2022 Newport Hazard Mitigation Plan Update

City of Newport, Rhode Island

PREPARED FOR

City of Newport
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March, 2022

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RESOLUTION NO. XXXX-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF NEWPORT AUTHORIZING THE ADOPTION OF THE 2022 NEWPORT HAZARD MITIGATION PLAN UPDATE

WHEREAS, the City of Newport recognizes exposure to natural hazards that increase the risk to life, property, environment, within our community; and

WHEREAS; pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

WHEREAS, The Disaster Mitigation Act of 2000 (Public Law 106-390) established new requirements for pre- and post- disaster hazard mitigation programs; and

WHEREAS; the 2022 Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Newport from impacts of future hazards and disasters; and

WHEREAS, adoption by the City Council demonstrates their commitment to hazard mitigation and achieving goals outlined in the 2022 Newport Hazard Mitigation Plan Update.

NOW, THEREFORE, BE IT RESOLVED that the City of Newport

1) Adopts in its entirety, the 2022 Newport Hazard Mitigation Plan Update (the "Plan") as the jurisdiction's Natural Hazard Mitigation Plan and resolves to execute the actions identified in the Plan that pertain to this jurisdiction.

2) Will use the adopted and approved portions of the Plan to guide pre- and post-disaster mitigation of the hazards identified.
3) Will coordinate the strategies identified in the Plan with other planning programs and mechanisms under its jurisdictional authority.
4) Will continue its support of the Hazard Mitigation Committee as described within the Plan.
5) Will help to promote and support the mitigation successes of all participants in this Plan.
6) Will incorporate mitigation planning as an integral component of government and partner operations.
7) Will provide an update of the Plan every five years.

PASSED AND ADOPTED on [insert date]

_____

Jeanne-Marie Napolitano, Mayor and Council Chair, City of Newport

ATTEST: _____
Laura Swistak, City Clerk, City of Newport

Resolution

Table of Contents

Appendices

List of Tables

List of Figures

Executive Summary

This 2022 Newport Hazard Mitigation Plan Update ("HMP" or the "Plan") is a product of the Newport Hazard Mitigation Committee (HMC). It has been approved by the Newport City Council, the Rhode Island Emergency Management Agency (RIEMA), and the Federal Emergency Management Agency (FEMA) in accordance with the Disaster Mitigation Act of 2000.

The HMC's overview of past natural hazard occurrences verifies that the City is vulnerable to diverse events including flooding, hurricanes, Nor'easters, high winds, and winter storms. The discussion puts the likelihood of these events into historical perspective and recognizes that although the probability of thunderstorms and lightning events may be higher; the intensity and potential impacts from less likely events such as hurricanes can be far greater.

The risk assessment portion of the plan confirms that the City has much to lose from these events. The identified vulnerabilities (in no particular order) include flood prone drainage systems, streets and infrastructure, bridges, wastewater systems, dams, critical municipal hazard response facilities, communication equipment, dams, populations, businesses, schools, recreation facilities, historic and natural resources.

To address these risks the 2022 HMP put forth a clear mission, a distinct set of goals and over twenty- five specific mitigation actions. The City's hazard mitigation mission is to protect public health and safety and create sustainable economic growth by limiting losses to lives, public and private and private property, and natural resources/systems.

To implement the Plan, important goals must be met. The City's mitigation strategy was created to help protect its citizens, visitors, businesses and property from the effects of various natural hazards.

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1

Introduction

Plan Purpose

The purpose of the 2022 Newport Hazard Mitigation Plan Update (HMP, the Plan) is to set forth guidelines of short-term and long-term actions, which will reduce the actual or potential loss of life or property from natural hazardous events such as hurricanes, Nor'easters, flooding, and high wind. This plan was constructed using input from a variety of municipal and private stakeholders and the general public involved in the planning process. This plan serves as guidance to help the City reduce their losses and vulnerabilities relating to natural hazards.

Hazard Mitigation and its Benefits

Hazard mitigation planning consists of a series of actions taken to identify specific areas that are vulnerable to natural and human-caused hazards within a city and seek to permanently reduce or eliminate the long-term risk to human life and property. It coordinates available resources and identifies community policies, actions, and tools for implementation that will reduce risk and the potential for future losses city-wide. The process of natural hazard mitigation planning sets clear goals, identifies appropriate actions, and produces an effective mitigation strategy that can be updated and revised to keep the plan current. In short, 'it's where we were, where we are and where we're going' in terms of hazard mitigation.

States and communities across the country are slowly, but increasingly, realizing that simply responding to natural disasters, without addressing ways to minimize their potential effect, is no longer an adequate role for government. Striving to prevent unnecessary damage from natural disasters through proactive planning that characterizes the hazard, assesses the community's vulnerability, and designs appropriate land-use policies and building code requirements is a more effective and fiscally sound approach to achieving public safety goals related to natural hazards.

In the past, Federal legislation has provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest federal legislation to improve this planning process. It reinforces the importance of natural hazard mitigation planning and establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP) or other annual funding opportunities. Section 322 of the DMA specifically addresses mitigation planning at the state and municipal levels of government. It identifies new requirements that allow HMGP funds to be used for planning activities. As a result of this Act, states and communities must now have a FEMA-approved natural hazard mitigation plan in place prior to receiving post-disaster HMGP funds. In the event of a natural disaster, municipalities that do not have an approved natural hazard mitigation plan will not be eligible to receive post-disaster HMGP funding.

A **natural hazard** is defined as an extreme natural event. **Natural disasters** occur when these extreme natural events come into contact with people and property.

Natural hazard mitigation is any sustained action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of natural hazards.

Natural hazard mitigation planning is a process undertaken by a community to analyze the risk from natural disasters, coordinate available resources, and implement actions to minimize the damage to property, and injury or loss of life of its citizens before disaster occurs.

More than twenty years later, some communities are updating their Plan for the fourth or fifth time. Elements of the hazard mitigation plans are being integrated into other planning elements such as comprehensive or economic development plans. Current Plans also consider the effects of climate change on the natural, social, and built infrastructure.

The purpose of this Plan is to recommend actions and policies for the City of Newport to minimize the social and economic loss of hardships resulting from natural hazards. These hardships include the loss of life, destruction of property, damage to critical infrastructure and critical facilities, loss/interruption of jobs, loss/damage to businesses, and loss/damage to significant historical structures. To protect present and future structures, infrastructure and assets and to minimize the social and economic hardships, the City of Newport implements the following general actions and policies:

- Revisions to the City's Comprehensive Land Use Plan with 2021 Amendment (CLUP)
- Revisions to the City's Capital Improvement Plan
- Incorporation of hazard mitigation into the permit review process
- Local building code review
- Coastal Resource Management Council's (CRMC) Critical Hazards Assessment

The City of Newport also recognizes the important benefits associated with hazard mitigation, its interaction with municipal land use and infrastructure planning, and the need for a comprehensive planning approach, which accommodates these interdependencies. The City's Comprehensive Land Use Plan (2017) with 2021 Amendment (CLUP) addresses land use, economic development, housing, community services and facilities, transportation and circulation, open space and recreation, natural resources, historical and cultural resources, energy, water; and natural hazards and climate change. While the entire HMP will not be formally incorporated into the revised CLUP, certain, applicable

mitigation actions will be incorporated during the update process. The City recognizes coordination between the HMP and the CLUP to be of benefit because it will ensure a unified planning approach into the future and ensure that risk reduction remains a critical element of municipal planning. This is also in alignment with current goals of Rhode Island Statewide Planning.

A second benefit of hazard mitigation is endorsing a proactive planning approach focused on sustainability, whereby the City of Newport could minimize the social and economic hardships that have resulted from the occurrence of previous natural disasters. These social and economic hardships include: the loss of life/injuries, destruction of property, interruption of jobs, damage to businesses, and the loss of historically significant structures and facilities. This proactive planning approach would look for ways to combine policies, programs, and design solutions to bring about multiple objectives and seek to address and integrate social and environmental concerns.

A third benefit of hazard mitigation allows for a careful selection of risk reduction actions through an enhanced collaborative network of stakeholders whose interests might be affected by hazard losses. Working side by side with this broad range of stakeholders can forge partnerships that pool skills, expertise, and experience to achieve a common goal. Proceeding in this manner will help the City ensure that the most appropriate and equitable mitigation projects are undertaken.

Lastly, the participation in a hazard mitigation planning process establishes funding priorities. The formal adoption and implementation of this plan will allow the City of Newport and its residents to become more involved in several programs offered by the Federal Emergency Management Agency (FEMA) including: the Community Rating System Program (CRS); the Building Resilient Infrastructure and Communities (BRIC) program[1]; the Flood Mitigation Assistance (FMA) Program; and the Hazard Mitigation Grant Program (HMGP). Money spent today on preventative measures can significantly reduce the cost of post-disaster cleanup tomorrow.

Mission Statement and Goals:

The City of Newport will protect public health and safety and create sustainable economic growth by limiting losses to lives, public and private property, and natural resources/systems.

Goals

This mitigation strategy is adopted by the City of Newport to present actions which help protect its citizens, visitors, businesses and property from the effects of various natural hazards. It is the intent of the City of Newport to:

1. Protect public health, safety and welfare; minimize social dislocation and distress
2. Reduce property damages caused by hazard impact
3. Reduce economic loss and minimize disruption to local business
4. Protect the ongoing operations of critical facilities
5. Expedite recovery disaster mitigation efforts during the recovery phase

[1] The BRIC program has replaced the Pre-Disaster Mitigation (PDM).

6. Promote non-structural flood and coastal erosion measures to reduce the risk of damage to the surrounding properties and environmental habitats

Background

Newport is a city on Aquidneck Island in Newport County, Rhode Island, United States, about 30 miles (48 km) south of Providence.

It is known as a New England summer resort and is famous for the grand Newport Mansions. In addition to the thriving tourist industry which supports about 3.5 million visitors a year, Newport is the home of Salve Regina University, which hosts approximately 2,500 students during the school year. Newport also hosts a naval base which includes the Naval Undersea Warfare Center, the United States Naval War College, and a major United States Navy training center.

Figure 1: Locus Map

Newport is located at 41°29'17"N, 71°18'45"W. It is the largest municipality (only city) on Aquidneck Island in Narragansett Bay. According to the United States Census Bureau, the city has a total area of 11 .5 square miles, of which, 7.9 square miles of it is island and 3.5 square miles of inland water. The Newport Claiborne Pell Bridge, the longest suspension bridge in New England, connects Newport to neighboring Conanicut Island community of Jamestown across the East Passage of the Narragansett Bay.

Newport has a population of just over 25,000 according to the 2020 census making it one of the more populated communities in Rhode Island. That puts it at #14 of the 39 cities and towns in Rhode Island for overall population count.

"Mostly developed prior to the inception of zoning and the invention of the automobile, Newport's core matured into a compact city with dense neighborhoods and comparatively narrow streets. The exception is the city's south end, where soils and other constraints have greatly limited development, and the "mansion" area where large tracts with grand "cottages" are the primary type of land use.

"Newport's current land uses and their patterns evolved from an early period where commerce was oriented around the harbor and a system of principal roads, which followed the shoreline and radiated out from the harbor. Being the southernmost community on a small island greatly limited

the extent of rail and highway infrastructure. This limited the scale of industrial and manufacturing uses in Newport, with the notable exception of shipbuilding and marine oriented crafts."[2]

History

Demographics[3]

The City of Newport is a residential inland community with a population of 25,163 according to the 2020 census. Newport's population on average is slightly younger than the State average of 40.1 years. The average United States average population is 38.5 years of age.

Approximately 18% of the population is 65 and older. The City of Newport is predominantly white (84% of the population). Hispanic or Latino make up 9.8%, Black or African American make up 7.1%, and Asians make up 2% of the population according to the 2020 Census. A language other than English is spoken in 13% of the homes.

The 2019 American Community Survey 5-Year Estimates reported an estimate of 12,991 housing units. Approximately 54% of the housing units were built before 1939. Approximately 43% of the housing units are single family detached or attached (condo). The remaining 56% of the housing units are considered multi-family. The greatest concentration of residential housing units is located in the Historic Hill and Downtown areas of Newport (west of Bellevue, east of America's Cup, and north of Memorial Boulevard).

Economic Conditions

"Newport's economy remains grounded in tourism, the United States Navy, health and human services and academia. While these sectors provide a sound foundation, in recent years employment growth has been stagnant. Adding to these challenges is the prospect of sea level rise (SLR) and its impact on one of the city's primary concentrations of economic activity, employment and tax base."[4]

Newport's strength in the tourism industry is evident, this sector represents nearly 21% in the City of Newport. The strength of the tourism industry is important to Newport as it directly relates to increased revenues through sales tax from outside sources. The City of Newport also employs a larger percentage of their workforce in the Professional, Scientific, and Management sector. This sector comprises 13.3% of Newport's workforce. The largest single employer is the United Sates Navy, Naval Station Newport. In 2014, over 8,000 people were employed at the naval station, 78% of which were employed in Science, Technology, Engineering and Math (STEM) occupations. [5]

An estimated 81% of the City's municipal revenue comes from real estate taxes. The fact that Newport primarily relies on property tax revenues to finance City services and capital improvements poses a question of equity when considering the impact on infrastructure and services due to the

[2] City of Newport Comprehensive Land Use Plan 2017, amended 2021

[3] United States Census data, 2019 American Community Survey, https://data.census.gov/cedsci/table?q=Newport%20city,%20Newport%20County,%20Rhode%20Island. The 2019 data was used because it provides additional demographic detail that the 2020 census survey did not.

[4] City of Newport Comprehensive Land Use Plan 2017, amended 2021

[5] City of Newport Comprehensive Land Use Plan 2017, amended 2021

large, transient tourist population. As seasonal visitors do not share a proportionate percentage in the costs, they must be borne largely by Newport's property owners.[6]

Annually, about 43% of the 12,991 housing units in Newport are owner-occupied (compared to 60% for the state), and median family income ($67,102) is lower than the statewide median family income of $75,655. Over 14% percent of the population has income below the poverty level.

Table 1 Demographic Changes

	2010	2019	% Change
Housing Units (total)	13,933	12,991	7.3%
Population	24,957	24,663	1.2%
Owner-occupied housing units	5,111	5,586	-8.5%

Government

The City of Newport, by charter, is governed by a Council-Manager form of government. Council members are elected every two years, four members serving at large, and three members serving from a specific ward of the city. The Council is empowered to enact local legislation, adopt budgets, and determine policy. The Council chooses one of its members who was elected at large as Chair and another of its members as Vice-Chair (Newport RI City Charter). The Chair receives the title of Mayor and presides at all meetings of the Council and is recognized as the official head of the city for all ceremonial purposes. The mayor signs and executes all contracts on behalf of the city, makes all proclamations in the name of the city, and is the executive head of the city to the extent required by this charter. Under the direction of the mayor, the Newport Police Department is designated as headquarters for emergency management response.

The City Manager is the Chief Administrative Officer and serves at the pleasure of the Council and is authorized to execute the laws and administer the government of the city. The Manager is charged with specific duties in connection with the administration of the city. Under the provisions of the City of Newport's charter, the Manager is responsible for the appointment of department heads within the city administration. Eight departments report directly to the City Manager.

City Boards and Commissions

City governance receives assistance from a large number of residents of the city who make a substantial commitment of time, talent, and energy to serve on the City of Newport's many boards and commissions. Members of these commissions are appointed by the Council.

The following boards are active in Newport[7]:

- Planning Board
- Zoning Board of Review
- Tax Appeals Board

[6] Fiscal Year 2021 Adopted Budget, and City of Newport Comprehensive Land Use Plan 2017, amended 2021

[7] As per the Newport website February, 2022.

The following commissions are active in Newport:

- Beach Commission
- Cliff Walk Commission
- Energy and Environment Commission
- Historic Cemetery Advisory Commission
- Historic District Commission
- Tree and Open Space Commission
- Waterfront Commission

The City of Newport is also an active member of the Aquidneck Island Planning Commission.

Records Management and Storage

The City of Newport has implemented a series of records storage procedures in recent years, which address both hard copy and electronic filing systems on and off site. Onsite hard copy storage includes Land Evidence and Probate records which continue to be housed on the ground floor of City Hall. Three offsite storage units for Canvassing, Assessors, and MIS hard copy records are located at Middletown Self Storage on Aquidneck Avenue. The City has consolidated all Information Technology services as party of an effort to provide secure onsite and offsite data backup of all City Departments. All departments have electronic data recovery storage of server information at the NaviSite Data Center in Andover, Massachusetts.

Land Use Patterns

"Newport's land use development patterns are well established. Mostly developed prior to the inception of zoning and the invention of the automobile, Newport's core matured into a compact city with dense neighborhoods and comparatively narrow streets. The exception is the city's south end, where soils and other constraints have greatly limited development, and the "mansion" area where large tracts with grand "cottages" are the primary type of land use.

"Newport's current land uses and their patterns evolved from an early period where commerce was oriented around the harbor and a system of principal roads, which followed the shoreline and radiated out from the harbor. Being the southernmost community on a small island greatly limited the extent of rail and highway infrastructure. This limited the scale of industrial and manufacturing uses in Newport, with the notable exception of shipbuilding and marine oriented crafts.

"Improvements in road access, the U.S. Navy decision to locate in Newport's north end and the development of gilded age "cottage" communities, all led to increased development which ultimately took the form of smaller detached homes on a conventional street grid. Major streets developed as corridors of mixed use, which largely continues to this day.

"In very general terms, land use in Newport is divided into three main areas. North to south, these include the following: Newport's North End, The Central Corridor, Newport Neck"[8].

[8] City of Newport Comprehensive Land Use Plan 2017, amended 2021

The City is 90% built out, capacity of new development on vacant land is limited. New development will likely occur as redevelopment. The primary land use pattern is characterized as residential (54%). The next largest land use is dedicated to Open Space/Recreation (18%).

Roads and Bridges

There are about 93.5 miles of roadway in Newport. Of those, 30% are minor arterials and collector roads. Collector roads handle low to moderate volume traffic, providing vehicular access to residential areas. Local roads connect to residential neighborhoods and provide access primarily for single and multi-family family homes to connect to the collector and arterial road system.

"Principal Arterials are important mobility corridors or centers of the city, which typically form major commercial corridors. These streets are usually state routes with Rhode Island's Route 138 serving as Newport's primary entrance and exit. State Routes 138A (America's Cup Avenue) and 238 (Farewell Street) are extensions of State Route 138. America's Cup Avenue runs right through the heart of downtown and eventually changes to Memorial Boulevard where it intersects with Thames Street. Memorial Boulevard then extends east to Easton's Beach and eventually into the Town of Middletown. Admiral Kalbfus Road runs east-west from Broadway and the Middletown under the Pell Bridge ramp to the Connell Highway rotary. The volume and speed characteristic of Admiral Kalbfus currently creates a divide through Newport's North End communities, disconnecting a large portion of Newport's residents from the rest of the City. All three state routes are maintained by the Rhode Island Department of Transportation (RIDOT). Broadway and JT Connell Highway are two other principal arterials, which move people throughout the city quickly and connect to the Town of Middletown"[9].

The Claiborne Pell Bridge (aka Newport Bridge) travels over Narragansett Bay, connecting Jamestown and the northwest western border of Newport.

[9] City of Newport Comprehensive Land Use Plan 2017, amended 2021

Dams

In 2020 the Department of Environmental Management (DEM) classified the Easton Pond South Dam located on the Newport/Middletown border as a high hazard dam (see inset to the right). The City of Newport has been working on improving the conditions at the dam.

High Hazard Dam – where failure or misoperation will result in probable loss of human life

Significant Hazard Dam – where failure or misoperation will result in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public's health, safety or welfare.

Low Hazard Dam – where failure or misoperation will result in no probable loss of human life and low economic losses.

Utilities

The Water Pollution Control Division is responsible for providing wastewater treatment for the residents of Newport. In addition, the division provides wastewater treatment to the Town of Middletown and Naval Station Newport, as well as flow from privately owned and operated sanitary collection systems in the Newport Neck area. The Water Pollution Control Division also manages the storm drainage system within the city.

The sanitary sewer collection system and wastewater treatment facility are operated and maintained in accordance with a service contract with Veolia Water Services, LLC. The City of Newport and Veolia Water Services, LLC (formerly United, formerly Suez) are issued a Rhode Island Pollutant Discharge Elimination System Permit # RI0100293 to operate the wastewater facilities. The city owns and operates approximately 97 miles of gravity and force main sewer collection pipe delivering domestic, commercial, and industrial waste to a water pollution control plant (WPCP) on JT Connell Highway. In addition to the sewer collection pipes, the city also owns and operates 16 sanitary pump stations to assist in conveying flows to the Newport Water Pollution Control Division (WPCD) for treatment.

The Newport Water Division operates and manages the source water reservoirs, treatment plants, storage tanks and drinking water distribution system throughout Newport, the Town of Middletown and a small portion of the Town of Portsmouth. The Water Division also sells water to the Portsmouth Water and Fire District as well as Naval Station Newport.

National Grid is responsible for delivering natural gas and electricity throughout Newport. While regional gas and electric utilities are regularly maintained by the entities that own them, the City's public utility infrastructure is maintained as needed.

The Newport Department of Public Services' Clean City Program through a contract with Waste Management Inc. provides services for the curbside collection of residential refuse and yard waste. The City of Newport also coordinates a mandatory recycling program in cooperation with Rhode Island Resource Recovery.

The City of Newport's communication equipment is located throughout the city. Private cellular towers are also located throughout the city.

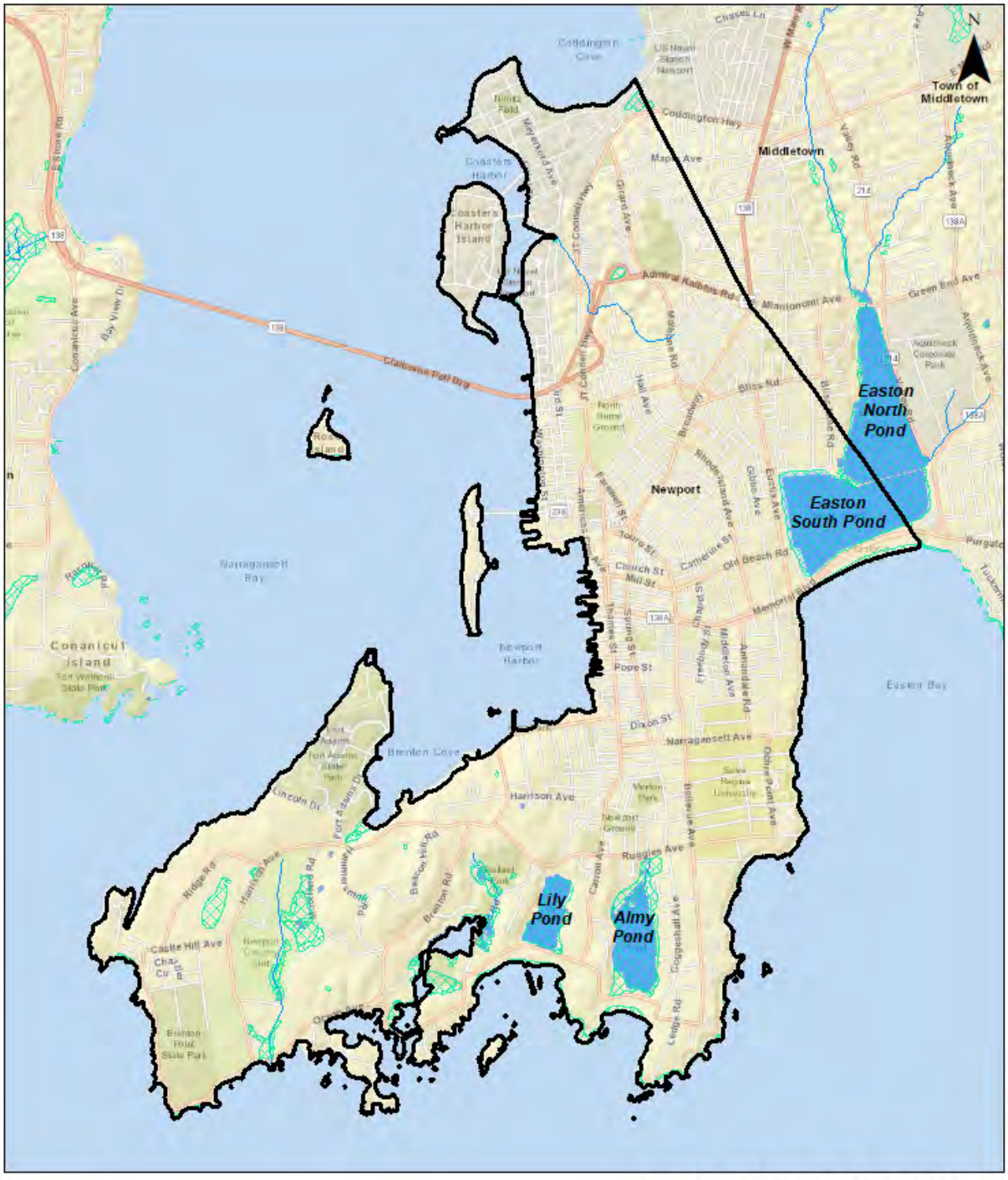
Water Resources

Aquidneck Island is part of the Narragansett Bay Watershed in the Narragansett Subbasin. The City of Newport is located within portions of two subareas within the Narragansett Watershed; the Lower East Passage Subwatershed and the Coastal Aquidneck Subwatershed.

