Manchester-by-the-Sea, Massachusetts Assesses Climate Vulnerability

Manchester-by-the-Sea is a small community on Manchester Harbor north of Boston. As the community is only 10 feet above sea-level, the town recognizes its wastewater treatment facility is at risk from sea level rise. To move beyond risk identification the facility's operators needed to determine the magnitude of its vulnerability to the changing climate. A vulnerability assessment can be an in-depth and daunting task for any size community. However, EPA's Climate Resilience Evaluation and Awareness Tool (CREAT) enabled Manchester-by-the-Sea to assess its region's projected climate risks and its facility's vulnerability to inundation from sea level rise. Using CREAT, the facility was able to evaluate potential climate-related impacts such as projected impacts to source water, receiving waters, and other environmental concerns of its stakeholders. CREAT also facilitated the utility's consideration of potential adaptation strategies for reinforcing the facility in anticipation of projected sea level rise. Recognizing sea level rise and increased precipitation threatens more than just the facility itself, the town applied for and was awarded a Coastal Zone Management Grant. This grant, awarded in December 2014, is helping the town assess climate risk and vulnerability to stormwater management in the city. Together, these vulnerability assessments will help the city select and implement adaptation actions to where they are most needed.

- EPA's Climate Resilience Evaluation and Awareness Tool (CREAT)

How did they do it?	Applicable EPA Tools
Manchester-by-the-Sea Identified a Need to Better Understand Climate Vulnerability • Officials recognized the climate threat to coastal infrastructure and the need to assess vulnerability to sea-level rise, as well as various other climate impacts.	The EPA Coastal Inundation Toolkit can assist utilities in better understanding facility vulnerability by illustrating a range of potential sea level rise and storm surge scenarios. EPA Coastal Inundation Toolkit
Manchester-by-the-Sea Conducted a Vulnerability Assessment to Better Understand Risk from Sea-Level Rise • Manchester-by-the-Sea worked with the USEPA to conduct a vulnerability assessment by using the Climate Resilience Evaluation & Awareness Tool (see below) to determine sea level rise vulnerability and identify potential adaptation strategies. ◦ Climate Resilience Evaluation & Awareness Tool • Utility officials selected the headworks building as a priority for identifying vulnerability and potential adaptation options. The headworks building was selected due to the critical nature of the facility and its location within the 100 and 500 year floodplain.	The Climate Resilience Evaluation and Awareness Tool (CREAT) helps utilities conduct a vulnerability assessment to better understand climate risk. Climate Resilience Evaluation and Awareness Tool (CREAT)

Identified Further Vulnerability Assessment Needs, Particularly for Stormwater Management

- NOAA awarded the city a Coastal Zone Management (CZM) Resilience Grant in December 2014 to evaluate stormwater management capacity under future conditions.
- This study will utilize climate projection scenarios to determine whether the town's culvert and bridge crossings within the Sawmill Brook Watershed will be able to accommodate future precipitation and sea level rise conditions.

EPA's Climate Ready Water Utilities Adaptation Strategies Guide can assist utilities identify in identifying potential next steps to adapt to expected climate vulnerabilities.

Climate Ready Water Utilities Adaptation Strategies Guide

Similar Cases and More Information

Manchester-By-the-Sea is still developing an adaptation plan based on upon their vulnerability assessment. For an example of a Northeastern community that completed a vulnerability assessment and then actively implemented adaptation strategies view the Camden, NJ case. For examples of large scale utility adaptation strategies including facility redesign, retreat, or reinforcement, view the Deer Island, Iowa City, and Blue Plains examples respectively. To see how a larger water utility has adapted, and continues to re-assess vulnerability under the best available science, view the Deer Island case.