

## 12 Resilient Waterfronts and Community Shorelines

### *Target Statement*

By 2050, Hudson River shoreline communities have dramatically reduced their vulnerability to chronic and catastrophic impacts of climate change, while sustaining a healthy river ecosystem. Strong economies and recreational opportunities create vibrant waterfronts; homes, businesses and infrastructure are resilient to variable and extreme conditions and natural areas and waterfront parks slow and store floodwaters. By 2030, all riverfront communities with significant vulnerability to sea level rise, flooding and drought have, with the active participation of residents and businesses, completed a resilience plan, proactively updated municipal law, zoning and building codes and taken steps to reduce their vulnerability, using ecological principles where appropriate.

### *Summary*

The Hudson River estuary is tidally influenced up to the Troy Lock and Dam, 153 miles from the Battery in Manhattan. More than 40% of the shoreline in the study area is considered “engineered” through a wide variety of measures and methods. These engineered shorelines are often, but not always, associated with urban centers, transportation and/or community infrastructure. The proximity of this infrastructure to the waters of the estuary makes them susceptible to sea level rise, storm surge and flooding.

Within the Hudson River CRP study area 21 villages, 41 towns and 10 cities directly front the Hudson River, with a total population of 1.3 million and close to 600,000 jobs (based on 2010 Census data). Approximately 178,000 residents live within ½ mile of the waterfront in about 76,000 units of housing, 3% of which are public housing. Over 105,000 jobs are located within ½ mile of the shoreline. The Hudson River shoreline is also heavily influenced by transportation-related infrastructure, including 12 Metro-North stations and 2 additional Amtrak stations on the eastern shore and a significant freight line along the western shore south of Esopus. Within a ½ mile of the shoreline there are 24 wastewater treatment plants, 10 hospitals, 9 power plants, 6 ports, 7,500 acres of parkland and 68 identified Superfund sites. There are also significant, but unquantified, miles of flood-vulnerable roadway infrastructure. Although the risks, challenges and ramifications of sea level rise, storm surge and flooding are not equal among these areas or types of infrastructure, the potential for disruptive impacts is both real and significant and requires proactive strategies to reduce this risk and improve resilience.

Resilience can be defined as the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to and recover rapidly from disruptions. If the communities of the Hudson are to be thriving places that minimize their impacts on natural resources and strive to reduce their risk to climate change, steps will need to be taken to ensure that they become resilient to drought, rising seas and more frequent and more intense storms. Resilient communities are also more likely to be self-equipped to respond and recover from damaging events and are less reliant on external disaster aid and assistance.

A socially and economically equitable approach to improved policies, practices and activities, rooted in both science and engineering, is necessary to ensure that high and consistent levels of resilience are realized throughout the estuary. This will require not only the issuance of state guidance, but also recognition and adoption of improved policies and practices into



municipal law. State agencies are currently undertaking a vulnerability assessment for their operations and assets, as directed by Governor Cuomo in the 2015 Opportunity Agenda Climate Smart NY initiative. Many communities are also now conducting vulnerability assessments, and the culminating recommendations will need to be implemented in a prioritized way that allows for a variety of strategies including fortification, accommodation and relocation. Many communities are also embracing their waterfronts as key assets; however, current and future visions will need to account for ways to improve both the ecological and resilience values of these dynamic areas. The incorporation of natural or nature-based features and flood-safe infrastructure will be important. Finally, many challenges are likely to be common across many communities while the approach to solutions is likely to vary widely. Platforms to share these varied approaches and lessons learned are likely to spur action and accelerate implementation.