Newport's principal water bodies are limited to coastal ponds, including Easton Pond (North and South), Lily Pond and Almy Pond. These are all vulnerable to impacts associated with sea level rise and coastal storm surge, as well as eutrophication, sedimentation, and invasive species.

Newport's drinking water supply comes from nine different surface reservoirs throughout Rhode Island. Seven of these are located on Aquidneck Island and the other two are located in Tiverton and Little Compton.

Figure 2: Water Resources



Open Space

Open space and recreation account for the third largest land use category (15%) in Newport. The open spaces in Newport provide recreational, social, cultural, aesthetic, economic, environmental, and community benefits to residents and visitors.

"Newport's diverse open spaces and recreational sites include City parks, State parks, conservation land, beaches, squares, civic spaces, the Harbor Walk, the Cliff Walk, driftways, boulevards, cemeteries, and privately managed public open spaces. The wide variety of open spaces is one of the defining characteristics of Newport, well known for its scenic views.

"Situated at the southern end of Aquidneck Island, Newport has views of the Atlantic Ocean on three of its four borders. Two of the significant viewsheds along the city's coastline are the Cliff Walk and Ocean Drive. The Cliff Walk, totaling 3.5 miles, extends along Newport's southeastern coastline, taking in ocean views as well as views of the city's famous Gilded Age mansions. Ocean Drive provides unforgettable views of Newport's estates, the Atlantic Ocean, the City's unique rocky coastline, and inland estuaries. Scenic water views are also found along the Harbor Walk, which is a little over five miles long and winds through Newport's Historic District.

"As large portions of the city have been developed, there is very limited forest cover throughout Newport. In the northern part of the city, forest cover is mostly limited to portions of Miantonomi Memorial Park. There is also limited forest cover located south of the park, just west of Malbone Road and south of Admiral Kalbfus Road."[10]

Cultural and Historic Resources

The urban character reflects distinctive periods in Newport's historical and cultural development. The variety and quality of architectural styles distinguishes Newport as a model for preservation efforts. From the country's largest collection of colonial era wooden homes, to the summer estates of the wealthy industrialist, these structures reflect our history and support an important tourism economy. There are currently 968 historic properties located in the floodplain. Impending sea level rise and climate change will impact Newport's historic and cultural resources going forward.

Newport's inventory of historic and natural/environmental resources is quite extensive. One potential threat is occurrence natural events such as flooding, hurricanes, Nor'easters, as well as the negative effects of climate change.

The City of Newport has the following national listings[11]:

- 56 properties listed on the National Register of Historic Places
  - 20 of which are considered National Historic Landmarks
- 5 areas are listed on the National Register of Historic Places Districts

[10] City of Newport Comprehensive Land Use Plan 2017, amended 2021

[11] National Register of Historic Places: The National Register is the official Federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture.

National Historic Landmark District: National Historic Landmarks are buildings, sites, districts, structures, and objects that have been determined by the Secretary of the Interior to be nationally significant in American history and culture. National Historic Landmarks are a separate designation, but upon designation, NHLs are listed in the National Register of Historic Places if not already listed.

› 5 areas are listed on the National Historic Landmark District

Development Trends Since the 2016 Plan

The City of Newport is 90% built out. Much of the recent land development has focused on redevelopment projects and infill development. The north end commercial area of the city has the largest geographic area for potential future development. This area has been the focus of recent infrastructure investment with the Pell Bridge Ramp Realignment project and the focus of economic diversification efforts with the creation and incorporation of the North End Urban Plan. The low-lying parcels in this area are subjected to storm water inundation and coastal flooding.

2

Planning Process

Overview

The City of Newport initiated this most recent hazard mitigation planning effort in 2021 at the recommendation of the Director of Planning and Economic Development and the City Planner. This Newport Hazard Mitigation Plan Update is the result of a dedicated group of individuals working for nine months identifying natural hazards and proposing ways to improve Newport's resiliency.

Newport Hazard Mitigation Committee

This updated Newport Hazard Mitigation Plan (HMP) is a product of the Newport Hazard Mitigation Committee (HMC). The 2021/2022 Committee members include:

- William Boardman, City Engineer
- Theresa Crean, URI CRC (left in 2022)
- Brian Dugan, Fire Department (retired in 2021)*
- Humphrey Donnelly IV, Fire Department (started 2022)*
- Julia Forgue, Utilities (left in 2021)*
- Peter Friedrichs, City Planner (left in August 2021)
- Richard Haggis, Planning Board Member*
- William Hanley, Building Official (retired in 2021)
- Ted Isabella, Building Official (started 2022)
- Kevin Michaud, Planning Board Member*
- Jared Mitchell, Newport GIS
- Cornelia Mueller, Naval Station Newport
- Joseph Nicholson, City Manager*
- Christine O'Grady City Planner (started 2021 and left 2022)

- Patricia Reynolds, Director of Planning and Economic Development
- William Riccio, Public Services
- Rob Shultz, Utilities (started July 2021)
- Gary Silva, Police Department*
- Rebecca Trethen, Planning Intern (left 2021)
- Lynne Tungett, Chamber Rep*

* denotes Newport resident.

The Planning Process

This 2022 HMP update is the result of a 7-step process that was initiated in March 2021 with the establishment of the HMC. Membership of the HMC consisted of City staff and positions that participated in the development of the previous Hazard Mitigation Plan completed in 2016, as well as identified stakeholders, by invitation from the Planning Department. The City hired a consultant to assist with this planning effort.

Step two started the plan development process and included the first meeting of the HMC on March 28, 2021. The HMC met virtually every month on Zoom.

The City's previous plan, dated 2016, was adopted in January 2017, so the first meeting focused on re-ranking hazards and discussing the process for updating the plan. At this initial meeting, the group reviewed a set of questions to be included in an online public survey. The purpose of the survey was to capture the local residents' perception of natural hazards.

The link to the survey was widely distributed on social media and on the City's website. Over 140 people responded to the survey. See Appendix A for survey results.

Step three began with the HMC meeting on April 8, 2021. After reviewing the hazards of concerns and survey results, the HMC identified Newport's critical infrastructure and community assets. Fourteen areas of vulnerability were identified: flood prone drainage systems/streets, or infrastructure; bridges; wastewater; water supply; electric utilities; public communication equipment; dams; critical municipal hazard response facilities; populations; businesses; schools; natural resources; recreational facilities; and historic resources.

During this early phase, the City's consultant reviewed the existing Comprehensive Land Use Plan, local ordinances, and gathered information on current infrastructure projects going on within the city.

Current municipal capabilities were discussed at the meeting on May 6, 2021. Many different departments, committees, and programs already engage in activities that help Newport become more resilient to a variety of hazards. It is important to highlight these capabilities and show how they support the City's hazard mitigation efforts.

Step four was creating an updated list of mitigation actions to reduce the impact to the identified vulnerable areas. At the May 6, 2021 meeting, the HMC reviewed goals and mitigation items that were proposed in the 2016 plan. Status updates were given for all the

previous actions. The incomplete actions that were still important were rolled into the list of actions for this 2021 plan update. The HMC also began to brainstorm new mitigation actions at this meeting.

Step five was conducted during the June 10, and July 22, 2021 meetings where the group continued to with proposing new actions, establishing action timelines, costs, and identifying responsible parties.

Step six focused on the prioritization of the mitigation actions. This occurred during the August 19, 2021 meeting. After this meeting the consultant finished the draft of the plan for committee review.

Step seven furthered the public input and review process with the Newport City Council, and the general public for review and comment. The plan was posted on the City's website, Facebook for public review. The Newport Hazard Mitigation Plan was also emailed to Town Planners in the neighboring towns of Jamestown, Middletown, and nearby Portsmouth for their review and comments. No comments were received.

Table 2 below provides a summary of the Committee's meeting dates and the activities that they conducted:

Table 2 Hazard Mitigation Committee (HMC) Meetings

Date	Meeting Summary
03/28/2021	› Kick off meeting with new contractor, VHB. HMC discussed the plan purpose and hazards of concern. Reviewed survey questions.
04/08/2021	› The HMC reviewed the hazards of concern and listed critical infrastructure and community assets.
05/01/2021	› Natural Hazards survey posted online.
06/10/2021	› Review of community assets and discussion of current capabilities. › Review status of 2016 actions.
07/22/2021	› Drafted mitigation actions.
08/19/2021	› Prioritization of mitigation actions.
09/03/2021	› Sent to City Planner for review and additional information.
12/29/2021	› Distributed to HMC for review.
	› Posted for public comment and distributed to City Council and neighboring communities.
	› Delivered to Rhode Island Emergency Management Agency for Review.
	› Delivered to FEMA for Approval.
	› Adopted by the City Council.

Public Input

This Newport Hazard Mitigation Plan Update benefits from various distinct types of public input strategies that were utilized by the HMC during the drafting process and prior to its adoption by the City Council. Public input for the updated Newport Hazard Mitigation Plan was primarily collected through a public survey, public meetings and an invitation to comment.

Early in the planning process, the HMC promoted and distributed a "Hazard Perceptions" survey online. The purpose of the anonymous survey was to hear from residents the hazards and neighborhoods they are most concerned about. Over 140 individuals participated in the survey. Not surprisingly, most were concerned about Hurricanes/Tropical Storms/Nor'easters, winter storms, high winds, and street flooding from heavy rain. The survey also provided the HMC with a list of problematic areas that are susceptible to flooding. The HMC used the input from the survey to focus their mitigation planning efforts.

The 2021/2022 HMC included city residents and local employees. The HMC's roles focused on reviewing the content of the risk assessment matrix to ensure proper classification of problems and estimates of potential impacts; formulation of mitigation actions and sequencing of primary tasks; and identification of feasible implementation methods and schedules. Their comments were incorporated into the final 2022 Newport Hazard Mitigation Plan Update.

Prior to public release of the 2022 HMP, the HMC drafted the plan through a series of committee meetings. While these meetings did not rise to the level of public hearings, they were posted on the Secretary of State's website and were open to the public. Local media and businesses did occasionally attend when invited.

Another public input strategy was geared toward the general public as opposed to specific stakeholders. During the draft review portion of the plan development, an electronic copy of the draft 2022 HMP was posted to the City's website. The public was informed of both the webpage posting and the public hearing. See Appendix B. They were encouraged to review the document, comment on the HMP and attend the virtual meeting. Notice of the public hearing was also posted as an agenda item on the City's website in accordance with state law. During the public review period, a few comments were received suggesting ways to make the city and residents better prepared to withstand storms. On XXX, the City Council held a discussion on the HMP as part of their regular public meeting. At the City Council meeting. Council members did not request any edits to the plan but they did entertain a discussion about mitigation actions and future grant funding.

Review and comments from the Federal Emergency Management Agency and the Rhode Island Emergency Management Agency were also incorporated prior to adoption by the City Council.

Before the HMC began meeting regularly, the City recently updated their Comprehensive Land Use Plan which includes discussions on floodplains, resource protection districts, and development trends. Members of the HMC are involved in the Comprehensive Land Use Plan update and will be incorporating elements of this document into the other plan.

3

Natural Hazards

Hazards of Concern

The Rhode Island 2018 State of Rhode Island State Hazard Mitigation Plan Update Draft and Newport 2016 Natural Hazard Mitigation Plan were used as a starting point for identifying hazards that pose the largest threat to the City. The following table summarizes the hazards identified by the Newport Hazard Mitigation Committee (HMC).

Table 3 Hazards Identified by the Newport Hazard Mitigation Committee

Natural Hazards Identified by the State	Identified by the Hazard Mitigation Committee	Notes
Severe Winter Weather		
Ice Storm	✓	
Snow	✓	
Flood		
Riverine (streams and rivers)	✓	
Coastal	✓	
Flash	✓	
Urban/Street	✓	
High Wind	✓	
Extreme Heat	✓	
Hurricane and Tropical Storms		
Nor'easter	✓	
Storm Surge	✓	
Extreme Cold	✓	
Thunderstorm	✓	
Hail	✓	
Lightning	✓	
Dam Failure	✓	

Table 3 Hazards Identified by the Newport Hazard Mitigation Committee

Natural Hazards Identified by the State	Identified by the Hazard Mitigation Committee	Notes
Fire		
Urban	–	Not covered by this natural hazard plan.
Wildfire/Brushfire	✓	
Sea Level Rise	✓	
Infectious Disease	–	Not covered by this natural hazard plan.
Drought	✓	
Earthquake	✓	
Tornado	✓	
Human-Caused Hazards		
Cyber Security	–	Not covered by this natural hazard plan.
Chemical Incident	–	Not covered by this natural hazard plan.
Terrorism	–	Not covered by this natural hazard plan.
Biological Incident	–	Not covered by this natural hazard plan.
Radiological Incident	–	Not covered by this natural hazard plan.
Civil Unrest	–	Not covered by this natural hazard plan.
Technological Hazards		
Infrastructure Failure	–	Not covered by this natural hazard plan.

During the beginning phases of the planning process, the HMC participated in an exercise that captured the frequency of various hazards, their potential damage extent, and their impacts (i.e. to populations, infrastructure, natural environment, etc.). The following scales were used during the analysis:

Probability of Future Occurrence	
Highly likely:	Near 100% probability within the next year;
Likely:	Between 10% and 100% probability within the next year or at least one chance in next 10 years;
Possible:	Between 1% and 10% probability within the next year or at least one chance in next 100 years;
Unlikely:	Less than 1% probability in next 100 years.
Damage Extent	
Low:	Some local property damage not city wide, minor injuries/ loss of life
Medium:	50% of property could be damaged and possible injuries/ loss of life

High:	Major town wide property damage, injuries and loss of life.
Level of Concern/Risk Rank	
Developed by the HMC to rank the various hazards based on frequency and damage potential.	
Low:	Not expected to occur with any frequency, damages will be limited.
Medium:	Will occur within the next 10 years but the City has resources to reduce risks.
High:	Expected to occur within the next 5 years and is a major concern for the city. City wide impacts.

Based on a combination of probability of future occurrence, damage extent and impacts, the team assigned each hazard a Level of Concern. The table below summarizes the hazards of concern for the City of Newport, ranked from a high concern to low concern.

Table 4 Hazards Ranked

Hazard	Level of Concern/Risk Rank
Nor'easters and Hurricanes	High
Flooding (Street and Riverine)	High
Coastal Flooding	Medium
High Wind	Medium
Coastal Erosion	Medium
Winter Storms and Ice	Medium
Drought	Medium
Heat Wave	Medium Low
Extreme Cold	Medium Low
Thunder/Lightning	Low
Microburst	Low
Tornadoes	Low
Brushfires	Low
Earthquakes	Low
Dam Failures	Low
Landslides	Unlikely

In this Newport Hazard Mitigation Plan Update, climate change is treated as an ongoing amplifier to the identified natural hazards, not profiled as an independent hazard. "Extreme weather events have become more frequent during the past half-century, and this trend is projected to continue.[12] For instance, more frequent intense precipitation events may translate into more frequent flooding episodes. The National Climate Assessment and Development Committee has documented that the average temperature across the United States has increased 1.5°F since 1895, with the majority of the increase since 1980. Weather events have and will continue to become more intense and frequent and will result in health and livelihood related impacts such as water supply, agriculture, transportation, and energy. The impact of dynamic storm events includes, but is not limited to, more frequent and

12 IPCC, 2012 - Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (Eds.) Available from Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU ENGLAND, 582 pp.

intense heat waves, increases in ocean and freshwater temperatures, frost-free-days, heavy downpours, floods, sea level rising, droughts, and wildfires."[13]

Potential climate change impacts will be mentioned for each hazard.

The following subsections are organized by the level of risk as identified in Table 4 Hazards Ranked.

Nor'easters

Description

A strong low-pressure system along the Mid-Atlantic and New England can form over land or over coastal waters. The storm radius is often as large as 1,000 miles, and the horizontal storm speed is about 25 miles per hour, traveling up the eastern United States coast. Sustained wind speeds of 10-40 MPH are common during a nor'easter, with short term wind speeds gusting up to 70 MPH. Typically a winter weather event, Nor'easters are known to produce heavy snow, rain and heavy waves along the coast. Unlike hurricanes and tropical storms, Nor'easters can sit offshore, wreaking damage for days.

Also called East Coast Winter Storms, Nor'easters are characterized by:

- A closed circulation.
- Located within the quadrilateral bounded at 45N by 65W and 70W, and at 30N by 85W and 75W.
- Show a general movement from the south-southwest to the north-northeast.
- Contain winds greater than 23 mph.
- The above conditions must persist for at least a 12-hour period[14].

The magnitude or severity of a severe winter storm or Nor'easter depends on several factors including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, and time of occurrence during the day (e.g., weekday versus weekend), and season.

The extent of a severe winter storm (including Nor'easters that produce snow) can be classified by meteorological measurements and by evaluating its combined impacts. For measuring wind effects, the Beaufort Wind Scale is a system that relates wind speed to observed conditions at sea or on land (See Figure 5). The snow impact of a Nor'easter can be measured using NOAA's Regional Snowfall Index (See the section *Winter Storms*).

Location

Newport's close proximity to the Atlantic Ocean renders it particularly susceptible to Nor'easters and the resulting damages and loss of human life and property.

13 National Climate Assessment and Development Advisory Committee (NCADAC) January 2013 Draft Climate Assessment Report. http://ncadac.globalchange.gov/

14 Hersher, et al. An East Coast Winter Storm Climatology. Northeast Regional Climate Center, Cornell University, Ithaca, NY, 2001.

Probability of Future Occurrence

Highly Likely.

Extent (Event Magnitude)

On average, Newport experiences or is threatened by a Nor'easter every year or two.

Impact and Damage Extent

Most damage in Newport would be to utilities, roads, stormwater infrastructure, personal property, trees, and snow loads on roofs. Expected damages are similar to those from a hurricane (see below). The Blizzard of 1978 was the largest Nor'easter on record. Many people in Rhode Island were without heat and electricity for over a week.

Climate Change Impacts

Similar to hurricanes, changes in air and water temperatures may lead to stronger Nor'easters along the Atlantic Ocean. Newport should expect stronger and more frequent severe storms.

History

Table 5 Nor'easter History[15]

Date	Comments
02/11/1994	Major Nor'easter in the region. School closed by noon, business and highway travel disrupted.
02/18/1998	Heavy rainfall, isolated flash floods, and thunderstorms to mainly central and southern Rhode Island. 2.16 inches of rain at T.F. Green Airport in nearby Warwick during a 12-hour period. In neighboring Middletown, the Maidford River rose out of its banks flooding a part of a neighborhood. Reports of minor street flooding in Newport.
02/23/1998	Second Nor'easter to affect region in less than one week brought heavy rainfall and strong winds. Winds of 47 mph reported in Newport.
03/21/1998	Spring nor'easter brought a mixture of snow, sleet, and rain to Rhode Island. Strong northeast winds gusting from 35 to 50 mph occurred over the central and southern portion of the state.
05/25/2005	Late season Nor'easter brought strong winds and heavy rains which mainly effected the western part of the state.
10/25/2005	A strong coastal storm (i.e. a Nor'easter) entrained with energy and moisture from the remnants of Wilma brought rainfall amounts between 2 and 2.5 inches and damaging winds to portions of Rhode Island. The high winds brought down limbs, trees, and wires, resulting in scattered power outages.
02/12/2006	A strong Nor'easter produced heavy snow and windy conditions across Rhode Island. Snowfall ranged from 9 to 14 inches.

15 NOAA Storm Event Database, Newport County. https://www.ncdc.noaa.gov/stormevents/

10/30/2011	A rare and historic October Nor'easter brought very heavy snow and high winds. The Automated Surface Observing System at Newport State Airport recorded sustained winds of 36 mph and gusts to 53 mph.
02/2013	Winter Storm Nemo, a major snow storm with powerful winds, resulted in severe power outages across the region for days.
02/08/2015	Long duration Nor'easter dumped 2 to 4 inches of snow in Newport County
03/2018	Three (3) Nor'easters in the month of March brought high winds, rain, and eventually snow throughout the area.
01/29/2022	Nor'easter brought high winds, poor visibility, and snow totals in excess of 20 inches in Newport.

Hurricanes

Description

Storm surge after Hurricane Sandy in 2012.
Photo credit: Newport Daily News.

Hurricanes are low pressure systems that usually form over the tropics. These storms are referred to as "cyclones" due to their rotation. Hurricanes are among the most powerful and destructive meteorological systems on earth. Their destructive phenomena include very high winds, heavy rain, lightning, tornadoes, and storm surge. As hurricanes move inland, they can cause severe flooding, downed trees and power lines, and structural damage (Rhode Island State Hazard Mitigation Plan 2014).

There are three categories of tropical cyclones:

1. Tropical Depression: maximum sustained surface wind speed is less than 39 mph
2. Tropical Storm: maximum sustained surface wind speed from 39-73 mph
3. Hurricane: maximum sustained surface wind speed exceeds 73 mph

Once a tropical cyclone no longer has tropical characteristics it is classified as an extratropical system (Rhode Island State Hazard Mitigation Plan 2014).

Most Atlantic hurricanes begin as atmospheric "easterly waves" that propagate off the coast of Africa and cross the tropical North Atlantic and Caribbean Sea. When a storm starts to move toward the north, it begins to leave the area where the easterly trade winds prevail and enters the temperate latitudes where the westerly winds dominate. This situation produces the eastward curving pattern of most tropical storms that pass through the Mid-Atlantic region. When the westerly steering winds are strong, it is easier to predict where a hurricane will go. When the steering winds become weak, the storm follows an erratic path that makes forecasting very difficult (Rhode Island State Hazard Mitigation Plan 2014).

