepperrell Cove. The Government Street Wharf and public Traip Launch are also both impacted in both scenarios.
Admiralty Village	Residential neighborhood with several homes impacted in both scenarios. Area in town of the most water and sewer infrastructure impacted, due to inundation from Spruce Creek and Mill Cove outlets.

Economic Impacts

The economic analysis indicates that over 200 jobs, over \$4 million in labor income, nearly \$7 million in area gross domestic product, and over \$11 million in revenue may be affected in some way by sea level rise and storm surge in Kittery. These numbers do not include impacts associated with the Portsmouth Naval Shipyard, as modeling effects associated with the federal military base is beyond the scope of this report.

Relatively few Kittery businesses are located within the predicted inundation zones. Industries most impacted include restaurants and retail, with approximately ten percent of restaurant employment expected to be impacted.

Property Taxes

Kittery has the second highest 2021 -2022 tax rate (.013) among the study communities. Based on the vulnerability of assessed property valuation, \$1.8 million in property tax revenues are at risk to the 1.6ft scenario. This increases to \$2.4 million at risk to the 3.0ft scenario. This represents 5% and 7% of the town’s total budget, respectively- the lowest impacts proportional to total budget across the six towns.

Infrastructure & Facilities

Roads & Culverts

Kittery has a total of 5.01 miles of road at risk to the 1.6 ft scenario, which increases to 6.52 miles at risk in the 3.0 ft scenario (Table 32). It has the second lowest total impact to roads among the six town region, with only Ogunquit having less. Kittery is the only town to have more private roads at risk than local roads in both scenarios.

Table 32. Miles of Vulnerable Roads in Kittery

Road Class	Miles Vulnerable to SS + 1.6ft SLR Scenario	Miles Vulnerable to SS + 3.0ft SLR Scenario
Local	2.27	2.89
Private	2.37	3.16
Secondary	0.37	0.46
Total	5.01	6.52

According to the Nature Conservancy, Kittery has 12 crossings inundated in the 1.6ft scenario, 32% of Kittery crossings in the dataset. Both ME DOT owned large culverts in Kittery are vulnerable to the 1.6 ft scenario.

Public Infrastructure

Table 33 shows the infrastructure, asset, and zoning data provided to GEI by Kittery. Most infrastructure impacts in Kittery are associated with sewer systems.

- ▶ 20 manholes are at risk to the 1.6ft scenario, while 33 are at risk to the 3.0ft scenario. This represents 3% and 5% of all manholes, respectively.
- ▶ Out of the 21 drainage structures in town, just 3 are vulnerable to the 1.6ft scenario, with 1 additional vulnerable to the 3.0ft scenario.
- ▶ 10% (2,273 ft of 20,819 total ft) of pressure mains are at risk from the 1.6 ft scenario compared with 3% (3,718 ft of 126,705 total ft) of gravity mains. In the 3.0ft scenario 3,179 ft of pressure mains and 5,847 ft of gravity mains are at risk. This is equivalent to 15% of pressure mains and 5% of gravity mains.

Table 33. Infrastructure, Assets, and Zoning Vulnerability Assessment for Kittery (Based on geospatial data provided by the Town)

Infrastructure Type	Vulnerable to SS + 1.6 ft SLR Scenario	Vulnerable to SS + 3.0 ft SLR Scenario	Not vulnerable to 1.6 ft or 3.0 ft Scenarios
Manholes	20	33	636
Drainage Structures	3	4	17
Pressure Mains	2,273 ft	3,179 ft	17,640 ft
Gravity Mains	3,718 ft	5,847 ft	120,858 ft

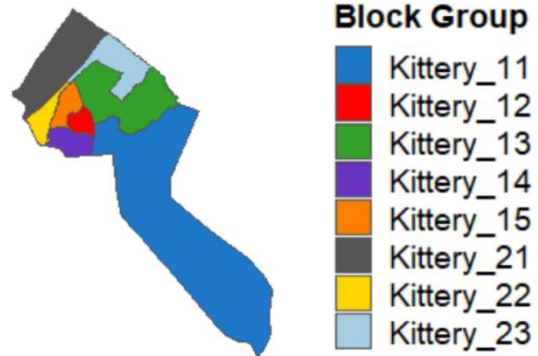
While they are not inundated directly, The Horace Mitchell Primary School and Kittery Police Department may have access issues due to road flooding. Access to the school via Route 103 is cut off a short distance east of the school, and the Kittery Police Department is located about a mile from the inundation over the Route 1 bridge.

Social Vulnerability

Individuals who already have increased social vulnerability will be disproportionately affected by sea level rise and climate change as they have less capacity to prepare for, respond to, and recover from coastal hazard events. The following sections describe the residents at risk under both flooding scenarios, broken down by age, race, and household income.

Age

- ▶ Kittery has the second largest number of people aged 17 or younger impacted in both scenarios.
- ▶ The Kittery_11 block group has the most people at risk over the age of 65 in the 1.6 ft scenario and 3.0 ft scenario.
- ▶ The Kittery_12 block group has the most people at risk under the age of 17 in the 1.6 ft scenario and 3.0 ft scenario.



Race

- ▶ Kittery has the greatest diversity of races impacted in both scenarios among the six towns.
- ▶ The Kittery_14 block group has the greatest number of people belonging to 4 different racial groups at risk in the 1.6 ft scenario and 3.0 ft scenario: white, black, Asian, and two or more races.
- ▶ The 'Kittery_12' block group has the greatest diversity of racial groups at risk in both scenarios, in 6 different groups (white, black, American Indian or Alaska Native, Asian, some other race alone, and two or more races).

Household Income

- ▶ Kittery has the greatest number of households impacted earning an annual income range of less than \$25,000 among the six towns, which is roughly equivalent to the Federal poverty level in 2019 (\$25,750).
- ▶ Kittery also has the greatest number of households impacted earning an annual income range of less than \$25,000 to \$50,000 among the six towns, which is below the US EPA (2021) climate change and social vulnerability threshold for low income and less than the Kittery median household income of \$78,451 (US Census, 2019).
- ▶ The Kittery_11 block group has the greatest number of households at risk making less than \$25,000 in the 1.6 ft scenario and 3.0 ft scenario. This block group also has the most households at risk making more than \$150k in the 1.6 ft scenario and 3.0 ft scenario in town.
- ▶ The 'Kittery_14' block group has the most individuals at risk earning between \$25,000 and \$50,000 in the 1.6 ft scenario and 3.0 ft scenario.

More information about the vulnerability assessment methodology and analysis can be found in the Coastal Vulnerability Assessment – Vulnerability Assessment Results section of the full report.