Hurricanes are categorized according to the Saffir/Simpson scale (Table 6) with ratings determined by wind speed and central barometric pressure. Hurricane categories range from one (1) through five (5), with Category 5 being the strongest (winds greater than 155 mph). A hurricane watch is issued when hurricane conditions could occur within the next 36 hours. A hurricane warning indicates that sustained winds of at least 74 mph are expected within 24 hours or sooner (Rhode Island State Hazard Mitigation Plan 2014).

The Saffir-Simpson scale below is based primarily on wind speeds and includes estimates of barometric pressure and storm surge associated with each of the five categories. It is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall.

Table 6 Saffir/Simpson Hurricane Wind Scale[16]

Wind Speed	Typical Effects
Category 1 – Weak 74-95 MPH (64-82kt)	*Minimal Damage:* Damage is primarily to shrubbery, trees, foliage, and unanchored mobile homes. No real damage occurs in building structures. Some damage is done to poorly constructed signs.
Category 2 – Moderate 96-110 MPH (83-95kt)	*Moderate Damage:* Considerable damage is done to shrubbery and tree foliage; some trees are blown down. Major structural damage occurs to exposed mobile homes. Extensive damage occurs to poorly constructed signs. Some damage is done to roofing materials, windows, and doors; no major damage occurs to the building integrity of structures.
Category 3– Strong 111-130 MPH (96-113kt)	*Extensive Damage:* Foliage torn from trees and shrubbery; large trees blown down. Practically all poorly constructed signs are blown down. Some damage to roofing materials of buildings occurs, with some window and door damage. Some structural damage occurs to small buildings, residences and utility buildings. Mobile homes are destroyed. There is a minor amount of failure of curtain walls (in framed buildings).
Category 4 – Very Strong 131-155 MPH (114-135kt)	*Extreme Damage:* Shrubs and trees are blown down; all signs are down. Extensive roofing material and window and door damage occurs. Complete failure of roofs on many small residences occurs, and there is complete destruction of mobile homes. Some curtain walls experience failure.
Category 5 – Devastating Greater than 155 MPH (135kt)	*Catastrophic Damage:* Shrubs and trees are blown down; all signs are down. Considerable damage to roofs of buildings. Very severe and extensive window and door damage occurs. Complete failure of roof structures occurs on many residences and industrial buildings, and extensive shattering of glass in windows and doors occurs. Some complete buildings fail. Small buildings are overturned or blown away. Complete destruction of mobile homes occurs.

Location

Newport's close proximity to the Atlantic Ocean renders it particularly susceptible to hurricanes and the resulting loss of human life and property.

Probability of Future Occurrence

Likely.

16 National Weather Service, National Hurricane Center

Extent (Event Magnitude)

Hurricanes that likely make it up to Rhode Island are usually weak (Category 1) or downgraded tropical systems. The wind speeds may be less but the storms can still bring a lot of rain and storm surge which can cause widespread flooding.

Impact and Damage Extent

Hurricane-strength storms can cause coastal, riverine and street flooding. Extensive rain, wind and storm surge, could damage homes, roads, and cripple the city. The high winds could down power lines and trees, and damage historic structures. Hurricane- and gale-force winds can also cover roadways with debris, making them impassable to conventional vehicles. During extremely dangerous conditions, the City may elect to open shelters. Damage extent is dependent upon the size and timing of the storm. A slow-moving storm may bring more rain to the area than a fast-moving storm.

Climate Change Impacts

Warming global air and water temperatures may increase the intensity of hurricanes that travel up along the Atlantic Coast.

History[17]

In 2011, Hurricane Irene hit Newport as a tropical storm. Despite the relatively low wind speeds, sustained winds over a 6 to 12-hour long duration resulted in widespread tree damage and resulted in power outages to roughly half a million customers throughout the state. Numerous trees, poles, and wires were downed throughout the area. Local roads were also flooded. Trees were downed onto wires at the intersection of Rhode Island Avenue and Oakwood Terrace and at the intersection of Bellevue Avenue and East Bowery Street in Newport. The Automated Surface Observing Station at Newport State Airport (KUUU) recorded sustained winds of 30 knots (35 mph) and wind gusts to 48 knots (55 mph). Collective effects throughout Massachusetts and Rhode Island resulted in 1 fatality, no injuries, and $127.3 million in property damage.

In October 2012, Hurricane Sandy severely impacted coastal Rhode Island as it came ashore with Tropical Storm strength winds. The Automated Surface Observing System at Newport State Airport (KUUU) recorded sustained wind speeds of 37 mph and gusts to 59 mph. Numerous trees were downed in Newport and neighboring Middletown.

Further damage from Hurricane Sandy was caused by the extensive coastal flooding. The Point section of Newport flooded with 6 to 12 inches of ocean water during the morning high tide cycle. The Bowen's Wharf section also flooded, with water surrounding houses. Ocean Drive and the adjoining seawall in Newport was damaged severely enough that it was one of four areas in the state deemed in greatest need of repairs immediately following the storm. Save the Bay's Exploration Center and Aquarium at Easton's Beach was damaged by Sandy's 12-foot waves. The wave action also left behind sand, rocks, and debris at the aquarium. Three hundred animals were displaced with the damage to the aquarium. The

17 NOAA Storm Event Database (accessed August 2021).

famed Cliff Walk was damaged extensively, with portions of the walkway washed away by storm surge.

Tropical Storm Isaias (downgraded from a hurricane) knocked out power to tens of thousands of Rhode Island residents on the evening of August 4, 2020. No reports of damage were received from Newport County, but it is likely that isolated tree or power line damage occurred from strong winds.

Flooding (Street/Urban)

For the purpose of this plan, three types of flooding will be discussed: street/urban flooding, riverine flooding, and coastal flooding. Since these hazards are ranked in order of concern, the first is street/urban flooding caused by heavy rain.

Flooding at JT Connell Highway on Sept 2, 2021 after the remnants of Hurricane Ida.

Description

According to the Rhode Island 2014 Hazard Mitigation Plan Update, "Flooding is a localized hazard that is generally the result of excessive precipitation.
Flooding is the most commonly occurring natural hazard, due to the widespread geographical distribution of river valleys and coastal areas, and the attraction of human settlements to these areas. Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss."

"A flood, which can be slow or fast rising but generally develops over a period of days, is defined by the National Flood Insurance Program (NFIP) as:

- A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: overflow of inland or tidal waters; unusual and rapid accumulation or runoff of surface waters from any source; or a mudflow; or
- The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above."

Flooding due to runoff occurs when water runs over the land's surface impervious surfaces (paved areas, building subdivisions, and highways). Two major environmental modifications are primarily responsible for drastically altering the rain fall-runoff relationship.

- Making the land surface impervious by covering it with pavement and construction work.

› Installing storm sewer systems that collect urban runoff rapidly discharging large volumes of water into stream networks and/or freshwater wetland system.

FEMA maintains regulatory flood maps called Flood Insurance Rate Maps (FIRM). Insurance companies refer to these when providing coverage to homeowners. These maps are available for viewing at City Hall and online at The FEMA Map Service Center https://msc.fema.gov. Please note that there is a process for the public to request a change in the flood zone designation for their property.

Table 7 Flood Zone Descriptions

Flood Zone	Description
VE	Coastal areas with 1% annual chance of flooding with additional hazards due to storm-induced velocity wave action. 26% chance of flooding over the life of a 30-year mortgage
A	1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. No recorded Base Flood Elevation
AE	1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Base Flood Elevation is provided.

Note that FEMA has changed the preferred term to **1% annual chance flood** (also know as the 100-year flood) to better represent the actual risk. This means that the base flood has about a 1% chance of being met or exceeded during a given year. This type of flooding event is expected to impact the Special Flood Hazard Area zones A and V. To put it another way, those areas have a 1 in 4 chance of experiencing flood damage during a typical 30-year mortgage.

Location

During heavy or extensive rain events, flooding around Newport is generally caused by undersized catchbasins and poor natural drainage. These areas include but are not limited to:

- Bedlow Avenue at Hillside Avenue
- Ellery Road at Gibbs Avenue; Eustice Avenue; and Kay Boulevard
- Halsey Street
- JT Connell rotary area
- Prescott neighborhood
- Third Street
- West Marlborough Street
- Whitwell Avenue

Probability of Future Occurrence

Street/urban flooding is highly likely.

Extent (Event Magnitude)

Localized flooding can be expected to occur on an annual basis.

Impact and Damage Extent

Heavy rains, quick thaws with precipitation, and hurricanes accompanied by heavy winds and rain make the City vulnerable to personal, property and environmental damage caused by flooding.

Vulnerable structures include stormwater infrastructure, dams, residential homes, water supply lines, wastewater infrastructure, and roads.

Climate Change Impacts

Changing weather patterns may lead to more severe rain events.

History

The City of Newport regularly experiences street/urban flooding on the nuisance level. The larger events in the county are outlined in the following table.

Table 8 History of Flooding in Newport County Since 2010 (includes street/urban and riverine)[18]

Date	Damage (reported)	Comments
03/30/2010	$3.2 million	Significant statewide flood event. Five to eight inches of rain fell across Newport County. Many basements were flooded in Jamestown, and Portsmouth.
07/28/2012	$5,000	Heavy rainfall and flash flooding in urban areas. A car was stuck in flood waters on East Main Road in Middletown. East Main Road was closed near Valley Road and the Shaw's Plaza due to flooding. Several streets in Newport were closed due to flooding. Also, Daley's Brook was overrunning onto Forest Road with 6 to 10 inches of water over the road.
08/15/2012	$0	Heavy rainfall and flash flooding. Water overwhelmed storm drains.
06/07/2013	$15,000	Significant urban flooding from the remnants of Tropical Storm Andrea. Three to five inches of rain fell across Newport County. The underpass to the Newport Bridge was flooded and impassable. A small car was stuck in floodwaters.
07/16/2014	$5,000	Heavy rainfall and flash flooding.
07/14/2020	$0	Thunderstorms produced localized flooding. Up to 1 foot of flood waters on several roads. The Newport Public Library was closed due to flooding.
09/02/2021	Unknown	Remnants of Hurricane Ida caused localized street flooding.

18 NOAA National Centers for Environmental Information, Storm Event Database. https://www.ncdc.noaa.gov/stormevents/

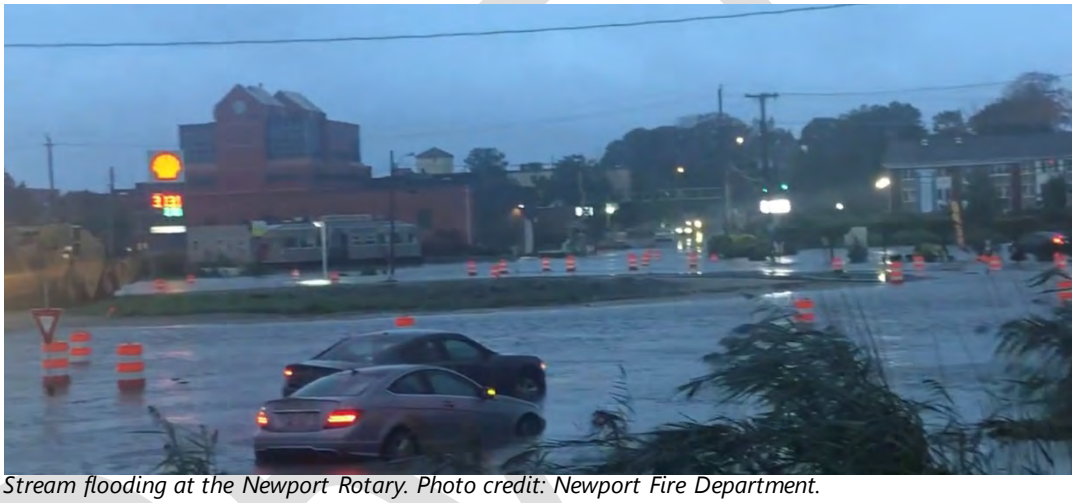
Flooding (Riverine/Stream)

Description

Riverine flooding occurs when heavy rainfall or snow melt causes the water in rivers and streams to flow over their banks. The severity of the flood depends on the saturation of the surrounding ground, the amount of precipitation, and duration of the event. Riverine flooding is most likely to occur in the late summer and early spring due to snow melt and spring rainfalls.

Location

Overtopped stream banks combined with heavy rain and a high-water table can easily flood parts of Newport. Low-lying areas around Elizabeth Brook in the North End are the most vulnerable.



Stream flooding at the Newport Rotary. Photo credit: Newport Fire Department.

Probability of Future Occurrence

Stream flooding is likely. More likely conditions include the addition of locally heavy rainfall or snowmelt on land.

Extent (Event Magnitude)

Localized flooding can be expected to occur on an annual basis. The flood event which occurred in March 2010 was a 250 year +/- event with about 5 ½ inches of rain in a short period of time.

Impact and Damage Extent

Damages are localized but can be serious. In addition to inconveniencing populations, severe flooding can impact the wastewater infrastructure and local businesses.

Bridges along the flooded streams can be compromised as waters rise and scour away at the foundations.

Climate Change Impacts

Changing climate conditions are likely to bring more rainfall events to Newport and fewer snowstorms. More intense storms will stress the rivers and natural floodplains designed to carry floodwaters.

History

There has not been an isolated riverine flooding event but rather tied to larger coastal flooding events.

Flooding (Coastal)

Description

Simply put, coastal flooding occurs when seawater inundates the land. This can occur from a storm making landfall or just an unusually high tide (also called a King Tide, Spring Tide, or Moon Tide).[19] Because of development pressures and population increases on the coast, a greater number of structures are at risk to flooding.

Tidal flooding compounded by precipitation along Second Street in 2011. Photo credit: CH2M July 2015

Location

Low-lying coastal areas are the most vulnerable.

Developed floodplain hazards of Newport include the Newport Harbor waterfront, Washington and Thames Streets, the area north of Easton Pond along Ellery Road, the area north of Almy Pond, and Goat Island. Several coastal areas are protected by seawalls, including areas of Ocean.

Probability of Future Occurrence

Coastal flooding is highly likely.

Extent (Event Magnitude)

Localized flooding can be expected to occur in Newport on an annual basis.

[19] For more information on King Tides, visit https://www.savebay.org/king-tides-ri/ and The RI King Tides Initiative - MyCoast

Impact and Damage Extent

Along the Newport coast, hurricanes and other storms accompanied by heavy winds and rain make the City vulnerable to personal, property and environmental damage occasioned by coastal flooding. Storm surge coupled with large fast-moving waves can scour beaches and building foundations. Coastal storms that occur during the summer have the likelihood of catching visitors and seasonal residents off guard without a plan to evacuate.

Saltwater intrusion into freshwater systems is another concern. Large storms will push the seawater up into the rivers and estuaries causing flooding. This can also impact the freshwater drinking resources. The timing of these storms around high tide could impact the extent of the damages.

Vulnerable structures include stormwater infrastructure, dams, residential homes, marinas, water supply lines, and roads.

Climate Change Impacts

Changing climate conditions are likely to bring stronger coastal events to Newport. More intense storms will stress the natural floodplains and stormwater infrastructure. In coastal areas where storm drains empty into the ocean, rising tides and storm surge may further exacerbate flooding during heavy rain events.

History

There are many examples of coastal flooding in Newport. The table below highlights some of the more notable ones in the Newport area as documented by NOAA.

Table 9 Recent History of Some Coastal Flooding in Newport County[20]

Date	Damage (reported)	Comments
10/28/2006	$5,000	In Newport, a park on Wellington Avenue was flooded. A portion of Ocean Avenue was also flooded. In Portsmouth, flooding was reported on Park Avenue.
04/15/2007	$30,000	Minor to moderate coastal flooding occurred along the coastline of Rhode Island through several high tide cycles, due to the combination of strong onshore winds, high seas, and astronomically high tides. Along the South Coast, the worst coastal flooding occurred with the morning high tide on the 16th, where flood waters and debris closed several shore roads. Large boulders that washed ashore had to be removed with snowplows, according to media reports.
09/03/2010	$0	High surf induced by Earl resulted in minor coastal flooding in Newport, RI. A portion of Ocean Avenue from Brenton Point to Bailey Beach was flooded with seawater and ocean debris over the road.

[20] NOAA Storm Event Database (2021)

Table 9 Recent History of Some Coastal Flooding in Newport County[20]

Date	Damage (reported)	Comments
10/29/2012	$3 million	Hurricane Sandy. The Point section of Newport flooded with six to twelve inches of ocean water during the morning high tide cycle. The Bowen's Wharf section also flooded, with water surrounding houses. Ocean Drive and the adjoining seawall in Newport was damaged severely enough that it was one of four areas in the state deemed in greatest need of repairs immediately following the storm. Save the Bay's Exploration Center and Aquarium was damaged by Sandy's 12-foot waves. The wave action also left behind sand, rocks, and debris at the aquarium. The Cliff Walk was damaged extensively, with portions of the walkway washed away by storm surge.
08/13/2014	$0	Heavy downpours caused seawater to overtop the seawall in nearby Portsmouth.
(Various)		Higher than normal tides, also called King Tides, Spring Tides, or Mood Tides. These "sunny day flooding" events occur when the tide is exceptionally high and floods the adjacent streets. This is related to the gravitational forces of the moon and the sun rather than a storm event.

High Winds

Description

Downed tree blocking a road in 2018.

Wind is the movement of air caused by a difference in pressure from one place to another. Local wind systems are created by the immediate geographic features in a given area such as mountains, valleys, or large bodies of water. National climatic events such as high gale winds, tropical storms, thunderstorms, nor'easters, hurricanes, and low-pressure systems produce wind events in Rhode Island. Wind effects can include blowing debris, interruptions in elevated power and communications utilities, and intensification of the effects of other hazards related to winter weather and severe storms.

Table 10 Beaufort Scale

Beaufort Number	Description	Wind Speed (km/h)	Observations
0	Calm	<1	Smoke rises vertically
1	Light Air	1-5	Smoke drifts slowly
2	Light Breeze	6-11	Leaves rustle, wind vanes move
3	Gentle Breeze	12-19	Leaves and twigs on trees move
4	Moderate Breeze	20-29	Dust picked up from ground
5	Fresh Breeze	30-38	Small trees sway in wind
6	Strong Breeze	39-51	Large branches move
7	Near Gale	51-61	Trees move, hard to walk
8	Gale	62-74	Twigs break off trees
9	Strong Gale	75-86	Branches break off trees
10	Whole Gale	87-101	Trees uprooted
11	Storm	102-120	Buildings damaged
12	Hurricane	>120	Severe building and tree damage

The Beaufort Wind Scale is a 12-level scale used to describe wind speed and observed wind conditions at sea and on land. A wind classification of 0 has wind speeds of less than 1 mile per hour are considered calm. On the other end, a classification of 10 with wind speeds reaching 63 miles an hour will blow down trees and cause considerable damage.

Location

Wind events are expected throughout the year in Newport.

Probability of Future Occurrence

Highly Likely.

Extent (Event Magnitude)

The windier part of the year lasts for 6.3 months, from October 13 to April 23, with average wind speeds of more than 8.3 miles per hour (13.3 km/h).[21]

21 WeatherSpark https://weatherspark.com/y/26159/Average-Weather-in-Newport-Rhode-Island-United-States-Year-Round accessed 06/20/2021

Impact and Damage Extent

Strong wind gusts of 40 miles an hour (Beaufort Scale of 8) can blow twigs and small branches from trees. Occasional gusts and sustained winds at this speed (and above) are of concern to the City. Damages from wind events range from power outages, property damage to vehicles and buildings and fallen trees/limbs. Previous wind events in Newport have resulted primarily in power outages and downed tree limbs with minimal property damage. It is important that the City of Newport maintain their public tree trimming program that will reduce the likelihood of fallen trees/limbs from disrupting transportation routes, taking down power lines, and/or creating damage to the tree canopy.

Climate Change Impacts

Changes in atmospheric circulation are predicted to occur. See "Hurricanes" and "Nor'easters."

History

Table 11 Recent History of High Winds in Newport County[22]

Date	Magnitude (kts)	Comments
02/16/2016	51	Winds gusted as high as 59 mph at the Halfway Rock station (located about 4 miles up the bay, north of the Newport Bridge). No significant damage was reported.
04/15/2016	35	Halfway Rock recorded sustained wind speeds of 40 mph. No damage was reported.
10/29/2017	50	Strong to damaging winds from Tropical Storm Phillipe
03/02/2018	58	Newport State Airport in Middletown measured a wind gust to 67 mph. At 2:24 PM EST an amateur radio operator in Newport reported a wind gust to 62 mph. At 3:20 PM EST, a tree fell on the front yard of a property near the intersection of Lawrence Avenue and Ruggles Avenue in Newport; the tree struck and killed the property owner.
02/25/2019	52	At 4:25 PM EST a weather station at Newport reported a sustained wind of 41 mph and a wind gust to 61 mph.
06/29/2019	51	At 4:17 PM EST, a weather station near Newport reported a wind gust to 59 mph.
08/08/2019	50	Tree damage in Newport.
10/16/2019	35	Rose Island weather station reported sustained winds of 43 mph
02/07/2020	63	A weather station in Newport recorded a gust to 62 mph. The ASOS (Automated Surface Observing Systems) at Newport Airport recorded a gust to 53 mph. In Newport multiple trees were reported down across town.
04/13/2020	50	Wind gusts of 58 mph reported.
07/14/2020	50	On Washington Street near Newport Harbor, a large tree was down. A small sailboat was blown over in the harbor. Large branches were down, with power outages, on both Bellevue Avenue and Easton's Beach.

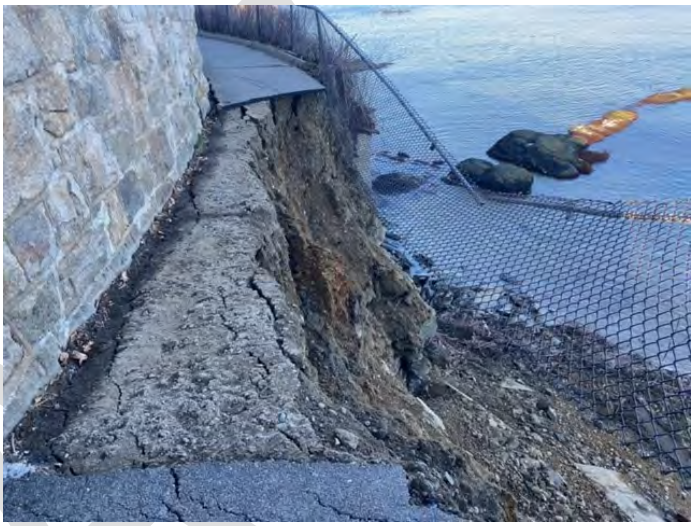
[22] NOAA Storm Event Database (2021). Wind types: high wind, thunderstorm wind.

Table 11 Recent History of High Winds in Newport County[22]

Date	Magnitude (kts)	Comments
08/25/2020	65	High winds caused damage to two boats in the harbor.
03/02/2021	53	Weather station at Rose Island recorded a gust to 58 mph. At the Newport State Airport, the ASOS had a strong wind gust of 53 mph.

Coastal Erosion

Description



Erosion of the Cliff Walk in March 2022.

Coastal erosion is the gradual wearing away of the land. Although this can happen along rivers and streams, for the purpose of this Newport Hazard Mitigation Plan Update, erosion will focus on coastal erosion as a hazard.

Coastal zones are dynamic areas that are constantly undergoing change in response to a multitude of factors, including sea level rise (SLR), wave and current patterns, hurricanes, coastal flooding and human influences. High winds and associated marine flooding from storm events such as hurricanes, nor'easters, flooding, and SLR, increase the risk exposure along developed coastal lands. Storm impacts and long-term erosion threatens developed areas with potential loss of life and billions of dollars in property damage. In addition to the natural processes that cause erosion, human alterations are affecting erosion rates.

The beaches, barrier spits and coastal bluffs of Newport and Rhode Island are vital economic, environmental, and cultural resources. A healthy, wide sandy beach provides protection against the effects of storm surge, coastal flooding, and high surf impacts. The beach and barrier environment provides habitat for marine and terrestrial organisms with beach dependent life stages and is home to species of indigenous and endemic Rhode Island plants. Beaches, barrier spits, and coastal bluffs are also the basis for the tourism industry, exceeding by a factor of three all other industries combined when providing direct income to the state.

Strong storms, rising sea level, flooding, and ocean waves can wear away beaches swiftly or over time. During storms it is swift and can result in tens of feet of bluff erosion in a severe storm. Over time this causes the shoreline to migrate inland. The beaches erode during storms but usually have post-storm recovery where there is actually sand accretion to reform a berm. Erosion reduces the amount of protective buffer between the ocean and the built

environment. The ocean becomes closer to homes, businesses, and City infrastructure, thereby putting the structures at greater risk of being unusable or uninhabitable.

Location

Bluffs and sand starved beaches are susceptible to erosion. Easton's Beach area, the Cliff Walk, as well as Hazards Beach and Bailey's Beach, are especially vulnerable to erosion as they are relatively exposed to waves generated by southwesterly winds. Another area prone to erosion is on the western side of the Newport neck section of the city. Erosion in this area is the result of a continuous, "natural" process rather than the result of storm events.[23]

Probability of Future Occurrence

Coastal erosion is likely.

Extent (Event Magnitude)

Based on measurements of the Newport tide gauge, sea level is expected to rise an estimated one foot per century, adversely impacting low lying areas of coastal Newport. Since the buoy gauges were installed in the 1930s, the sea has risen about an inch every eight years.[24] Coastal armoring and the construction of jetties and groins may save the beach or one private property owner, but it severely impacts sediment deposits from occurring down shore of the structure, thus accelerating erosion activity and negatively impacting property owners in these locations.

Impact and Damage Extent

Locally, erosion has already shown to remove beaches fronting or adjacent to hardened shorelines, expose on-site wastewater treatment systems, compromise roadbeds, and undermine coastal homes. Bringing the saltwater barrier further inland also promotes saltwater intrusion into the freshwater drinking systems.

In addition to narrowing the beaches, important coastal habitats can be destroyed through erosion.

Unfortunately, local FEMA maps do not reflect the risk of erosion in their Flood Insurance Rate Maps. People are often caught unaware of the real risk of living along the coast.

Climate Change Impacts

Newport expects erosion to be a growing concern as storms become more intense and sea levels rise. The Shoreline Change Special Area Management Plan identifies an erosion multiplier to estimate accelerated rates of erosion that result from sea level rise.[25]

[23] Newport Hazard Mitigation Plan 2016

[24] Freeman, Mike. 2020. *The Newport Daily News*. "Rising Sea Levels". August 26, 2020. https://www.newportri.com/story/news/2020/08/26/rising-concern/113804768/

[25] Coastal Resource Management Council (CRMC) Shoreline Change Special area Management Plan http://www.beachsamp.org/wp-content/uploads/2018/07/BeachSAMP_CH5_CRMCCoastalApp_061218_CRMCApproval.pdf

History

According to Newport's 2016 Natural Hazard Mitigation Plan, "Hurricane Bob in 1991 produced several incidents of erosion; these were located along Newport's Cliff Walk, the Easton's Beach area, Hazards Beach, and Bailey's Beach. The Cliff Walk incidents of erosion were documented in the Cliff Walk Rehabilitation Study. Newport also experienced extensive coastal erosion from the effects of Hurricane Sandy. Portions of the famed Cliff Walk were washed away in the storm, which cost about $2 million in repairs.[26] Additionally, the seawall along Ocean Drive was severely damaged from the high surf generated by the hurricane (RI Press Release) as were the beaches, including Easton's and Third Beaches. The Save the Bay Exploration Zone located in the Rotunda at Easton's Beach was flooded with sand and its exhibits featuring more than 100 marina animals had to be relocated.

In 2022 the Cliff Walk was again closed due to destruction from coastal erosion.

Winter Storms

Description

Bannister's Warf, December 2020. Photo credit: Savana Dunning/ Newport Daily News.

The majority of Rhode Island lies outside the heavy snow and ice regions of the northeast. Due to its maritime climate, Rhode Island generally experiences cooler summers and warmer winters than inland areas. However, snow and ice do occur and can be more than an inconvenience and cause extensive damage. The two major threats from these hazards are loss of power due to ice on electrical lines and snow loading on rooftops. Additionally, loss of power could mean loss of heat for many residents.

Winter storms vary in size and strength and can be accompanied by strong winds that create blizzard conditions and dangerous wind chill. There are three categories of winter storms. A **blizzard** is the most dangerous of the winter storms. It consists of low temperatures, heavy snowfall, and winds of at least 35 miles per hour and visibilities of less than a quarter of a mile for an extended period of time (at least three hours). A **bomb cyclone** is a winter hurricane caused by a drop in in atmospheric pressure of 24 millibars over 24 hours. A

[26] Flynn, Sean. The Damage is Done: Repairs to the Cliff Walk will cost the city about $2 million. Newport Daily News. <http://www.newportri.com/features/the-damage-is-done/article_7a245871-18ef-56d9-89a3-2bcb4362e17d.html>.

heavy snowstorm is one which drops four or more inches of snow in a twelve-hour period. An **ice storm** occurs when moisture falls and freezes immediately upon impact.

Location

A severe winter storm could have a serious impact in private and public structures, as well as the general population throughout Newport.

Probability of Future Occurrence

Highly Likely.

Extent (Event Magnitude)

On average, Newport receives about 33 inches of snow during the winter months.[27] The average winter temperature (December-February) in Newport is 40 degrees Fahrenheit.[28]

Blizzard conditions (sustained winds of 35 mph or more, with snow reducing visibility to a quarter of a mile or less for at least three hours) are experienced with some of the larger winter storms in Newport. Due to the buffering ocean air, Newport experiences warmer winters than inland communities and therefor gets less snow.

Impact and Damage Extent

The combination of wind, ice, and snow can have a crippling effect on Newport. Heavy and/or excessive snowfall amounts can stress roofs and slow plowing efforts, as well as cause power outages. The local economy slows when businesses are closed due to winter weather.

Climate Change Impacts

Newport may likely see less snowfall over the winter season but may see more intense blizzards when they do occur.

History

Newport has been subjected to annual snowstorms and Nor'easters. A few of the more significant ones crippled not only Newport but the entire state. The blizzard of 1978 is still regarded as the storm of the century and is the storm to which all subsequent storms are compared. Newport received 28 inches of snow while areas in the rest of the state got upwards of 40 inches.[29] Businesses across the state were closed for several days. More than 9,000 people in Rhode Island sought refuge in makeshift shelters, hotels, and movie theaters.

In February 2013, Winter Storm Nemo temporarily crippled the region. Power lines were downed, and heavy snow hampered driving conditions. The governor declared a state of emergency and enacted a state travel ban that lasted nearly 24 hours. Strong winds and wet

[27] Newport RI Weather https://www.newportriweather.com/mwd/stats/months/monthlysnow.htm

[28] U.S. Climate Data https://www.usclimatedata.com/climate/newport/rhode-island/united-states/usri0040

[29] Weisman, Janine. January 25, 2012. The Storm Governor. Newport Daily News. http://www.newportri.com/features/personalities/the-storm-governor/article_86f22e9a-4775-11e1-9f1a-001871e3ce6c.html

snow lead to extensive power outages. Thirteen inches of snow fell across Newport County during this event.

Blizzard conditions were present in Newport during a late January 2015 winter storm. Again, the Rhode Island governor issued a travel ban to keep people off the roads. Sixteen to nineteen inches of snow fell across Newport County.

In March 2018 nine to fourteen inches of snow fell throughout Newport County. Blizzard conditions were observed locally. A wind sensor on the Newport Bridge measured a wind gust of 64 mph.

Ice Storm[30]

Description

Ice Storm. Photo credit: NOAA.

An ice storm occurs when moisture falls and freezes immediately upon impact. The term ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Freezing rain most commonly occurs in a narrow band within a winter storm that is also producing heavy amounts of snow and sleet in other locations. If extreme cold conditions are combined with low or no snow cover, the cold can better penetrate downward through the ground and potentially create problems for underground infrastructure, as well. When utilities are affected, and heating systems are compromised or do not work, water and sewer pipes can freeze and even rupture.

Location

All of Newport is susceptible to ice storms.

Probability of Future Occurrence

Highly Likely.

Extent (Event Magnitude)

Ice storms can be the most devastating winter weather phenomena and are often the cause of automobile accidents, power and communication system outages, personal injury, and death. Moreover, they can hinder the delivery of emergency services needed in response to

[30] For the purpose of this Newport Hazard Mitigation Plan Update, ice storms were discussed by the Hazard Mitigation Committee as part of the Winter Storm Hazards.

these catastrophes and endanger the responders. Ice storms accompanied by wind gusts cause the most damage.

The Sperry–Piltz Ice Accumulation (SPIA) Index is a scale for rating ice storm intensity, based on the expected storm size, ice accumulation, and damages on structures, especially exposed overhead utility systems. The SPIA Index uses forecast information to rate an upcoming ice storm's impact from 0 (little impact) to 5 (catastrophic damage to exposed utility systems).

Newport expects at least a level 1- isolated or localized utility interruptions every year due to ice.

Figure 4 SPIA Index

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised-October, 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
2	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Impact and Damage Extent

The Newport Hazard Mitigation Committee is most concerned about ice taking down trees, knocking out power, blocked roads, and structure damage. Falling trees have taken out power lines, damaged buildings, and essentially shut down the city. Flash freezes and icy roads can also cause dangerous driving conditions.

Climate Change Impacts

Warming temperatures may mean less snowfall but if there is enough moisture in the atmosphere, it may fall as freezing rain, coating everything in ice. Newport, a coastal city, should expect more ice events.

History

Due to the unique weather in New England, ice storms are usually part of larger snow events. The winter storm event that crippled the state in February 1978 did include a FEMA disaster declaration for snow and ice. Subsequent storms have included ice warnings when there are rapidly warming and cooling temperatures. Rhode Island was spared the brunt of the 2008 ice storm which affected more than a million people across New Hampshire, Vermont, Massachusetts, Maine, Connecticut, and New York.

Drought

Description

Drought is characterized as a continuous period of time in which rainfall is significantly below the norm for a particular area over a multi-year period. The American Meteorology Society defines drought as a period of abnormally dry weather sufficiently long enough to cause a serious hydrological imbalance. Drought differs from other natural hazards in that they occur suddenly. Rather, a drought evolves over months or even years and, while causing very little structural damage, can have profound economic, environmental, and social impacts.

Drought in nearby Connecticut.
Photo credit: Bob Luckey Jr./ Hearst Connecticut Media

There are four different ways that a drought can be defined:

1. **Meteorological** – A measure of departure of precipitation from normal. Due to climatic differences, what is considered a drought in one location may not be a drought in another location.
2. **Agricultural** – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
3. **Hydrological** – occurs when surface and subsurface water supplies are below normal.
4. **Socioeconomic** – refers to the situation that occurs when physical water shortage begins to effect people.

Characteristics and impacts of drought differ in many ways, so it is difficult to quantify drought. An existing index called the Palmer Drought Severity Index (PDSI) that used temperature and precipitation levels to determine dryness, measuring a departure from the normal rainfall in a given area. The advantage of the PDSI is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or

rainfall conditions. A monthly PDSI value below -2.0 indicates moderate drought, and a value below -3.0 indicates severe drought.

The U.S. Drought Monitor tracks drought conditions in Rhode Island and in the rest of the nation. They create maps based on climate data, hydrologic and soil conditions, as well as reported impacts and observations from over 350 contributors nationwide.

Table 12 Drought Severity [31]

Severity	Category	PDSI Index Value	Drought Level	Possible Impacts
Exceptional Drought	D4	-5 or less	Emergency	Widespread crop/pasture losses, shortages of water creating water emergencies.
Extreme Drought	D3	-4 to -4.9	Warning	Major crop/pasture losses, widespread water shortages or restrictions.
Severe Drought	D2	-3 to -3.9	Watch	Crop or pasture losses likely, water shortages common, water restrictions imposed.
Moderate Drought	D1	-2 to -2.9	Advisory	Some damage to crops/pastures, developing water shortages, voluntary water-use restrictions requested.
Mild Drought/Abnormally Dry	D0	-1 to -1.9	Normal	Short term dryness slowing planting or crop growth.
Incipient Dry Spell		-0.9 or less	–	–

Rhode Island, as with most states within the United States, uses both the Palmer Drought Severity Index (PDSI) and the Crop Moisture Index (CMI) as indices for a drought occurrence. The CMI (a derivative of the PDSI) provides information on the short-term or current status of purely agricultural drought or moisture surplus. The PDSI is most effective for determining long-term drought conditions, while the CMI is effective at helping determine short-term drought.

The RI Drought Steering Committee assigns drought levels for the seven designated drought regions in the state, based on hydrological indices such as precipitation, groundwater, stream flow, and the PDSI, as well as on local supply indices such as static groundwater levels and reservoir levels. The Normal, Advisory, and Watch levels are issued statewide. The Warning and Emergency levels are issued on a regional basis and consider local conditions, source of water supply, and water storage capacity issues.

Location

According to the Rhode Island Water Resource Board the potential for a drought exists every eleven years in Rhode Island. Although temporary drought conditions may occasionally exist in Rhode Island, affecting Newport, devastating long term drought conditions are not indicative of this temperate region.

31 http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx

Probability of Future Occurrence

Likely.

Extent (Event Magnitude)

According to The National Weather Service Rhode Island receives on average 39" to 54" of rain annually. Notwithstanding the same, the State experiences extended periods of dry weather. Some type of drought in Rhode Island occurs approximately once every 11 years.

Impact and Damage Extent

The main impacts of meteorological drought are periods of very high fire danger and low drinking water supplies. Newport draws its drinking water from nine surface water reservoirs located within five Rhode Island municipalities. Changes in water levels can impact not only the quantity of available water but also the quality.

Climate Change Impacts

Even though rain events may intensify due to climate change, the periods between them may be longer. Rhode Island expects longer periods of drought. According to the 2016 Rhode Island Hazard Identification and Risk Assessment, "Recent climate change studies[32] have indicated that although precipitation is projected to increase throughout this century, it will be in the form of short duration, intense, and less frequent events. In addition, it is projected by the Northeast Climate Impacts Assessment Group (NECIA) and the New York City Panel on Climate Change (NPCC) that most of this increased precipitation may occur during colder times of the year, such as winter, in the form of snow or ice. Furthermore, it is projected that the frequency and intensity of both long-term and short-term droughts throughout the Northeast will increase throughout the century with the impacts beginning to occur with a greater degree of frequency beginning in the mid-century (2050s)."

History

Historically, Rhode Island has ranged from near-normal moisture conditions to moderate and severe droughts throughout the past century. Since 2000, the longest duration of drought (D1–D4) in Rhode Island lasted 36 weeks beginning on May 19, 2015 and ending on January 19, 2016. The most intense period of drought occurred the week of September 29, 2020, where D3 affected 99.21% of Rhode Island land.[33]

[32] Information derived from two recent studies: Confronting Climate Change in the Northeast, by the Northeast Climate Impacts Assessment Group, July 2007, and Climate Risk Information, by the New York City Panel on Climate Change, 2/17/09.

[33] NOAA National Integrated Drought Information System https://www.drought.gov/states/Rhode-Island Accessed July 2021.

Table 13 History of Droughts[34]

Date	Area Affected	Category	Remarks
1930-31	Statewide	D1/D2	Stream flow of 70% normal.
1941-45	Statewide	D1	Stream flow of 70% normal in Blackstone and Pawtuxet Rivers.
1949-50	Statewide	D1/D2	Stream flow of 70% normal.
1963-67	Statewide	D1-D3	Water restrictions/well replacements common.
1980-81	Statewide	D1	Groundwater deficient in eastern part of state. Considerable crop damage.
1987-88	Southern part of the state	D0/D1	$25 million crop damage.
1998-99	Statewide	D1-D3	Spring through summer the State experienced 75% of normal flow.
2012	Statewide	D2	January –April 2012. Meteorological drought due to precipitation levels one half of normal.
2016	Statewide	D2	August to November. Severe Drought due to below normal precipitation.
2020	Statewide	D3	September to November. Extreme Drought

Extreme Temperatures

Description

Extreme cold may accompany winter storms, be left in their wake, or can occur without storm activity. Extreme cold can lead to hypothermia and frostbite, which are both serious medical conditions. The definition of an excessively cold temperature varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." In Rhode Island, extreme cold usually involves temperatures below zero degrees Fahrenheit.[35]

The wind chill index attempts to quantify the cooling effect of wind with the actual outside air temperature to determine a wind chill temperature that represents how cold people and animals feel, based on the rate of heat loss from exposed skin. A wind chill index of -5 indicates that the effects of wind and temperature on exposed flesh are the same as if the air temperature alone were five degrees below zero, even though the actual temperature could be much higher. The NWS issues the following a wind chill alerts:

› A wind chill warning is issued within 12 to 24 hours before the onset of extremely dangerous cold conditions. Issued when wind chill temperatures are expected to be hazardous to life within several minutes of exposure.

[34] USGS; RI Water Resources Board http://www.wrb.ri.gov/work_programs_drought/Drought_Facts_110607.html; and NOAA National Centers for Environmental Information https://droughtmonitor.unl.edu/AboutUSDM/AbouttheData/DroughtClassification.aspx

[35] Rhode Island State Hazard Mitigation Plan 2014.

- A wind chill watch is issued when conditions are favorable for excessive cold in the next 24 to 72 hours.
- A wind chill advisory is issued within 12 hours of the onset of dangerous cold conditions.

NOAA's National Weather Service issues **extreme (or excessive) heat** warnings when the maximum expected heat index is expected to be 105° F or higher for at least 2 consecutive days and nighttime air temperatures are not expected to fall below 75°. In the northeast, these criteria are generally modified to a heat index of 92° for higher for 2 consecutive days.

The following are the types of heat event warmings that are issued by NOAA's National Weather Service:

- An excessive heat warning is issued within 12 to 24 hours before the onset of extremely dangerous heat conditions.
- An excessive heat watch is issued when conditions are favorable for excessive heat in the next 24 to 72 hours.
- A heat advisory is issued within 12 hours of the onset of dangerous heat conditions.

Location

An extreme heat or cold event would be a regional issue affecting Newport and significant portions of Southern New England.

Probability of Future Occurrence

Highly Likely. (Excessive Heat)

Likely. (Extreme Cold)

Extent (Event Magnitude)

NOAA's National Weather Service has issued Wind Chill Advisories, Watches, and Warnings, as well as Excessive Heat Warnings, Excessive Heat Watches, and Heat Advisories for Newport.

Impact and Damage Extent

Extreme temperatures could have a serious impact on private and public structures, as well as the general population throughout Newport. During a heat wave, water supplies for drinking and firefighting may be stressed.

Personal exposure to dangerous heat conditions may lead to heat cramps, heat exhaustion, and heat stroke. These are especially important to monitor in children, elderly, and vulnerable populations that are not able to move to cooler conditions.

Extreme cold conditions may occur during, after, or without any connection to a winter storm. Exposure to extreme cold can lead to hypothermia and frostbite. In Newport, the supply of natural gas used to heat homes was once a concern but has been improved with infrastructure upgrades.

Climate Change Impacts

Over the coming century, extremely hot days (over 90 degrees F) is projected to increase in New England.[36]

"Extreme cold in Rhode Island is projected to continue as extreme weather events experience an upswing due to climate change. The specific likelihood of extreme cold is unpredictable, as days of frigid, arctic air and below freezing temperatures may be followed by days of mild temperatures in the 40s or 50s."[37]

History[38]

NOAA's Storm Events Database as documented the following extreme temperature events.

- In July 2011, Newport State Airport reported heat indexes of 106 to 110 over a 5-hour period.
- In February 2015, the Newport State Airport recorded wind chills as low as 26 degrees below zero.
- Wind chills of 34 degrees below zero were reported at Newport State Airport in February 2016.

Lightning/Thunderstorms

Description

Thunderstorms are formed when the right atmospheric conditions combine to provide moisture, lift, and warm unstable air that can rise rapidly. Thunderstorms occur any time of the day and in all months of the year but are most common during summer afternoons and evenings and in conjunction with frontal boundaries. The National Weather Service (NWS) classifies a thunderstorm as severe if it produces hail at least one inch in diameter, winds of 58 MPH or greater, or a tornado. About 10 percent of the estimated 100,000 annual thunderstorms that occur nationwide are considered severe. Thunderstorms affect a smaller area compared with winter storms or hurricanes, but they can be dangerous and destructive for a number of reasons. Storms can form in less than 30 minutes, giving very little warning; they have the potential to produce lightning, hail, tornadoes, powerful straight-line winds, and heavy rains that produce localized flooding.

All thunderstorms contain lightning. Thunderstorms can occur singly, in clusters, or in lines. Therefore, it is possible for several thunderstorms to affect one location over the course of a few hours. Thunderstorms usually bring heavy rains (which can cause localized floods), strong winds, hail, lightning, and tornadoes. Lightning is caused by the attraction between positive and negative charges in the atmosphere, resulting in the buildup and discharge of electrical energy. Lightning is one of the most underrated severe weather hazards yet ranks as the second-leading weather killer in the United States. "Hundreds of people across the nation are injured annually by lightning, most commonly when they are moving to a safe place but have waited too long to seek shelter. Lightning strike victims often suffer long-term effects such as

[36] Confronting Climate Change in the Northeast, by the Northeast Climate Impacts Assessment Group, July 2007

[37] RI Emergency Management Agency, State of Rhode Island Hazard Identification and Risk Assessment. November 2016

[38] NOAA Storm Event Database (2021).

memory loss, sleep disorders, weakness and fatigue, chronic pain, depression and muscle spasms. Lightning has the potential to start both house fires and wildfires. Lightning causes an average of 55-60 fatalities, 400 injuries, and over $1 billion in insured losses annually nationwide." Lightning often strikes as far as 10 miles away from any rainfall.

Location

All of Newport is susceptible to lightning/thunderstorms.

Probability of Future Occurrence

Highly Likely.

Extent (Event Magnitude)

There is no universally accepted standard for measuring the strength or magnitude of a lightning storm. Similar to modern tornado characterizations, lightning events are often measured by the damage they produce. Building construction, location, and nearby trees or other tall structures will have a large impact on how vulnerable an individual facility is to a lightning strike. A rough estimate of a structure's likelihood of being struck by lightning can be calculated using the structure's ground surface area, height, and striking distance between the downward-moving tip of the stepped leader (negatively charged channel jumping from cloud to earth) and the object. In general, buildings are more likely to be struck by lightning if they are located on high ground or if they have tall protrusions such as steeples or poles which the stepped leader can jump to.

Impact and Damage Extent

Lightning can strike buildings and accessory structures, often causing structure fires. Electrical and communications utilities are also vulnerable to direct lightning strikes. Damage to these lines has the potential to cause power and communication outages for businesses, residencies, and critical facilities.

Electrical and communications utilities are also vulnerable to direct lightning strikes. Damage to these lines has the potential to cause power and communication outages for businesses, residencies, and critical facilities.

Human vulnerability is largely determined by the availability and reception of early warnings for the approach of severe storms, and by the availability of nearby shelter. Swimming, boating, and fishing are particularly dangerous during periods of frequent lightning strikes, which can also cause power outages, topple trees, and spark fires. Individuals who immediately seek shelter in a sturdy building or metal-roofed vehicle are much safer than those who remain outdoors. Early warnings of severe storms are also vital for aircraft flying through the area.

Climate Change Impacts

Changing weather patterns may lead to more severe thunder and lightning storms.

History

There has been no reported loss of human life in Newport in the past 50 years due to lightning.

Table 14 Recent History of Lightning Events in Newport[39]

Date	Damages	Comments
08/4/2015	$0	A tree was struck by lightning. There was no resulting fire.

Microbursts

The Newport Hazard Mitigation Committee has chosen to consider the damaging effects of microbursts separate from lighting and thunderstorms.

Description

According to the National Weather Service, a microburst is "a localized column of sinking air (downdraft) within a thunderstorm and is usually less than or equal to 2.5 miles in diameter (a microburst is larger than 2.5 miles in diameter and lasts longer). Microbursts can cause extensive damage at the surface, and in some instances, can be life-threatening. There are two primary types of microbursts: 1) wet microbursts and 2) dry microbursts. Wet microbursts are accompanied by significant precipitation and are common in the Southeast during the summer months."[40]

Probability of Future Occurrence

Possible.

Location

All of Newport is susceptible to microbursts.

Extent (Event Magnitude)

A microburst is a very local event with winds of up to 100 mph.

Impact and Damage Extent

A sudden microburst can cause major damage to homes, buildings, utilities, and trees.

[39] NOAA Storm Event Database www.ncdc.noaa.gov and the City of Newport

[40] National Weather Service https://www.weather.gov/bmx/outreach_microbursts

Climate Change Impacts

Changing weather patterns may lead to more severe thunderstorms which contain microbursts.

History

The following microbursts/macrobursts have been noted throughout the state in recent years.

- June 2011: Cranston
- July 2012: Cranston
- September 2013: Warren
- July 2015: Narragansett
- August 2015: Warwick and Cranston

Tornadoes

Description

A tornado is a violent windstorm with a twisting, funnel-shaped cloud. They are often spawned by thunderstorms or hurricanes. Tornadoes are produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado season is generally March through August, although tornadoes can occur at any time of year. Over 80 percent of all tornadoes strike between noon and midnight. During an average year, about 1,000 tornadoes are reported across the United States, resulting in 80 deaths and over 1,500 injuries. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one-mile-wide and 50 miles long.

Tornadoes are categorized according to the damage they produce using the Fujita Scale (F-scale). Below is the Enhanced Fujita (EF) Scale and the Old Fujita (F) Scale. An F0 tornado causes the least amount of damage, while an F5 tornado causes the most amount of damage. Relatively speaking, the size of a tornado is not necessarily an indication of its intensity. On August 7th, 1986, a rare outbreak of seven tornadoes occurred in New England. One such tornado, rated F2 on the Fujita Scale, carved its way through Cranston, RI, and Providence, RI, causing twenty injuries and $2,500,000 in damages. Table 15 highlights more tornado events that have affected, Rhode Island.

Table 15 Fujita Scale

Fujita Scale			Enhanced Fujita Scale		
F Number	Fastest ¼ mile (MPH)	3 Second Gust (MPH)	EF Number	3 Second Gust (MPH)	Damage Scale
0	40-72	45-78	0	65-85	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
1	73-112	79-117	1	86-110	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
2	113-157	118-161	2	111-135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
3	158-207	162-209	3	136-165	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
4	208-260	210-261	4	166-200	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars are thrown, and large missiles generated.
5	261-318	262-317	5	Over 200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Probability of Future Occurrence

Unlikely.

Location

The Newport Hazard Mitigation Committee recognizes that the risk of tornadoes is low for the State of Rhode Island and Newport but with the recent changing weather patterns and touchdowns of tornadoes, it would be unwise not to consider them a possible hazard.

Extent (Event Magnitude)

Historically, Newport isn't known to be a hotbed of tornado activity. In 2019 an EF-0 tornado touched down in nearby Portsmouth and lasted for only about a minute.[41] It is expected that future tornadoes will be 0 or 1 on the F-Scale of magnitude.

Impact and Damage Extent

Tornadoes can cause significant damage to buildings, trees and above ground utility lines. Flying debris can be cause injuries to residents. In 2019 the nearby Town of Portsmouth experienced a small, quick tornado that uprooted a few trees.

[41] NOAA Storm Event Database (2021).

Climate Change Impacts

It is uncertain how climate change will affect tornado outbreaks in Newport.

History

There is no history of tornadoes in Newport but there have been occurrences in Rhode Island.

Table 16 Recent Tornado Events in Rhode Island[42]

Date	EF-Scale	Injuries	Damage	Location
8/16/2000	0	0	$0	Providence County
8/7/2004	0	0	$0	Kent County
7/23/2008	1	0	$47,987	Bristol County
8/10/2012	0	0	$50,000	Washington County
10/24/2018	1	0	unknown	North Providence and Lincoln
10/02/2019	0	0	$5,000	Portsmouth, RI
11/13/2021	0/1	0	unknown	3 tornadoes in Foster, Westerly, and North Kingstown[43]

Brushfire

Description

Brushfires are fueled by natural cover, including native and non-native species of trees, brush and grasses, and crops along with weather conditions and topography. While available fuel, topography, and weather provide the conditions that allow wildfires to spread, most wildfires are caused by people through criminal or accidental misuse of fire.

Brushfires, can pose serious threats to human safety and property in rural and suburban areas. They can destroy crops, timber resources, recreation areas, and habitat for wildlife. Wildfires are commonly perceived as hazards in the western part of the country; however, smaller brushfires are a growing problem in the wildland/urban interface of the eastern United States, including Rhode Island.

Brushfires are dependent upon the quantity and quality of available fuels. Fuel quantity is the mass per unit area. Fuel quality is determined by a number of factors, including fuel density, chemistry, and arrangement. Arrangement influences the availability of oxygen. Another important aspect of fuel quality is the total surface exposed to heat and air. Fuels with large area-to-volume ratios, such as grasses, leaves, bark and twigs, are easily ignited when dry.

[42] Rhode Island Emergency Management Agency (RIEMA), Rhode Island 2014 Hazard Mitigation Plan Update; NOAA Storm Event Database www.ncdc.noaa.gov

[43] https://www.wpri.com/weather/pinpoint-weather-alerts/nws-two-confirmed-tornadoes-in-rhode-island/

Climatic and meteorological conditions that influence wildfires include solar insulation, atmospheric humidity, and precipitation, all of which determine the moisture content of wood and leaf litter. Dry spells, heat, low humidity, and wind increase the susceptibility of vegetation to fire. In Rhode Island, common factors leading to large fires include short-term drought, humidity below 20%, and fuel type.

Various natural and human agents can be responsible for igniting brushfires. Natural agents include lightning, sparks generated by rocks rolling down a slope, friction produced by branches rubbing together in the wind, and spontaneous combustion.

Human-caused brushfires are typically worse than those caused by natural agents. Arson and accidental fires usually start along roads, trails, streams, or at dwellings that are generally on lower slopes or bottoms of hills and valleys. Nurtured by updrafts, these fires can spread quickly uphill. Arson fires are often set deliberately at times when factors such as wind, temperature, and dryness contribute to the fires' spread.

The temperate climate in Newport is not set up to endure long periods of drought that lead to widespread vegetation loss. Lightning fires in remote locations are rare but there is always a risk of fires from arson or careless fire use.

Location

The open fields, forested areas, and grassy areas throughout Newport are most at risk.

Probability of Future Occurrence

Highly Likely.

Extent (Event Magnitude)

Minor. Newport is largely built out but does maintain pockets of open space in places such as Fort Adams, Miantonomi Park and areas along Ocean Avenue. While the threat of wildfires in these limited open spaces may be slim, fires could still occur under the right conditions. Brushfires average about once per year with a burn area of generally one acre. The extent has decreased over the years due to better response equipment, faster response time, and the widespread use of cell phones used to report fires. However, the wildland-urban interface is growing, potentially putting more infrastructure and lives at risk.

Impact and Damage Extent

Individual buildings may be more or less vulnerable to damage from brushfires based on factors such as the clear distance around the structure and the structure's construction materials. Brushfires primarily impacts timber and forest ecosystems, although the threat to nearby buildings is always present.

The likelihood of brushfires occurring and having widespread impacts has decreased over the years as fields and wooded areas are taken over by development.

Climate Change Impacts

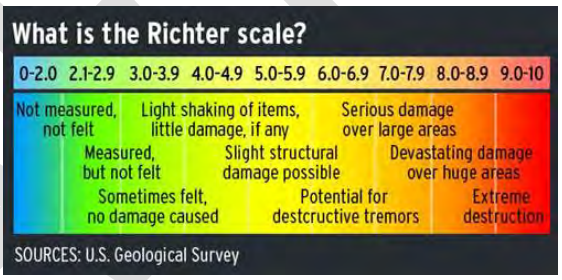
Longer dry periods and droughts may increase the probability of brushfires but their extent has diminished over the years due to advances in detecting and firefighting technologies.

History

There have been no significant brushfires in the past 25 years in Newport.

Earthquake

An earthquake (also known as a quake, tremor or temblor) is the result of a sudden release of energy in the Earth's crust that creates seismic waves. The seismicity or seismic activity of an area refers to the frequency, type and size of earthquakes experienced over a period of time. Earthquakes are measured with a seismometer. The size or magnitude is recorded on a device known as a seismograph. Earthquakes with a magnitude 3 or lower are mostly imperceptible (too low to recognize) and magnitude 7 earthquakes cause serious damage over large areas.



Although earthquakes are not considered to be a major problem in the Northeast United States, they are more prevalent than one might expect. Table 18 presents historical seismic activity for Rhode Island. It highlights the earthquake epicenter, the Richter magnitude at the epicenter, and the Mercalli Intensity Level. Richter magnitudes are technical quantitatively based calculations that measure the amplitude of the largest seismic wave recorded. Richter magnitudes are based on a logarithmic scale and are commonly scaled from 1 to 8. See the graphic below. The higher the magnitude on the Richter Scale, the more severe the earthquake. Mercalli intensity levels are based on qualitative criteria that use the observations of the people who have experienced the earthquake to estimate the intensity level. The Mercalli scale ranges from I to XII. The higher the intensity level on the scale, the closer the person is to the epicenter.

Table 17 Mercalli Scale

Modified Mercalli Intensity	Description of Intensity Level
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motorcars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level distorted. Objects thrown into the air.

Despite the low probability of a high impact earthquake, physical characteristics in Rhode Island may increase earthquake vulnerability:

- **Hard Rock:** Due to the geological makeup of New England's base rock, seismic energy is conducted on a greater scale (four (4)-10 times that of an equivalent Richter magnitude earthquake in California).
- **Soft Soil:** Many coastal regions of New England are made up of soft soils. These soils can magnify an earthquake as much as two times.
- **Structures:** The New England region, being one (1) of the first settled areas of the United States, has an abundance of older, unreinforced masonry structures that are inherently brittle and very vulnerable to seismic forces.
- **Low Public Awareness of Vulnerability:** Little public recognition of earthquake threat, and no established system of educating or informing the public of the threat or how to prepare for or respond during an earthquake. Therefore, higher losses will occur here than in other regions of the country.

Location

Rhode Island is located in the North Atlantic tectonic plate and is in a region of historically low seismicity. Only three (3) or four (4) earthquakes of Modified Mercalli Intensity Scale (MMI) V or greater have been centered in Rhode Island, including the 1951 South Kingstown earthquake of magnitude 4.6 on the Richter scale.

Probability of Future Occurrence

Possible.

Extent (Event Magnitude)

Minor. Damaging earthquakes do not normally occur in this region. Rhode Island is located in an area of "moderate" seismicity and "high" risk. Seismic risk applies to the seismic hazard, location demographics, and regional economics to the vulnerabilities of the structure or lifeline on the site. Seismologists have estimated that there is about a 50% probability of a very damaging magnitude 5.0 earthquake occurring anywhere in New England, in a 50-year period.[44]

Impact and Damage Extent

The committee recognizes that the potential for an earthquake to strike the City of Newport is relatively low but the hazard could afflict town-wide damage, causing power outages, building collapses, water main breaks, dam failures, gas leaks, fires and injuries or deaths. Buildings that are most at risk from earthquakes are the historic structures.

Climate Change Impacts

It is uncertain how climate change will affect earthquake magnitude in and around Newport.

History

No major earthquakes have happened in Newport but they have occurred in the region.

44 RI Emergency Management Agency, State of Rhode Island Hazard Identification and Risk Assessment. November 2016

Table 18 Historic Seismic Activity in/near Rhode Island[45]

Date	Epicenter	Epicenter Magnitude	Mercalli Intensity Level
10/16/1963	Coastal MA	4.5	Caused some cracked plaster (MMI V) at Chepachet, Rhode Island.
6/14/1973	Western Maine	unknown	The intensities in Rhode Island were IV at Charlestown and I-III at Bristol, East Providence, Harmony, and Providence.
03/11/1976	Near Newport, RI	3.5	Intensity level VI shock effects felt throughout Southern New England. This earthquake has the distinction of being the largest earthquake to originate in Rhode Island.
04/20/2002	Plattsburgh, NY	5.2	Intensity level II to III shock effects felt throughout Rhode Island.
03/11/2008	Central Connecticut	2.9	No data reported for Rhode Island.
06/23/2010	Ontario-Quebec	5.0	Felt throughout Rhode Island.
2011	Rhode Island	0.9	Felt locally in RI.
2012	Rhode Island	1	Felt locally in RI.
2013	Kingston, RI	Unknown	Felt locally in RI.
04/04/2013	Hope Valley, RI	1.8	Felt locally in RI.
01/12/2015	Wauregan, CT	3.3	Felt locally in RI.
07/22/2015	East Providence, RI	2.3	Felt locally in RI
12/01/2019	Newport, RI	2.0	Felt locally in Newport and Middletown
11/08/2020	Buzzards Bay	3.6	Felt locally in Portsmouth, Middletown and Newport
11/22/2020	Buzzards Bay	2.0	Felt locally in RI.

Dam Failure

Description

Dams are classified as high hazard, significant hazard or low hazard. The classification is not based on whether a dam is deemed safe or unsafe. As of 2020, there are 95 high hazard dams, 81 significant hazard dams and 493 low hazard dams in the state.[46] Each dam's hazard classification determines the frequency of inspection. The higher the classification, the more frequently the inspection is conducted.

- A *High Hazard* dam is one whose failure or misoperation will result in a probable loss of human life.
- A *Significant Hazard* dam is one whose failure or misoperation results in no probable loss of human life but may cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public's health, safety or welfare.

45 United States Geologic Survey http//neic.usgs.gov/neis/states/rhode_island/rhode_island_history.html and Earthquake Hazards Program "*Did You Feel It*" Archives.

46 2020 Annual Report to the Governor on the Activities of the Dam Safety Program. STATE OF RHODE ISLAND, RIDEM, Office of Compliance and Inspection, Dam Report 2019

- A *Low Hazard* dam is one whose failure or misoperation results in no probable loss of human life and low economic losses.

As part of each Rhode Island Department of Emergency Management (RIDEM) inspection, the major components of the dam are subjectively rated as good, fair or poor. The major components are the embankment, the spillway and the low-level outlet. Good means the dam meets the minimum Army Corps of Engineers (ACOE) guidelines. Fair means the dam has one or more components that require maintenance. Poor means a component of a dam has deteriorated beyond maintenance and is in need of repair.

Location

In 2020, RIDEM identified no dams in the City of Newport however various dams in neighboring towns are owned by the Newport Water Division. Newport's water supply is exclusively dependent on surface water for drinking water; the city owns nine surface water reservoirs located within four Rhode Island municipalities.

- Easton Pond (Middletown/Newport)
- Green End Pond (Middletown)
- Nelson Pond (Middletown)
- Gardner Pond (Middletown)
- Sisson Pond (Portsmouth)
- St. Mary's Pond (Portsmouth)
- Lawton Valley Reservoir (Portsmouth)
- Nonoquit Pond (Tiverton)
- Harold E. Watson Reservoir (Little Compton)

Probability of Future Occurrence

Possible.

Extent (Event Magnitude)

The extent of a failure would vary. The Newport Hazard Mitigation Committee has identified failure as a break in the dam, sending water downstream.

Impact and Damage Extent

The Newport Hazard Mitigation Committee recognizes that a dam failure is not a natural hazard in itself but several of the hazards listed in the hazard list could bring dam failure upon the City of Newport. Severe winter storms, flooding, and a hurricane could all bring enough rain and or snowfall to cause a dam failure. The age of these nearby dams also poses a risk to their structural integrity. A failure of the Easton Pond South Dam would cause significant damage to Memorial Boulevard and several hundred feet of Easton's Beach.

Climate Change Impacts

Related to flooding, more intense rain events may stress the structural integrity of dams which would lead to failure.

History

There have been two minor dam incidents with the Newport-owned reservoirs in recent history. A dam incident was detected in the Lawton Valley Reservoir Dam (Portsmouth) in February 2000; the vegetation on the earth concrete dam was deemed to be excessive and recommendations were made to remove it. Additionally, missing riprap and erosion issues were in need of repair (National Performance Dams Program).

Another dam incident was recorded in March 2000 with the Harold E. Watson Reservoir Dam (Little Compton). During the inspection the dam was found to have an eroded embankment and recommendations were made to remove excessive vegetation and to regrade the crest and plant it with grass for erosion protection (National Performance Dams Program).

Currently all the City's dams are stable. Routing maintenance has improved over the years.

Climate Change

Changing climate patterns globally and in Rhode Island will worsen the effects of natural hazards and affect future planning and mitigation efforts. Changes are already being observed and documented. Long-term climate change is likely to cause the following impacts in Newport:

- Heavier, more frequent precipitation events, which may cause more riverine flooding and flash flooding events.
- Longer periods of drought which may affect water availability and increase the threat for wildfires.
- Increasing air and water temperatures.
- More frequent high heat days and heat waves.

The Point Neighborhood (east of the Goat Island causeway), one of Newport's most historic areas, has experienced flooding from both storm surge and freshwater stormwater that is unable to drain. Unless adaptations actions are implemented, this area will likely see massive flooding during future hurricanes and rainfall events.

How rapidly these climate changes will be felt is debatable but there is certainty within the state that municipalities need to be prepared. The City aims to become more adaptable/resilient to the changing conditions.

"In recent decades, climate-related sea level rise has begun to change the frequency and severity of hurricanes along the East and Gulf coasts. Katrina, Irene, and Sandy wrought widespread destruction and suffering, including significant damage to cultural heritage.

Since 1990 Newport has been brushed by ten hurricanes and been hit directly by one; four of those have occurred in the last ten years.[47"48]

In Newport, climate change has become a real concern for historic preservationists, coastal homeowners, waterfront businesses, U.S. Navy, and the City. Through the exercise of creating this plan, the City of Newport is exploring ways to reduce their long and short-term risks to a variety of hazards. Any storm that comes up the eastern seaboard will likely impact Newport. As climate conditions intensify, the HMC is prepared to update this plan accordingly.

[47] Tropical Systems That Impacted Newport County RI – 1898 to Present." NewportRIWeather.com, 1 Sept. 2012. Web 17 July 2015. http://www.newportriweather.com/mwd/hurricanes/hurricanes.htm.

[48] Keeping History Above Water, *Climate Change in Newport* https://historyabovewater.org/climate-change-in-newport/

4

Risk Assessment

Facilities/Resources Inventory

The first step in the assessment process was to create the inventory of facilities and resources of special concern to the City. The HMC identified the following as community assets:

- Flood prone drainage systems, streets, or infrastructure
- Bridges
- Wastewater facilities
- Water supply systems
- Other services/utilities
- Public communication equipment
- Dams
- Critical municipal hazard response facilities
- Populations
- Businesses
- Schools
- Recreational facilities
- Natural resources
- Historic resources

During the review of these assets, the HMC came to the conclusion that not all of these are so vulnerable they require a new mitigation action within the next 5 years. For some, assets, the City will continue with ongoing actions. As infrastructure ages, and climate conditions change, the HMC will update this plan accordingly.

These most vulnerable assets are identified in the Community Assets Matrix located at the end of this section.

Hazard Mitigation Mapping

The City's GIS database, including parcel data, orthophotography and FEMA flood zone information, were utilized to complete the assessment. The use of this system allowed the HMC to estimate potential fiscal and population impacts for individual parcels.

The final output of this exercise is the City of Newport Community Assets Map in Appendix C. The focus of the maps is not to duplicate all of the spatial information generated through the inventorying process but rather to present the location of the identified risks as they relate to the City's response facilities.

Fiscal Impact Analysis

Although wind and heavy snow can certainly rack up substantial damages, flooding is one of the hazards that most frequently affects area populations. The City of Newport's parcel data and FEMA's 1% annual chance floodplain data were utilized to generate estimates of potential fiscal impacts from natural hazard events such as flooding. The information utilized from the tax assessor's database and GIS included the improvement values, land usage, and unit counts. The analysis showed that Newport is comprised of 4,864 acres of land (7.6 square miles), with about 1,127 acres in the regulatory floodplain. These areas are largely located along the coast, at Easton Pond (North and South), Lily Pond, Almy Pond.

HAZUS-MH is a software tool that contains models for estimating potential losses from earthquakes, floods, and hurricanes. HAZUS-MH was used to further understand the potential risk from a large hurricane. For the purpose of this plan, a scenario was run that capture the city's risk from hurricane damage. The table below summarizes some of the potential damages. The hurricane scenario model uses the same path as Hurricane Carol in 1954 which tracked west of Newport.

In 1954 Hurricane Carol (Category 1, peak gusts at 95 mph) tore through Southern New England, causing extensive damage throughout Rhode Island. If this same storm were to strike again today, it would cause over $45 million dollars in total economic losses (property damage and business interruption loss) in Newport.[49] About 173 buildings are expected to be at least moderately damaged.[50]

[49] 2014 dollars.

[50] A representative analysis. No particular buildings are identified.

HAZUS Qualitative Damage Description

- No Damage or Very Minor Damage
- Little or no visible damage from the outside. No broken windows, or failed roof deck.
- Minimal loss of roof over, with no or very limited water penetration.

Minor Damage

- Maximum of one broken window, door or garage door. Moderate roof cover loss that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.

Moderate Damage

- Major roof cover damage, moderate window breakage. Minor roof sheathing failure. Some resulting damage to interior of building from water

Severe Damage

- Major window damage or roof sheathing loss. Major roof cover loss. Extensive damage to interior from water.

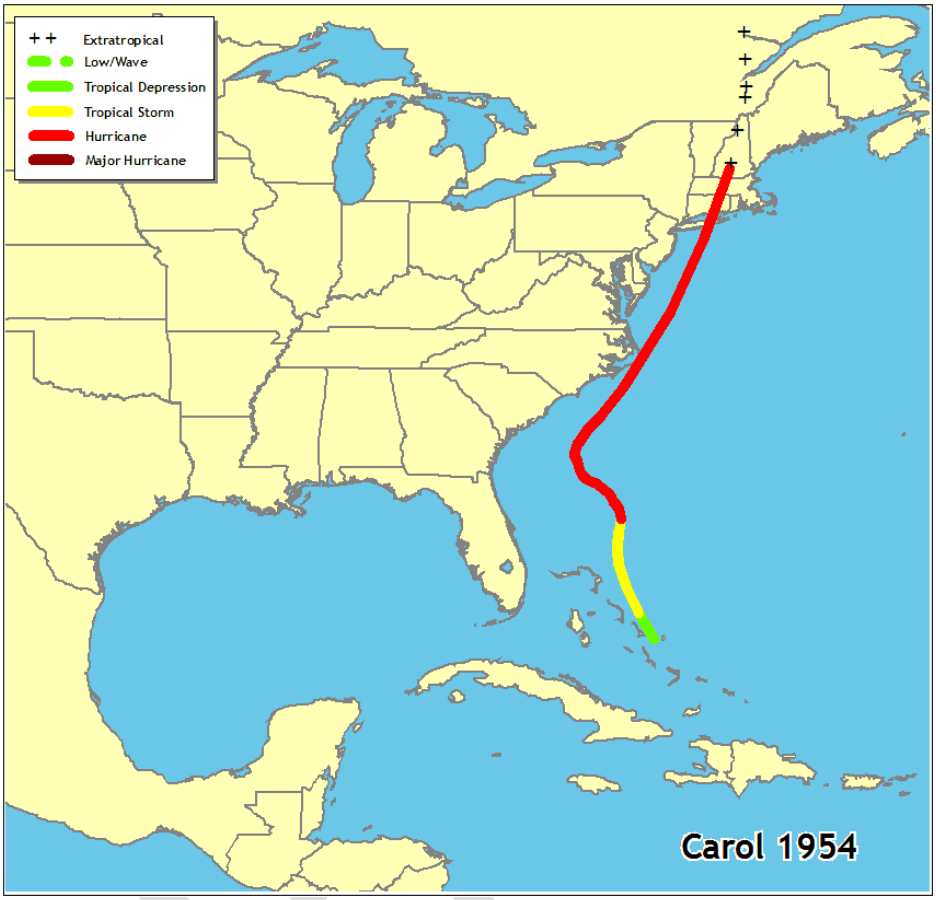
Destruction

- Complete roof failure and/or, failure of wall frame. Loss of more than 50% of roof sheathing.

Table 19 HAZUS-MH Scenarios for Newport, RI

1954 Hurricane Carol Scenario – If It Happened Today	
Estimated Damage	**Amount**
Debris generated	8,337 tons
Buildings destroyed	2
Buildings at least moderately damaged	173 (overt 2% of total number of buildings)
Displaced households	54 households may be displaced. 30 people out of a population of 24,672 will seek temporary shelter in public shelters.
Essential Facility Damage (fire, police, schools)	18 facilities would expect to be non-operational for less than a day.
Residential Property (capital stock)	$40,975,000
Business interruptions	$4,649,000

Figure 5 Hurricane Carol Path



During non-cyclone events, flooding can still impact the City. Table 20 displays potential damage estimates of property values of buildings within the City's Special Flood Hazard Area (SFHA), or regulatory floodplain. The parcel information, using the best available data, provides the number of parcels in the SFHA, and values of the buildings on each property. Land value was not considered for this exercise. The values provided are an estimate considering some properties are located in more than flood zone. This percentage was calculated in order to assist with identifying which areas are at greater risk. According to Table 24, the city-wide total potential building damages for these floodplain areas are over $1.3 billion.

Approximately 81% of Newport's revenue is generated from real estate taxes.[51] Should any of the properties forming the tax base be destroyed by a hazardous event, a causal effect would be those property owners whose parcels remain intact would carry and increased financial burden with regards to property taxes. It is an important course of action for the City to protect both lives and property from natural disasters.

Using data from the E-911 structure data from the RI Geographic Information System (RIGIS) and information from the Newport Tax Assessor, the following table summarizes the value of

51 Fiscal Year 2021 Adopted Budget

the insurable buildings that are located within the Special Flood Hazard Areas. Accessory buildings such as sheds located in the SFHA were not included in the summaries.

Table 20 Property Values of Parcels with Structures in Special Flood Hazard Areas by Flood Zone[52]

Flood Zone	# of Parcels	Total Acres	# Structures By Types	Total Building Value
VE	80	100	81 Commercial 47 Residential 15 Public Buildings 6 Government 1 Utility	$216,150,300
AE	691	243	710 Residential 215 Commercial 44 Public Buildings 7 Government 3 Utility	$1,123,538,800
TOTAL	**771**	**343**		**$1,339,689,100**

Table 21 Property Values with Structures in Special Flood Hazard Areas by Land Use Type[53]

Land Use Type	# of Parcels	Total Acres	Building Value
Residential	615	138	$ 573,429,800
Commercial[54]	140	125	$ 732,453,100
Public (Federal/State/Municipal)	31	100	$33,578,300
Utilities	3	7	$227,900
TOTAL	**789**	**370**	**$1,339,689,100**

Built Environment

According to HAZUS-MH, Newport has over an estimated 9,376 buildings with a total replacement value (excluding contents) of $4.3 billion (2014 dollars). Approximately 87% of the buildings and 77% of the value are associated with residential housing.

[52] Based on RIFIS e911 Sites, FEMA 2015 Flood Insurance Rate Maps, and 2021 parcel information from the City. Accuracy of the data was not verified. This data is to be used for planning purposes only to prove estimate values.

[53] May include some accessory structures that are in adjacent parcels, forcing the counts, but not the values.

[54] Includes lodging and waterfront businesses.

Using the Rhode Island GIS e911 structure file, and the City's GIS, it was determined that there are total of 1,134 structures within 771 parcels that are located in City's Special Flood Hazard Areas.

There are 935 flood insurance policies in place for a municipality that has 1,134 buildings in the regulatory floodplain (VE and AE-zones). In the lower risk X-zones, 353 policies are in place, just in case it floods. These polices are more affordable than those in the A-Zones.

Table 22 Flood Insurance Information[55]

Total Number of Policies	935
Total Premiums	$1,857,814
Insurance in Force	$233,659,500
Total Number of Closed Paid Losses	292
$ of Closed Paid Losses	$7,074,773
Repetitive Loss Properties	22
Severe Repetitive Loss Properties	5

Number of Policies in Each Zone:

Zone	Policies
A-Zone	528
VE-Zone	48
X-Zone (Standard)	170
X-Zone (Preferred)[1]	183

1 Preferred Risk Policies (PRP) are more affordable policies cover structures that were built in an X zone but due to new mapping, are now located in a Special Flood Hazard Area.

Areas that didn't used to flood are now more vulnerable as sea levels continue to rise and riverine flood intensity and frequency increases. While the City has been encouraging more resilient re-development many vulnerable areas remain unprepared to face a storm of any significance.

"The principal developed areas that are most at risk for flooding include the northern half of Goat Island, the Harbor/Lower Thames area, portions of the Navy base, the area around 3rd Street / Training Station Road, and the Price, Goose and Cherry Necks. "Undeveloped" flood plain areas include the large floodplain extending north from Ocean

FEMA A-Zone vs. AE-Zone

Both are considered Special Flood Hazards Areas- areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage.

AE Zone: Base Flood Elevations (BFEs) are provided on the FEMA maps. Formerly A1-A30 numbered zones.

A Zones: Detailed studies have not been conducted which indicate depth or base flood elevation.

[55] As per the State Hazard Mitigation Officer June 9, 2021

Drive more or less through the Newport Country Club to Brenton Cove at Harrison Avenue; and Lily, Almy, Easton (North and South) and Green End Ponds. It is important to note that these ponds are also subject to saltwater wave action. This is a serious threat to the ponds survival due to the fact that they are all freshwater ponds. Newport also receives water from Nelson's and Gardiner ponds in Middletown, which are also threatened by coastal flooding."[56]

The HMC has identified critical infrastructure listed in the Community Asset Matrix (Table 22). The list includes flood prone drainage systems, streets or infrastructure; bridges; wastewater; water supply; services/utility facilities; public communication equipment; dams; critical municipal hazard response facilities; populations; businesses; schools; recreational facilities; and historic resources. All of these important community resources have the potential to be affected by natural disasters. The magnitude of the losses would be dependent upon the type, location, and extent of each unique hazard.

The City's zoning laws help dictate future development while maintaining Newport's unique, historic character. Continued enforcement of Rhode Island State building codes and new regulations as required will lessen potential damage caused by a natural hazard event. The codes adopted by the City of Newport range from building codes and design standards, to zoning regulations.

Population Impact Analysis

Of primary concern during a hazard event is protecting the health and safety of Newport residents. In addition to knowing the total and seasonal population, it's also important to estimate how many people would be impacted by loss of service or need to evacuate. According to the 2019 American Community Survey 5-Year Estimates, there are 12,991 housing units in Newport supporting a population estimate of 24,663. The population in Newport is generally clustered in the Historic Hill and Downtown areas of Newport (west of Bellevue, east of America's Cup, and north of Memorial Boulevard. Most of the year-round population live in the North End neighborhood. The 2010 Population data was used in Figure 8 to estimate the most densely populated areas based on the best available data.

Visitors and employees from out-of-town represent a segment of the vulnerable population. These non-residents may be unfamiliar with evacuation routes, or flood risks during severe weather. Improving emergency response and educating these populations is important to the City.

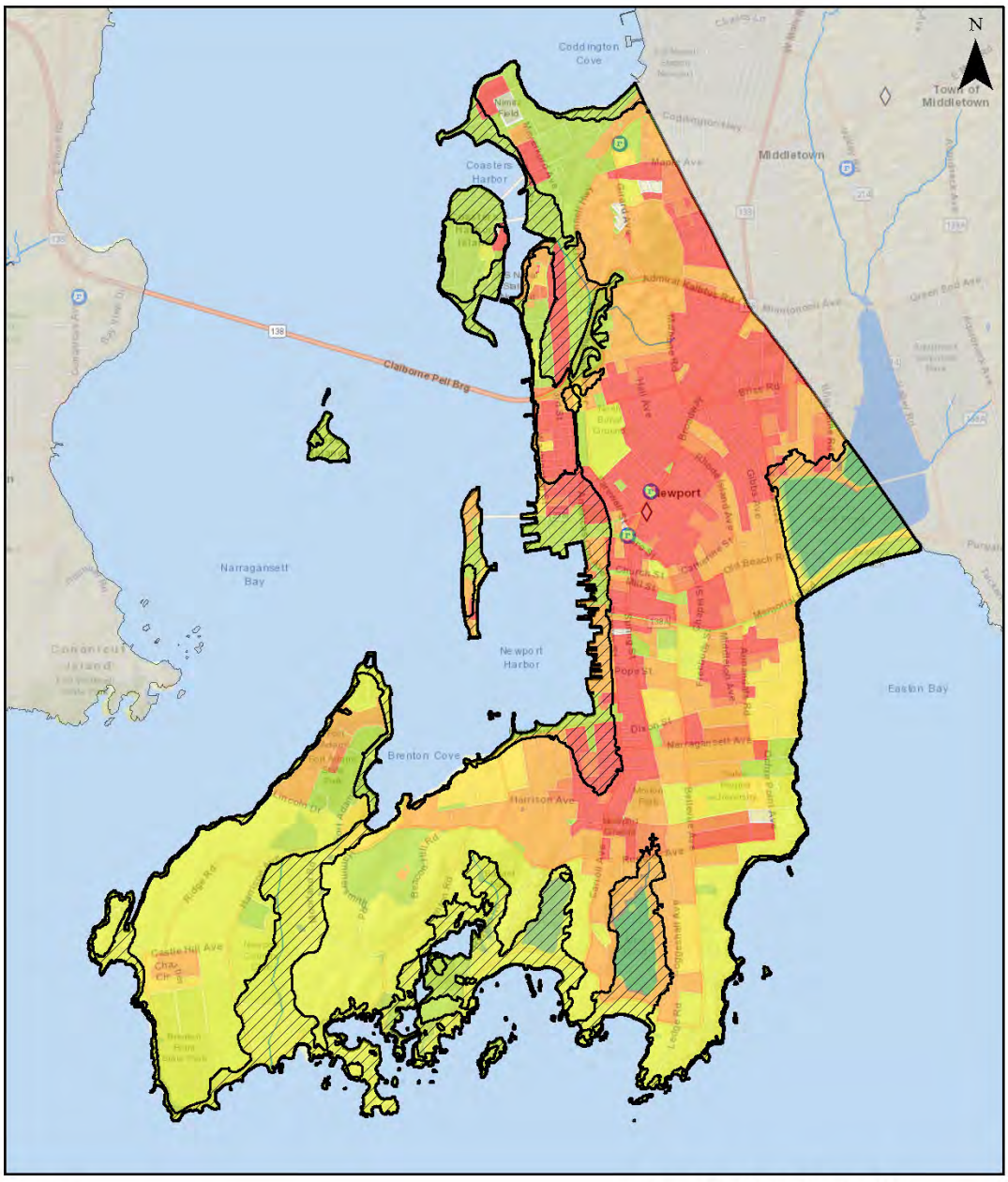
A significant hazard can significantly cripple the City. In addition to direct damage to personal property, impacts can include the disruption of vital services, the loss of utilities, and the emotional strain from financial and physical losses. This is especially jarring when residents are forced to evacuate their homes.

Newport and Middletown share a regional emergency shelter. In general, a low percent of the population will leave their homes and take refuge in a local emergency shelter. About

[56] Newport Comprehensive Land Use Plan 2021

5,000 people from Newport and Middletown would represent 10% of the regional population. Even though the shelter can only support about 1,000 people, it is difficult to staff with volunteers and people rarely use it.

Figure 6 Population Density of Newport



Natural Environment

The Newport Comprehensive Land Use Plan identifies the following critical natural resources:

- Coastal ponds
- Coastal marshes
- Beaches and shoreline
- Newport Harbor
- Wetlands
- Forest cover
- Open space and conservation lands
- Scenic views

Rhode Island has experienced a significant increase in both flood frequency and flood severity over the past 80 years. Climate change is expected to result in more frequent heavy rains, affecting stream flow.[57]

The biggest threats to the natural environment in Newport are non-point source pollution, point source pollution, and existing development patterns.

Impacts of severe weather events to the natural environment include loss of habitat, damage to trees, threats to ecosystems/ species, and contamination of potable water supply.

Vulnerability of Future Structures

The City of Newport is approaching maximum build out capacity. As previously mentioned, the City of Newport is 90% built out with only a small portion of the land within the community being vacant and available for development. The Pell Bridge Ramp Realignment project is expected to free up over 20 acres of available land by the removal of obsolete infrastructure, much of this available land is located within or near a flood plain, Other redevelopment in the city often leads to an increase in impervious surfaces, with modest structures being razed to make way for larger structures and increased hardscape.

Newport's vulnerability to natural hazards is not expected to change dramatically over the next five years due to increased development. Enforcement of current building codes and smarter building will ensure that development will be stronger and more resilient than some of the older, historic structures in Newport.

Future Vulnerability

In 2020, the City of Newport held a Community Resiliency Building Workshop as part of the State's Municipal Resilience Program. The Core Project Team and workshop participants are

57 Rhode Island's Environmental Climate Change Coordinating Council (EC4) Science and Technical Advisory Board, *Current State of Climate Science in Rhode Island*, May 1, 2016 Microsoft Word - STAB_Ann_Rpt_Final.docx (ri.gov)

concerned about major storms (including hurricanes and Nor'easters), pandemics, future sea level rise, precipitation-driven flooding, and heavy wind events.[58]

As climate conditions change, increased storm intensity or frequency coupled with rising sea level may put considerable stress on the infrastructure in Newport. Extreme high tides (sunny day flooding) will become more usual. Low-lying coastal roads will flood more often and may eventually become unusable.

Drainage infrastructure may be overwhelmed more often during more intense rain events. Urban areas such as the North End have poor draining soils and more impervious surfaces, intensifying the flood risk. Fire hydrants, pump stations, and sewer and water lines will be stressed or inaccessible by the rising streams. Residents in areas that are not used to flooding may see flood waters inch closer to their property.

Longer periods of elevated heat during the summer (during prime tourist season) will cause increase stress on vulnerable populations including the elderly, disabled, and those that do not have access to cooling.

Community Assets Matrix

The matrix (Table 23): Critical Infrastructure/Community Assets represents the culmination of the risk assessment process and is the final product. Its purpose is to gather all the pertinent results in one place for ease of presentation and to serve as a starting point for discussion of specific mitigation actions. It not only lists the specific areas of concern, but provides detailed location information, summarizes the applicable hazard, problem, and mitigation benefits

[58] City of Newport (2020). Online Resilience Building Workshop- Summary of Findings, State of Rhode Island Municipal Resilience Program. City of Newport, Rhode Island Infrastructure Bank, The Nature Conservancy. Newport, Rhode Island.

Table 23 Newport Critical Infrastructure/Community Assets

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
Flood Prone Drainage Systems, Streets, or Infrastructure	• Whitwell Ave. (development on natural drainage) • Harrison Ave. • Ellery at Gibbs; Eustice; and Kay • Marchant • Bedlow at Hillside (development on natural drainage) • Broadway at Ayrault; Marlborough • The rotary- JT Connell area • Prescott neighborhood • The Point/Bridge Street • Wellington Ave. • Thames Street • Memorial Blvd @ First Beach • Ocean Drive at Harrison • America's Cup Ave. • West Marlborough St. (tied to Marsh Street- 1 drainpipe gets backed up when tide is over outfall (42inch diameter)) • Garfield Street	Hurricane/Nor'easters Flooding • King tides cover outfalls + rain event • Overwash during king tide event • Development in natural drainage areas • System cannot handle intense short rainfalls, esp. during high tides. Soils are poor for infiltration (clay). • Incremental infill (such as driveways) slowly increases the impervious surfaces	New tide gate on Bridge St. New tide gate on Marsh St. Pending tide gates on Wellington. Drainage studies on riverine flooding. Using a Southeast New England Program (SNEP) grant to improve the area. Utility Department has been pro-actively floodproofing city buildings. Passed a zoning update for the North End that takes into account resiliency (North End Urban Plan). Ongoing efforts to reduce flooding at Whitwell Avenue. State level (RI EC4) efforts to create a statewide buyout process.	1. Create a Stormwater Management Overlay District. 2. Create a High Water Table Limitations Overlay District. 3. Improve Elizabeth Brook flooding. a. Daylight Elizabeth Brook b. Create deep stormwater storage green areas along the brook. c. Construct a flood gate or storm surge gate where Elizabeth Brook flows into Coaster's Harbor north of Admiral Kalbfus Road. 4. Improve Stormwater Education a. Continue Adopt-a-Catch Basin initiative which encourages residents to help keep the city's storm drains and catchbasins clear of leaves.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
			(re-)Development Plan Review Ordinance for larger projects. Robust catchbasin cleaning program. SNEP Grant, prioritizing projects. Developing a full-time role for a Resiliency Planner Redesign of Pell Bridge approaches (RIDOT)	b. Continue public education on tide gates and high tides. c. Educate residents and builders on the effects of buildout, sea level rise, and stormwater connections. d. Educate residents on the damaging effects of phosphorus loading. 5. Require the use of the CRMC Coastal Hazards Analysis Worksheet for all development and redevelopment. 30. Develop a strategic managed retreat plan for the Point Neighborhood.
Bridges	Newport Claiborne Pell Bridge (State) Jamestown Verrazano Bridge (State) Goat Island Causeway (State/City, in STIP) Van Zandt bridge (City owned) (access to evacuation route)- in dire need of repair. Green Bridge (City) Memorial Blvd culvert Bridge on north end to leave Coasters Island (Navy). Coast flooding east and north. Access issue. Bridge to Harbor Island- high tides	Hurricane/Nor'easters Flooding Winter Storms Tornadoes Earthquakes	Pell bridge ramps being re-designed and pulled out of flood zone (DOT) The Van Zandt approach to the Pell Bridge is in City Capital Improvement Plan. All bridges except for Memorial Blvd are in	6. Evaluate evacuation routes/timing for Coasters Island. 7. Mitigate Goat Island Causeway at Newport Harbor to protect from sea level rise. RIDOT to assess for major rehabilitation work, superstructure, and/or total bridge replacement.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
			State Transportation Improvement Program (STIP) The Navy is looking at bridge vulnerability as part of Military Installation Resiliency Review (MIRR) grant.	
Wastewater	Sewer collection system (Water Pollution Control Division and Newport Water Services LLC) • Wastewater Treatment Facility (WWTF): 250 JT Connell Highway • Wellington Avenue Combined Sewer Overflow Facility and Pumping Station: 50 Wellington Avenue • Washington Street Combined Sewer Overflow Facility (storage and treatment): 25 Washington Street • Sewer Pumping Station: 4-1/2 Alpond Drive • Sewer Pumping Station: Beach – 170 Memorial Boulevard • Sewer Pumping Station: Bliss Mine Road – 86 Ellery Road • Sewer Pumping Station: 224-1/2 Carroll Avenue • Sewer Pumping Station: 32 Codington Wharf • Sewer Pumping Station: 7 Dyre Street • Sewer Pumping Station: Goat Island • Sewer Pumping Station: 17 Hazard Road • Sewer Pumping Station: 25 Lees Wharf	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes Drought Heat Wave Dam Failure	Wastewater Treatment Facility and 2 CSO have generators. Large pump stations have generators others have hook-ups. Raised controls at: WWTF, Washington, Wellington, Long Warf Pump Station (pending). Looked at resiliency for all utility projects.	8. Evaluate flooding frequency and magnitude of the roads near the WWTF outfall at Coddington Point.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
	• Sewer Pumping Station: 100 Long Wharf • Sewer Pumping Station: 214 Maple Avenue • Sewer Pumping Station: 12 Murray Place • Sewer Pumping Station: 50 Ruggles Avenue • Sewer Pumping Station: Ranger Road			
Water Supply Systems	• Station 1 Water Treatment Plant: 100 Bliss Mine Road • Lawton Valley Water Treatment Plant and water storage tanks: 2154 West Main Road, Portsmouth Newport owns and operates the Regional Water system (Portsmouth, Middletown, and NPT), reservoirs on mainland.	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes Drought Heat Wave Dam Failure	Both water treatment plans have full generator power. Station 1 improvements took into account sea level rise.	None at this time. Water Treatment Plant Station 1 may have to be relocated in 20 years.
Other Services/Utilities	Electrical grid (National Grid) Natural gas supply (National Grid)	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes Drought Heat Wave Dam Failure	National Grid improved the electric grid at JT Connell Highway and rest of Aquidneck Island. National Grid assessed the long-term resilience of the natural gas supply. National Grid replacing low-pressure gas lines. National Grid has a temporary tank farm on Whapping Rd. in Portsmouth. Focus on Aquidneck Island and gas	9. Implement solutions to natural gas resiliency on Aquidneck Island.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
			supply resilience at the end of the pipe. Utilities consult on development projects within 200 feet of a reservoir. Ongoing study of the effects of climate change on southern reservoirs. City is looking to move from LNG to full electrification.	
Communication Equipment	Cell tower on Old Fort Rd at Fire Station Internal comm tower at Police Station on Broadway. West Marlborough for FD, FD Station 5 on Touro St. Cell towers at Reservoir. Rd in Middletown and Lawton Valley in Portsmouth. Churches, etc. 800 MHz tower is in Middletown. Hospital	High Wind/Microburst Lightning	New dispatch is being constructed at Fire Station 5. Police department making upgrades as needed.	10. Upgrade Police Department radio systems (including portables) 11. Monitor available upgrades for mobile communications in Police cruisers.
Dams	Easton Pond South (Dam #585) -high hazard	Hurricane/Nor'easters Flooding Winter Storms Tornadoes Earthquakes	Resiliency study at South. Easton Dam. BRIC grant to better identify improvements from the study. Then move to design and construction.	12. Design and construction as per results of the second round of the Easton Pond Dam study.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
Critical Municipal Hazard Response Facilities	• City Hall: 43 Broadway • Fire Station 1: 21 West Marlborough Street at America's Cup Avenue (Built 1934), in flood zone • Fire Station 2: 100 Old Fort Road (Built 1986) • Fire Station 5: Touro Street at Mary Street (Built 1867, renovated 1895) • Police Station (EOC): 120 Broadway- limited space • Newport Hospital: 11 Friendship Street • Newport Animal Hospital: 541 Thames Street • JT Connell (Evac route) floods • Sheffield School (Innovate Newport)- potential EOC location <u>Emergency Shelters</u> • Rogers High School, 15 Wickham Road, Newport • Pell School: 35 Dexter Street, Newport; capacity: 419 persons (area of refuge, not Red Cross approved) • Florence Gray Center: 1 York Street, Newport; capacity: 345 persons • Gaudet Middle School: Tuner Rd. (Preferred Regional Shelter)	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes	Considering moving EOC. Did a study to get a grant for generator due to data limits. Applied for DCIP grant for generator at Innovate Newport.	13. New generator at Innovate Newport/Sheffield School/EOC. a. Perform a study to evaluate building needs. b. Purchase and install a generator. 14. Relocate Fire Station 1 out of the floodplain. 15. Develop a Disaster Recovery Plan. 16. Formally organize the current Emergency Management volunteers into a Citizens Emergency Response Team (CERT).
Populations	765 residential structures in the flood hazard area. • Heatherwood Nursing and Subacute Center, 398 Bellevue Avenue • St. Claire Home, 309 Spring Street	Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes	Special Needs Registry. Fire Department checks on resiliency during annual site visits.	17. Improved Public Education a. Education on storm drains/road flooding- wait it out. b. Improve education on 72- hour shelter in place.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
	• Village House Nursing and Rehabilitation Center, 70 Harrison Avenue • Scattered Elderly Housing Project: Edgar Court, Earl Avenue, Pond Avenue, Chapel Street (low-rise), and Coddington Street • Donovan Manor, Chapel Street • Mumford Manor, Farewell Street • John Clarke School Senior Apartments, Mary Street • Paramount Theatre Apartments, Broadway • Ahepa 245 I and II Senior Housing, Girard Avenue • Henderson Home (elderly) • Old YMCA housing- 50 Washington Sq. • Seamen's Church Institute • Harbor House – Washington St. • Nina Lynette Home (independent seniors)	Drought Heat Wave	Shelter need being assessed. Working on a Transportation Plan to evacuate people in low-lying areas to the Regional Shelter. Ongoing flood education efforts as part of Community Rating System requirements.	c. Educate on effects of buildout/SLR/stormwater connections. d. Climate change adaptation.
Businesses	302 commercial structures in the flood hazard zone Tourism-related sector Defense industry Warf businesses and marinas Businesses at Easton's Beach	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes	Small Business Resilience Project (CRC) URI students are looking at JT Connell businesses along Elizabeth Brook that are vulnerable to flooding. Grant effort (Military Installation Resiliency Review) by Naval base and City operations. Simulated storm events and response. Navy Postgraduates looking at	18. Develop guidelines for redevelopment post-disaster. 17. Improved Public Education (above).

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
			evac routes and shelter times/capacities.	
Schools	• Pell School: 35 Dexter Street • Thompson Middle School: 55 Broadway • Rogers High School: 15 Wickham Road • Newport Area Career and Technical Center: 16 Wickham Road • Aquidneck Island Adult Learning Center: 435 Broadway • Naval War College • Met School • Community College of Rhode Island-Newport County Campus • St. Michael's Country Day School • Salve Regina University • Various Private Schools	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes	Deconstructing Rogers HS and rebuilding. $96 million Pell School- $8M addition being added. Distance learning. New buildings will be more resilient to storms/high winds. New buildings will also consider energy efficiency.	19. Develop a student bus transportation plan to safely evacuate students during a storm. 20. Invest in broadband improvements for schools to boost remote learning capabilities.
Recreation Facilities	Cliff Walk Beaches Major Parks	Hurricane/Nor'easters Flooding Winter Storms Lightning Extreme Heat	Cliff Walk continues to have improvements. Seawall repairs throughout the City. Easton Beach- looking at structural issues to make more resilient. Carousel/Snack Bar at First Beach is boarded up to reduce further storm damage.	21. Develop a comprehensive management plan for the Cliff Walk. 22. Design and install splash pads at two playground facilities. 23. Evaluate reconstruction/ relocation of Carousel/ Snack Bar facilities to improve resiliency from coastal storms and high tides.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
				24. Improvements to the Martin Recreation Center (the Hut). a. Needs assessment b. Implement improvements
Natural Resources	Freshwater Wetlands Saltwater resources Newport Harbor Forested areas Beaches	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes Drought Heat Wave	Robust tree planting program. Tree maintenance by City and National Grid. Save the Bay dune restoration- annual. Inlet at Hazard Road dune restoration. Lily and Almy Pond: TMDLs for nutrient loading. Identifying which outfalls contribute to loading. All residential property. Tree filters, other BMPs with DEM grant. Reducing beach closures. UV system treats runoff from moat. Trash skimmer partnership with Clean Ocean Access.	4.d. Educate residents on the damaging effects of phosphorus loading. 25. Develop a steep slope ordinance. 26. Continue to support our partners in habitat restoration. -Newport Tree Program -Aquidneck Island Land Trust -Save the Bay -Clean Ocean Access 27. Establish a tree trust for development projects.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
			Clean Ocean Access water testing, beach cleanups.	
Historic Resources	In the floodplain • Weatherly (yacht), 49 America's Cup Boulevard, (8/28/12) • Castle Hill Lighthouse, Castle Hill, off Ocean Avenue, at the west end of Newport Neck (3/30/88) • Fort Adams State Park/Fort Adams, Harris Avenue-Fort Adams (7/28/70) • Newport Harbor Lighthouse, Goat Island (Newport Harbor) (3/30/88) • Ida Lewis Rock Lighthouse, Lime Rock (in Newport Harbor off Wellington Avenue) (2/25/88) • Seamen's Church Institute, Market Square (8/4/83) • Rose Island Lighthouse, Rose Island (4/10/87) • The Brick Market Historical Society, 127 Thames Street (10/15/66) NHL 1960 • Perry Mill, 337 Thames Street (1/13/72) • Francis Malbone House, 392 Thames Street (4/28/75) • Coronet (yacht), 449 Thames Street (6/3/04) • Newport Steam Factory (Electric Works), 449 Thames Street (1/20/72), • Hunter House, 54 Washington Street (11/24/68) NHL • William King Covell III House/Milton H. Sanford House, 72 Washington Street (5/31/72)	High Wind/Microburst Hurricane/Nor'easters Flooding Winter Storms Lightning Tornadoes Earthquakes	Rhode Island Coastline CSRM (Coastal Storm Risk Management) Feasibility Study (USACE). Guidelines on Flood Adaptation for Rehabilitating Historic Buildings: re-released in 2021. Elevate historic structures. Streetscape/history preservation. None to full BFE. Local historic district has guidelines for elevating structures. 1 of 2 in the country! City of Newport | City Seeks to Elevate History Against Climate Change SHPO to maintain facade of Old Navy Hospital.	28. Document and follow-up on what has been done since Keeping History Above Water. 29. Engage in a community discussion after the U.S. Army Corps of Engineers (USACE) Rhode Island Coastline Coastal Storm Risk Management (CSRM) Feasibility Study is complete. 30. Develop a strategic managed retreat plan for the Point Neighborhood.

At Risk	Location	Hazard/Problem	Ongoing Actions	Mitigation Actions
	• Clark (Sherman) High School, 279 Thames Street (1/13/1972) • North Light Historic District • Ocean Drive Historic District • Fort Adams Historic District • Kay Street, Catherine Street, Old Beach Road Historic District			

5

Programmatic Capabilities

Purpose

This capability assessment examines the existing studies, plans, programs, and policies that have incorporated hazard mitigation and other pro-active tools into the City's system. The purpose of the capability assessment is to highlight successes, identify shortcomings, and to lay the groundwork for possible improvement. The City of Newport recognizes that the inclusion of mitigation initiatives not only benefits the community by reducing human suffering, damages and the costs of recovery, but also helps build and maintain the sustainability and economic health of the City. This section details the City's existing relevant plans, programs, and policies that were reviewed during the drafting of this plan.

Primary Plans, Regulations, and Departments

Capital Improvement Plan (CIP): Updated annually, the CIP was last updated in 2021 for the period 2021-2025, the CIP prioritizes public infrastructure projects over four years. Capital expenses include new or expanded physical facilities that are large, expensive, and permanent. Examples include senior centers, schools, City hall, public safety buildings and equipment, roads, public libraries, and park and recreational facilities. Such facilities are expensive and cannot normally be financed on a "pay-as-you-go" basis. Actions identified in this tool are reviewed when updating the Newport Hazard Mitigation Plan.

Community Resilience Building Workshop Summary of Findings: In 2020, The City of Newport participated in Rhode Island's Municipal Resilience Program and engaged in a community-driven process to assess current hazard and climate change impacts and to identify projects, plans, and policies to improve resilience.

Comprehensive Land Use Plan: The City's Comprehensive Land Use Plan was most recently updated in 2017, last amendment in 2021. Newport's Comprehensive Land Use Plan

identifies actions that can be taken to address increased development pressures, economic stability, open space and recreation issues, and public infrastructure and facilities. It outlines goals, policies, issues, and actions to provide a framework for everyday operations within the City.

Newport has recognized the importance of incorporating mitigation initiatives (both Pre- and Post-Disaster) into the Comprehensive Land Use Plan and has adopted the mitigation strategy and planning process into its publicized City-planning initiatives. Further revisions of the Comprehensive Land Use Plan will reflect the mitigation actions set forth in this 2022 plan, as well as revisions of such, when setting goals for the City, which will allow all City plans to incorporate comprehensive mitigation planning for the City. Natural hazards and climate change are incorporated into the current Comprehensive Land Use Plan as per State recommendations.

Continuity of Operations Plan (COOP)/Continuity of Government (COG): City operations should be performed efficiently with minimal disruption, especially during an emergency. The plan provides an overview of continuity of operations efforts. Departments have further specific plans outlining procedures necessary to maintain essential services on a day-to-day basis.

Emergency Operations Plan: This plan addresses the response to extraordinary emergency situations associated with natural, man-made, and technological disasters. The City's Emergency Operations Plan further addresses pre- and post-disaster strategies to affectively deal with the hazards addressed in this plan such as hurricane and flooding evacuation, public warning and sheltering during natural disasters. Newport's plan combines mitigation, preparedness, response, and recovery. Future revisions of the EOP by the Newport Emergency Management department will continue to incorporate mitigation activities; including those listed in the Plan. This plan is reviewed and updated every few years to include changes in policy, new information, or changes in hazard threats.

Erosion and Sediment Control Plan and Stormwater Pollution Prevention Plan (SWPP): This bylaw was adopted to ensure that land disturbance activities do not increase stormwater run-off. Applicants must file an erosion and sediment control plan as well as a soil erosion and sediment control permit application. For disturbance areas greater than one acre, a stormwater pollution prevention plan (SWPP) must also be approved. Where applicable, a Rhode Island freshwater wetlands permit is required.

National Flood Insurance Program (NFIP): The City of Newport is an active and compliant member of the National Flood Insurance Program since 1990. As such, Newport residents are able to purchase flood insurance to protect their property against flood losses. The City of Newport has adopted the most recent (September 2013) Flood Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS). The City has designated the Building Official as the NFIP Coordinator to manage the program. Chapter 15.24 of the City's Code of Ordinances is dedicated to the floodplain management program. The special flood hazard areas make up the floodplain overlay district.

FEMA is phasing in a new pricing methodology which delivers more equitable flood insurance rates. This methodology takes into account the value of the home and the unique

flood risk of the property. FEMA will include variables such as storm surge, coastal erosion, heavy rainfall, distance to a water source, elevation, and the cost to rebuild.[59] The City also maintains the following which support the NHIP participation.

MapGeo- The City maintains an interactive online map that shows flood hazard zones, City infrastructure, zoning, and other points of interest. https://newportri.mpageo.io/

Floodplain Education- The NFIP Coordinator is available to answer questions that residents may have about flood insurance, map updates, compliance, or floodplains. There are also flood-related print materials available at the Building Official's office. The City maintains a website specifically dedicated to flood protection.

CRS- In 2017 Newport earned the Community Rating System (CRS) Class 7 Designation. This is expected to save Newport homeowners an average of $247 annually on flood insurance premiums.

Subdivision Regulations: Written and approved by the Planning Board, these regulations: promote the protection of the existing natural and built environment from fire, flood, and other hazards or damages. Land Development Regulations are currently being drafted.

Tree Trimming Program: In partnership with local utility companies the City of Newport's Department of Public Services regularly maintains trees along public roads. The City has a chipper for branches and utilizes the State MPA for larger trimming projects. The City does not work near power lines. Trimming near power and utility lines are done by the various utilities using their own crews and equipment or contractors.

Zoning Ordinance: Among other things, the intent of the Newport Zoning Ordinance is to manage growth and land use; protect of the natural, historic, cultural, and scenic character of the city, provide for the preservation and promotion of agricultural production, forest, silviculture, aquaculture, timber resources, and open space; and promote safety from fire, flood and other natural or man-made disasters.

Newport's Floodplain Overlay District was created to minimize hazards to persons and property from inland flooding, to protect water courses from encroachment and to maintain the capacity of floodplains to retain and carry off floodwaters

Departments/Organizations

City Council: These 7 elected members are the governing body by which new plans and policies may be adopted. They take a holistic view of the City's operations when formulating policies and exercising City powers. Educating the City Council members about the importance of hazard mitigation is not only beneficial for the City's resiliency but also facilitates plan adoption.

City Manager: The Newport City Manager is the chief administrative officer of the City, responsible to the Council for the administration and management, and has control and

[59] FEMA Updates its Flood Insurance Rating Methodology to Deliver More Equitable Pricing https://www.fema.gov/press-release/20210401/fema-updates-its-flood-insurance-rating-methodology-deliver-more-equitable

supervision of all administrative departments, divisions, offices and agencies subject to their jurisdiction.

Department of Utilities: The Department of Utilities is comprised of two divisions, the Water Division, which is responsible for drinking water; and the Water Pollution Control Division, which operates the City's sanitary sewer system and stormwater system. They are committed to protecting Newport's natural resources and believe that maintaining our infrastructure is a vital component of maintaining and improving quality of life. The Department is also responsible for managing and improving Newport's stormwater system.

Water Division: The Newport Water Division provides water services to residents and business in the three communities on Aquidneck Island; the Division provides public drinking water to 100% of residents and businesses in Newport, 75% in the town of Middletown, and 3% in the town of Portsmouth. In addition, Newport Water provides Portsmouth Water and Fire District with 60% of that district's supply. The Water Treatment Plants are located at 100 Bliss Mine Road (Station 1), and Lawton Valley Water Treatment Plant and water storage tanks on 2154 West Main Road in neighboring Portsmouth. Both have permanent generators. Station 1 has been designed to accommodate future sea level rise.

- Resilience Study at S. Easton Dam. The City has applied for Building Resilient Infrastructure and Communities (BRIC) grant to advance that effort.

Water Pollution Control Division: Sewer treatment services are provided through the Water Pollution Control Division. The City implemented an Industrial Pretreatment Program (IPP) to reduce the volume of pollutants discharged into the sewer system that could, in turn cause harm to the collection system, treatment plant, or facility employees. All businesses must meet local discharge limits. Dilution is not allowed as a means of meeting the discharge limits. Additional recent or ongoing mitigation projects include:

- Tide gate on Bridge Street/Storer Park
- Tide gate on Marsh Street
- Tide gate on Wellington (Pending)
- Drainage studies on riverine flooding
- Resiliency reviewed for all utility projects
- Sewer Treatment Plant and 2 Combined Sewer Overflow (CSO) facility have generators.
- Large Pumping Stations have generators, others have generator hook-ups.
- Raised controls at Sewer Treatment Plant, Washington Street CSO, Wellington Avenue CSO Treatment facility, and Long Warf Pumping Station (pending).

Fire Department: Newport businesses and residents are protected from fires, medical, hazardous material or environmental mishaps. The City of Newport is served by three fire stations. The mission of the Newport Fire Department is to preserve lives and property within

the community by providing services directed at the prevention and control of fires, accidents, and other emergencies. In addition to the Administrative Division within the Newport Fire Department, there are two other main divisions. The first is the Fire Prevention Division, which is responsible for fire safety and education, code enforcement (inspection and plans review) and fire investigation. The second is the Fire Suppression/EMS personnel Division, which is responsible for fire suppression, property conservation, pre-hospital emergency medical care and transportation, and the mitigation of other incidents that potentially could cause harm to the general public and the environment. The Fire Department also checks on the resiliency and storm preparedness of various elderly housing locations during their annual visits.

The Fire Department's facilities include:

- Station One (Headquarters) at 21 West Marlborough Street. (Currently undergoing a new dispatch center upgrade.)
- Newport Fire Station #2 is located at 100 Old Fort Road near the Williams Rogers High School
- Station #5 is located at 119 Touro Street near the Hotel Viking.

The Fire Department, like the Police Department, experiences a higher demand in the summer months when the summer population can increase to over 100,000 persons due to tourism activities[60].

The City is served by 5 Fire Prevention staff, 2 Administrative staff, and 84 firefighters. Overall equipment inventory includes:

- 5 pump engines
- 2 ladder trucks
- 3 EMS rescues
- 1 fire boat

Harbormaster: The Harbormaster's position is full-time and is augmented by a full-time administrative assistant and twenty temporary seasonal employees. Presently, the Harbormaster's Office has eight Assistant Harbormasters and three administrative personnel. This department is responsible for enforcement of ordinances and state and federal boating laws pertaining to the operation of commercial and pleasure craft within the harbor and surrounding public waters. It is also charged with collecting fees for mooring rentals, mooring maintenance, harbor patrol, oversight of special events and regattas, cruise ship arrivals, removing hazardous debris, and providing first aid when the need arises. The department also performs inspections of vessel waste holding tanks to enforce the state "no-discharge" regulation. The Harbormaster works in coordination with Federal and State Officials on security, immigration, and other joint responsibilities in addition to providing public safety services on the water in cooperation with the Newport Police and Fire

[60] Newport Comprehensive Land Use Plan 2021

Departments; the Rhode Island Department of Environmental Management (RIDEM); and the United States Coast Guard.

Historic District Commission: Newport's Historic District Commission members are appointed by the City Council and advised by the City's Historic Preservation Planner. The HDC is responsible for overseeing development within the City's Historic District. Recently the HDC approved guidelines for elevation of historic properties.

Planning and Economic Development Department: The Planning and Economic Development Department is the lead on the Newport Hazard Mitigation Plan Update. Elements from their work on the Comprehensive Land Use Plan and flood protection are incorporated into the hazard mitigation plan. Actions as outlined in this plan will help prioritize the growth and resiliency goals of the community.

In 2017 Newport was proud to have earned a Community Rating System Class 7 Designation. This is currently the highest level able to be achieved in Rhode Island. This certification provides eligible Newport homeowners with a 15% discount on their flood insurance policies.

The City maintains an interactive online public mapping portal for viewing public data such as zoning, voting districts, harbor mooring locations, and flood zones.

Police: The mission of the Newport Police Department is to provide excellence in police service, which is accomplished by forging a partnership with the citizenry of Newport, to enhance the quality of life, reduce the fear of crime, preserve the peace, and impartially enforce the law. The members of the department are empowered to enforce state and local laws to ensure that the peace and tranquility of our neighborhoods are maintained, and that crime and the fear of crime are reduced. The Newport Police Department is staffed by 80 sworn police officers and supported by 1 animal control officer, and 20 non-sworn civil employees, 33-part time retired officers.

The Department operates twenty-four hours a day and responds to all criminal complaints, calls for service and City-wide emergencies. In 2020, officers responded to over 43,000 calls. The Department is located at 120 Broadway and has the following equipment:

- 18 marked front-line vehicles
- 12 unmarked/detective vehicles

The permanently established Emergency Operations Center (EOC) is located at 120 Broadway. The City is in the process of evaluating alternate sites. The EOC has a diesel generator servicing the entire building. The Fire Chief serves as the City's Emergency Management Agency (EMA) Director.

Newport uses the RAVE emergency telephone notification system to provide important emergency information

Public Services: The Newport Public Services Division includes Public Works, Parks and Recreation, and Engineering. This group manages public infrastructure projects including the sewer system, City owned roads, open space, waste and recycling, and the municipal tree services. Elements of this hazard mitigation plan will help the public services department

prioritize projects and facilitate grant applications for funding. This department is out in the City every day and offers firsthand experience on vulnerable systems, and infrastructure needs. The Public Services Department handles the following ongoing mitigation actions:

- snow plowing
- street sweeping
- engage in an ongoing tree-trimming program (with National Grid) which reduces the probability of downed utility lines and reduces storm debris.
- Cliff Walk continues to have improvements
- Seawall repairs occur throughout the City
- The City is currently analyzing the structural issues at Easton's Beach with the plan to make them more resilient to coastal storms.

School Department Buildings and Grounds: In cooperation with City Public Services, responsible for the maintenance of all school and municipal buildings and school grounds. This includes sand spreading, and snow and ice clearing from roofs and around storm drains.

Two schools are currently undergoing improvements. The aging Rogers High School is being demolished and rebuilt. The Pell School is adding eight new classrooms to accommodate increased enrollment and Pre-Kindergarten.

Technical Review Committee: The Newport Technical Review Committee (TRC) was established in Chapter 2.68 of the City of Newport Code of Ordinances in 2018. The TRC is made of 11 City officials, representing a variety of City departments. The purpose of the TRC is to assist the Planning Board by providing professional and technical advice, comment and recommendations on matters referred to the TRC by the Planning Board and also for any required zoning development plan review.

Zoning and Inspections Department: The Newport Zoning and Inspections Department, which includes the Inspections Division, and the Building Official, handles building permits, mechanical permits, electrical permits, plumbing permits, building inspections, zoning applications, minimum housing code, and many other services.

The Zoning Department helps the City improve resiliency and reduce damages and cost from hazards by reviewing every site that is proposed for new development and/or redevelopment to ensure the sewer, water and stormwater regulations are followed during the design, the construction and the final acceptance of the site.

State Programs

Rhode Island Coastal Resources Management Council (CRMC): New development along coastal areas in Newport is regulated by Rhode Island Coastal Resources Management Council (CRMC) and the City of Newport. One regulation requires a Coastal Buffer Zone, or a "land area adjacent to a Shoreline (Coastal) Feature that is, or will be, vegetated with native shoreline species and which acts as a natural transition zone between the coast and adjacent upland development," on property within 200 feet of the inland edge of a coastal feature.

The benefits of the Coastal Buffer Zone include protection of water quality, protection of coastal habitat, protection of scenic and aesthetic quality, erosion control, and flood control.

The CRMC has adopted shoreline change maps that delineate shoreline rates of change that will be applied to pertinent sections of the Council's regulatory programs to address issues including setbacks of activities from coastal features. These shorelines change maps detail erosion rates for the shoreline and are further detailed into shoreline segments for each map. In total there are 11 such maps for Newport.

Qualifying projects are required to submit a Coastal Hazard Application (CHA) Worksheet when submitting a standard CRMC Application. The purpose of the worksheet is the notify the applicant of potential coastal hazards such as sea level rise, storm surge and associated flooding and shoreline erosion. It is CRMC's goal to guide development away from these vulnerable areas.[61]

Rhode Island State Dam Safety Program: The City of Newport participates in the State Dam Safety Program because of the Easton's Pond Dam and Drinking Water Reservoir owned be the Newport Water Division. The State Dam Safety Program was created to facilitate the enforcement of the primary dam inspection law (RIGL 46-19, Inspection of Dams and Reservoirs). RIGL 46-19 states that dam owners are responsible for the safe operation, maintenance, repair, and rehabilitation of a dam, which are the essential elements in preventing dam failure; furthermore, dam owners are liable for the consequences of accidents or failures of their dams. According to the State of Rhode Island 2019 Dam Safety Program Report, the following have been identified as program limitations: unclear ownership of numerous high hazard dams, construction of buildings within inundation areas below dams, lack of funding to repair of remove privately owned dams, inadequate spillway capacities and engineering analyses, lack of Emergency Action Plans across the state, inadequate staffing, increase in rainstorm intensities. There are Emergency Action Plans on file for the Easton's Pond and Drinking Water Reservoir dams.

Rhode Island Department of Environmental Management (DEM) Division of Law Enforcement: The Rhode Island DEM Division of Law Enforcement serves to protect the natural resources and ensure compliance with all environmental conservation laws through law enforcement and education.

Rhode Island DEM Wetland Regulations: The Rhode Island Department of Environmental Management (DEM) is responsible for regulating alterations of the freshwater wetlands throughout the State. Since many floodplains are also wetlands, appropriately managing these resources help maintain proper floodplain function. These regulations ensure that actions in this plan which alter the physical landscape will not do so at the expense of wetlands.

Rhode Island Department of Health: The Rhode Island Department of Health (RIDOH), not only strives to prevent disease and increase health and safety, but they also promote the Special Needs Emergency Registry. By voluntarily enrolling in this list, local police, fire, and

[61] CRMC Coastal Hazard Application http://www.crmc.ri.gov/coastalhazardapp.html

other local first responders can better prepare for and respond to an individual's needs during a disaster.

Rhode Island Department of Transportation: The Rhode Island Department of Transportation (RIDOT) designs, constructs, and maintains the state-owned surface transportation system. This includes not only roads and bridges but also the state's rail stations, tolling program, bike paths and ferry service.

Rhode Island Executive Climate Change Coordinating Council : The Rhode Island Executive Climate Change Coordinating Council (EC4)) is a 12-member council which assesses, integrates, and coordinates climate change efforts throughout state agencies to reduce emissions, strengthen the resilience of communities, and prepare for the effects of climate change.

Rhode Island Emergency Management Agency: The Rhode Island Emergency Management Agency (RIEMA) is the State agency assigned to reduce the loss of life and property for the whole community while ensuring that as a state we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all natural, human-caused, and technological hazards. RIEMA is also the pass-through agency for FEMA mitigation funding.

Rhode Island Enhanced 9-1-1 Telephone System: Newport utilizes the state's E-911 system which provides 24-hour public safety communication services from one answering point in North Scituate. Each call is routed to the appropriate response team. The system processes both landline and wireless 9-1-1 calls.

Rhode Island Infrastructure Bank: The Rhode Island Infrastructure Bank (RIIB) is the central hub for financing. The City of Newport is financing a series of improvements to the Newport Water Pollution Control Plant through RIIB's Clean Water State Revolving Fund. Improvements will address water pollution. RIIB also manages the State's Municipal Resilience Program which supports municipalities to complete a process of identifying top natural hazards and prioritizing projects to improve municipal resilience to all climate-related hazards. Newport was one of the earlier communities to participate in this process and is a designated Resilient Rhody Municipality.

Rhode Island State Building Code: All municipalities within the State of Rhode Island share a single building code (RIGL 23-27.3-100 et. al.). The Code itself (which incorporates the International Building Code) was last amended in 2012 and provides comprehensive construction requirements designed to mitigate the impacts from natural hazards, such as high wind events. The Code is enforced by the Newport Building Department and provides an additional layer of regulatory control to those discussed above.

Rhode Island State Fire Code Regulations: Newport has adopted the Rhode Island Fire Safety Codes to safeguard life and property from the hazards of fire and explosives in accordance with safe practice. The Code is enforced by the Newport Fire Department and provides reasonable minimum requirements for fire prevention and protection.

Rhode Island Turnpike and Bridge Authority: The Rhode Island Turnpike and Bridge Authority (RITBA) operates and maintains the Newport Pell Bridge which connects the City of

Newport to the Town of Jamestown. The RITBA was created in 1954 by the Rhode Island General Assembly as a body corporate and politic, with powers to construct, acquire, maintain, and operate applicable bridge projects. Tolls on the Newport Pell Bridge account for the majority of the quasi-state agency's revenue.

Other

United Way 2-1-1: United Way 2-1-1 in Rhode Island is a free, confidential service that provides information, referrals, and is available in multiple languages. This service connects residents with community services they may need such as childcare, housing, health insurance, and tax preparation.

Federal Programs

Federal Emergency Management Agency: The Federal Emergency Management Agency (FEMA), an agency of the U.S. Department of Homeland Security, coordinates disaster response when local and state resources are maxed out. The agency also provides grant funding for pre-and post-disaster mitigation projects.

United State Coast Guard, Station Castle Hill: The Station Castle Hill in Newport directly supports the United States Coast Guard and is operated by the local Fire District.

United State Navy, Naval Station: Naval Station (NAVSTA) Newport is home to 50 Navy, Marine Corps, Coast Guard and U.S. Army Reserve commands and activities. Newport is the Navy's premier site for training officers, officer candidates, senior enlisted personnel and midshipman candidates, as well as testing and evaluating advanced undersea warfare and development systems.

6

Mitigation Actions

Mission Statement

Newport is building a disaster resistant community and achieving sustainable development through the commitment of state and local government and its policymakers to mitigate hazard impacts before disaster strikes. By doing so, Newport aims to preserve and enhance the quality of life, property, and resources.

Mitigation Goals

To effectuate the mission statement, the City establishes the following hazard mitigation goals, toward which all action must reach:

1. Protect public health, safety and welfare; minimize social dislocation and distress
2. Reduce property damages caused by hazard impact
3. Reduce economic loss and minimize disruption to local business
4. Protect the ongoing operations of critical facilities
5. Expedite recovery disaster mitigation efforts during the recovery phase
6. Promote non-structural flood and coastal erosion measures to reduce the risk of damage to the surrounding properties and environmental habitats

Status of Proposed 2016 Actions

Action	Status	Notes
Creation of evacuation service and support mechanisms for citizens unable to self-evacuate.	Ongoing	Working on a Transportation Plan to evacuate people in low-lying areas to the Regional Shelter.
Evaluate expected shelter demand and existing capacity to assure need will be met.	Incomplete	Partially done. Capacity of shelters is known however how many people would use the shelters is unclear. Estimate 10% of population.
Purchase high output emergency generators to ensure hospital facilities remain operable when power is lost	Complete	
Implement education & outreach workshops focusing on hazard mitigation readiness and preparedness	Ongoing	Ongoing efforts as part of CRS requirements.
Development and implementation of a plan to protect historic structures, collections, and public records	Ongoing	Hunter House furniture is shipped out when floods are anticipated. Digitizing historical records is a challenge.
Mitigate structures most likely to be damaged during a hazard event	Ongoing	Utility Department has been proactively floodproofing City buildings. National Grid is making investments in their infrastructure. There are plans to relocate Fire Station 1 out of the flood zone. Carousel at First Beach is temporarily being shored up.
Revise, amend and enforce zoning code to manage land in vulnerable areas	Completed	Completed a zoning update for the North End that takes into account resiliency issues. Whitwell Avenue flooding also being considered as part of SNEP (ongoing).
Preventative measures for sea walls and cliff walk to minimize damage from storm surge	Complete	
Determine appropriate actions to mitigate flood risk to repetitive loss structures.	Incomplete	Expensive coastal structures along the coast which repeatedly flood do not have flood insurance. Poorly constructed basements and flash flooding in other areas. **Move action into 2022 which addresses basement flooding.**
Perform study to develop actions which will reduce fire spread potential in urban fire zone	Incomplete	Not a current priority as brushfire risk level is low.
Separate remaining combined sewer and storm water drainage systems. Protect wastewater treatment facility	Complete	
Use result of regional study to develop and implement mitigation actions to reduce vulnerability	Ongoing	There was a recent study on the effects of climate change on Southern Reservoirs. Utilities Department consults on development projects that are within 200 feet of a reservoir.

Action	Status	Notes
Allow for a streamline process to assure efficiency in the rebuilding process after a disaster	Incomplete	Need to develop guidelines for redevelopment of waterfront (MRP process). No current recovery process in place in Emergency Management. **Move action into 2022.**
Create a buyout program to allow for acquisition of local at-risk residential structures	Ongoing	Movement at RI EC4 to create a statewide buyout process. City may be more interested in riverine buyouts than coastal.
Develop a disaster recovery plan which increases preparedness and accelerates the recovery process	Incomplete	**Move action into 2022.**
Develop additional local sheltering capacity to support year-round and seasonal population	Ongoing	Need being determined. There is a regional shelter in Middletown. Newport shelters are not certified by The Red Cross. There is a low number of volunteers. The region is considering setting up transportation hubs to shuttle people to shelter.
Study of existing evacuation routes paying close attention to high tourist volume	Complete	
Special projects for critical roads to be used during evacuation to ensure overall readiness	Ongoing	City-owned roads area ready or able to be bypassed. With the exception of Broadway, major routes are state-owned.
Maintain roadside trees to facilitate quicker roadway clearing	Ongoing	No known issues.
Maintain debris management plan and exercise plan to assure resources are in place for rapid debris removal from essential roadways	Ongoing	

Additional Actions Since Last Plan Update

Since the 2016 Natural Hazard Mitigation Plan, the City of Newport has the following notable successes in making their city more resilient and accessible.

- Installed a new tide gate on Bridge Street and Marsh Street. Pending tide gates on Wellington.
- Local drainage studies have been done on riverine flooding.
- Utility Department has been proactively floodproofing city buildings.
- Completed a zoning update for the North End neighborhood that takes into account resiliency.
- Ongoing efforts to reduce flooding at Whitwell Avenue. Funded via a grant from the Southeast New England Program (SNEP).
- State level efforts (RI EC4) to create a statewide buyout process.
- Created a development Plan Review ordinance for larger projects.
- Maintained a robust catchbasin cleaning program.

- Newport/Pell Bridge ramps are being re-designed and removed from the floodplain (RIDOT project).
- The Van Zandt approach to the Newport/Pell Bridge is in the City CIP but still needs funding.
- All bridges except for Memorial Blvd are in State Transportation Improvement Program (STIP).
- The Navy is looking at bridge vulnerability as part of Military Installation Resiliency Review (MIRR) grant. The grant will be used to simulate storm events and response for Navy facilities.
- Wastewater Treatment Facility (WWTF) and two CSOs have generators.
- Large pump stations have generators others have hook-ups.
- Raised controls at: WWTF, Washington, Wellington, and Long Warf Pump Station (pending). Looked at resiliency for all utility projects.
- Both water treatment plants have full generator power.
- Station 1 (water treatment) improvements took into account sea level rise.
- National Grid has made various improvements to the electric grid.
- National Grid has assessed the long-term resilience of the natural gas supply, is replacing low-pressure gas lines, and set up a temporary tank farm on Wapping Rd. in Portsmouth to improve supply resiliency at the end of the pipe.
- Ongoing study of the effects of climate change on southern reservoirs.
- Fire Station- new dispatch being constructed at Station 5.
- Police department making upgrades as needed.
- Resiliency study has been done at South Easton Dam. The City has applied for a BRIC grant to better identify improvements from the study. Then they will move to design and construction.
- Considering moving the Emergency Operations Center (EOC).
- Performed a study to identify generator needs at Innovate Newport (potential new EOC) and applied for a grant to purchase the generator.
- Promote Special Needs Registry.
- Newport Fire Department checks on the resiliency of elder care facilities during annual site visits.
- Emergency shelter needs being assessed.
- Working on a transportation plan to evacuate people in low-lying areas to the regional shelter.
- Ongoing flood education as part of the CRS requirements.
- Small Business Resilience Project with the University of Rhode Island's Coastal Resource Center (CRC).
- University of Rhode Island students are looking at flood impacts from Elizabeth Brook to the businesses along JT Connell Highway.

- Deconstructing and reconstructing Rogers High School. Will be more resilient to storms/high winds.
- Adding an addition to the Pell School.
- Added distance learning capabilities for the schools.
- Continuous repairs to the Cliff Walk.
- First/Easton's Beach: examining ways to make the carousel and snack bar more resilient. In the meantime they are boarded up to prevent further damage.
- Ongoing dune restoration in partnership with Save the Bay.
- Implementing best management practices (BMPs) at Lily and Almy Ponds to meet Total Maximum Daily Load (TMDL) requirements from excess nutrients.
- Installed ultraviolet disinfection system to treat the stormwater runoff from a man-made moat. This has reduced the number of beach closures.
- In partnership with Clean Ocean Access, installed marine trash skimmers in the harbor, continue water testing and beach cleanups.
- Local historic district has guidelines for elevating historic structures (none to full BFE) to maintain streetscape and preserve historical resources.
- Working with the State Historic Preservation Officer on maintaining the façade of the old Navy Hospital building.
- Approved a Green and Complete Streets Ordinance and Policy.
- Re-done Broadway to include green infrastructure.
- Grant to remove excess pavement around Almy Pond.
- Became a designated Resilient Rhody Municipality.
- Completed a Resiliency Plan with Summary of Findings.

Mitigation Actions

The Newport Hazard Mitigation Plan Committee decided to propose actions that addressed certain vulnerabilities that were identified earlier in the planning process. See Chapter 4.

The worksheets below summarize the specific problem and proposed possible solution, details the primary tasks to be undertaken, identifies an appropriate lead and anticipates financing options. Each action was given a priority ranking of low, medium, or high as determined by the Committee. This helps to generally prioritize needs when funding becomes available or budgeted. Funding and staff time will be the determining factors on when various actions are completed. The Committee understands that implementation of many of these proposed actions require the City to secure external funding.

This HMP includes actions which prevent or reduce the consequences of disaster (mitigation), planning and education (preparedness), improved response in the immediate aftermath of an event (response), and improved restoration efforts (recovery). Those which are true mitigation actions are noted as such. There are necessary planning elements that need to be completed before additional mitigation actions can be considered. The

Committee has identified a range of actions below, some of which are planning activities. However, there is a mitigation action identified for each vulnerable area where applicable.

Priority Level

- **High:** Reduces the greatest risks, is important to accomplish first
- **Medium:** May need other actions to be completed first
- **Low:** Less of an impact on safety and property

Time Frame (from date of plan adoption)

- **Short Term:** within 1-3 years
- **Medium Term:** within 3-5 years
- **Long Term:** greater than 5 years

Goals

1. Protect public health, safety and welfare; minimize social dislocation and distress
2. Reduce property damages caused by hazard impact
3. Reduce economic loss and minimize disruption to local business
4. Protect the ongoing operations of critical facilities
5. Expedite recovery disaster mitigation efforts during the recovery phase
6. Promote non-structural flood and coastal erosion measures to reduce the risk of damage to the surrounding properties and environmental habitats

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
1. Create a Stormwater Management Overlay District	☒Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☒3 ☒4 ☐5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
People are upgrading dwelling sizes, increasing stormwater generation. There are few options to improve stormwater capacity. The issue is compounded with climate change. Creating the overlay district has the added benefit of a public education component.

BENEFITS	OBSTACLES
Reduce hazards to life and protect structures and uses from damages which may be caused by construction on or use of land which is unsafe for development. Protect land, public infrastructure, and waters of the City from damages caused by improper use or construction on land which has physical, environmental or aesthetic limitations or development. Maintain and enhance natural land features which are environmentally significant, or which constitute a natural resource of importance to the community at large	Deciding if this would be citywide or a true overlay.

LEAD/CchampION	SUPPORT
Department of Utilities	Department of Planning

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Southeast New England Program (SNEP) Grant	Staff time, TBD	☒ Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES
Currently being discussed.

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
2. Create a High Water Table Limitations Overlay District.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☒3 ☒4 ☐5 ☒6	☐High ☐Medium ☒Low **ACTION STATUS** New (re-crafted from 2016)

RATIONALE- WHY IS THIS IMPORTANT?

Water table fluctuates seasonally. When new development is occurs in areas with a high water table, automatic sump pumps often discharge into the street, causing not only a flooding problem but an icing problem in the winter. This discharge also causes wetland migration.

BENEFITS	OBSTACLES
Public safety. Creates an enforcement mechanism to address problem properties.	Seasonal problem. Requiring property owners to create drywells

LEAD/CHAMPION	SUPPORT
Department of Utilities	Department of Planning, City Solicitor

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
City General Funds	Staff costs	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

See Narragansett Municipal Code: Appendix A, Section 4.5

"District defined. This [high water table limitations overlay] district is composed of areas in which the water table is within three feet below the surface of the ground for significant periods of the year, creating moderate to severe limitations for subsurface development. In high water table limitations overlay district "A," the water table is generally within 18 inches of the surface of the ground. Areas included in district "A" are designated on the environmental inventory soils maps with the following symbols: Aa, Co, Mk, Re, Rc, Rf, Sb, Se, Sf, Wa, Ma, Me, Mc. In high water table limitations overlay district "B," the water table is generally between 18 inches and three feet below the surface of the ground. Areas included in district "B" are designated on the environmental inventory soils maps with the following symbols: Bc, Nt, PmA, PmB, PnB, RaA, RaB, RbB, StB, WbB, WhA, WhB, WoB, StB, Ss, Tb."

Development standards. Any proposed basement or in-ground swimming pool in high water table limitations overlay district must comply with the following development standards, in addition to all other applicable requirements of this ordinance: (1)The design of the subsurface structure or system minimizes the problems and hazards created by the high water table; (2)The high water table will not damage or interfere with the proper functioning of the subsurface structure or system; (3)The subsurface structure or system will not pose any threat to public health or safety or to the water resources of the town.

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
3. Improve Elizabeth Brook flooding. a. "Daylight" Elizabeth Brook.	☐ Local Plans and Regulations ☒ Structure and Infrastructure ☐ Natural Systems Protection ☐ Education and Awareness *Implementation of this action will directly reduce the flood impact.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☒ 6	☐ High ☒ Medium ☐ Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Low-lying areas along Elizabeth Brook in the North End neighborhood, are prone to flooding due to surcharge of existing utility outfalls along the coastline as well as limited overland flooding during high tide storm events. Sea level rise will further threaten the North End neighborhood where Elizabeth Brook flows into Narragansett Bay.

BENEFITS	OBSTACLES	
Protect public infrastructure and private homes from flooding. The streambed can serve as both a stormwater mitigation and public amenity with the addition of walking paths and open space.		
LEAD/CHAMPION	**SUPPORT**	
Planning Department	Public Services and Utilities	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Private developer as part of a land development project. FEMA BRIC grant funding	TBD	☐ Short Term (0-3 years) ☐ Medium Term (3-5 years) ☒ Long Term (more than 5 years)

OTHER NOTES

Part of a larger stormwater management program.

See the North End Urban Plan https://www.cityofnewport.com/CityOfNewport/media/City-Hall/Boards-Commissions/Boards/Planning%20Board/2021-05-12-Newport-NEUP-compressed.pdf

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
3. Improve Elizabeth Brook flooding. b. Create deep stormwater storage green areas along the brook.	☐ Local Plans and Regulations ☒ Structure and Infrastructure ☐ Natural Systems Protection ☐ Education and Awareness *Implementation of this action will directly reduce the flood impact.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☒ 6	☐ High ☒ Medium ☐ Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Low-lying areas along Elizabeth Brook in the North End neighborhood, is prone to flooding due to surcharge of existing utility outfalls along the coastline as well as limited overland flooding during high tide storm events. The current and future flood pathway for overland flooding leads Sea level rise will further threaten the North End neighborhood where Elizabeth Brook flows into Narragansett Bay.

BENEFITS	OBSTACLES	
Protect public infrastructure and private homes from flooding. The streambed can serve as both a stormwater mitigation and public amenity with the addition of walking paths and open space.		
LEAD/CHAMPION	**SUPPORT**	
Planning Department	Public Services and Utilities	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Private developer as part of a land development project. FEMA BRIC grant funding	TBD	☐ Short Term (0-3 years) ☐ Medium Term (3-5 years) ☒ Long Term (more than 5 years)

OTHER NOTES

Part of a larger stormwater management program.

See the North End Urban Plan https://www.cityofnewport.com/CityOfNewport/media/City-Hall/Boards-Commissions/Boards/Planning%20Board/2021-05-12-Newport-NEUP-compressed.pdf

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
3. Improve Elizabeth Brook flooding. c. Construct a flood gate or storm surge gate where Elizabeth Brook flows into Coaster's Harbor north of Admiral Kalbfus Road.	☐ Local Plans and Regulations ☒ Structure and Infrastructure ☐ Natural Systems Protection ☐ Education and Awareness *Implementation of this action will directly reduce the flood impact.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☒ 6	☐ High ☐ Medium ☐ Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Low-lying areas along Elizabeth Brook in the North End neighborhood, is prone to flooding due to surcharge of existing utility outfalls along the coastline as well as limited overland flooding during high tide storm events. The current and future flood pathway for overland flooding leads Sea level rise will further threaten the North End neighborhood where Elizabeth Brook flows into Narragansett Bay.

BENEFITS	OBSTACLES
Protect public infrastructure and private homes from flooding. The streambed can serve as both a stormwater mitigation and public amenity with the addition of walking paths and open space.	

LEAD/CHAMPION	SUPPORT
Planning Department	Public Services and Utilities

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
Federal funding via the U.S. Navy American Rescue Plan Act (ARPA) Infrastructure funding	TBD	☐ Short Term (0-3 years) ☐ Medium Term (3-5 years) ☒ Long Term (more than 5 years)

OTHER NOTES

Part of a larger stormwater management program.

See the North End Urban Plan https://www.cityofnewport.com/CityOfNewport/media/City-Hall/Boards-Commissions/Boards/Planning%20Board/2021-05-12-Newport-NEUP-compressed.pdf

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
4. Improve Stormwater Education a. Continue Adopt-a-Catch Basin initiative which encourages residents to help keep the city's storm drains and catchbasins clear of leaves.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☒6	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Clogged catchbasins can result in minor street flooding, creating a nuisance for motorists, pedestrians and businesses. Oftentimes, it doesn't take much more than a thin layer of leaves to block these critical drainage elements.

BENEFITS	OBSTACLES	
Reduced flooding. Fewer beach closures.	Other priorities in the City. So far there has been very little buy-in	
LEAD/CHAMPION	**SUPPORT**	
Department of Utilities	Communications Officer	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
City General Funds	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Catch basin adoption: https://www.newportri.com/news/20191107/as-leaves-cover-streets-newport-catch-basins-go-up-for-adoption

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
4. Improve Stormwater Education *b.* Continue public education on how tide gates and tides interact during a storm. Teach adaptation, let the waters recede.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☒6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The City has invested in new tide gates to reduce flooding. The tide gates permit water flow in only one direction, so tide water will be prevented from flowing back into the stormwater system.

BENEFITS	OBSTACLES	
Better understanding of the infrastructure intent and capabilities can reduce the number of citizen complaints.		
LEAD/CHAMPION	**SUPPORT**	
Department of Utilities	City Communication Officer	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Rhode Island Department of Environmental Management (RIDEM) green economy bond City General Funds	$20,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
4. Improve Stormwater Education *c.* Educate residents and builders on the effects of buildout, sea level rise, and stormwater connections. Promote adaptation to rising sea levels.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☒1 ☐2 ☐3 ☐4 ☐5 ☒6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The City's stormwater system cannot and will never fully be capable of diverting all the rainwater, especially as tides rise.

BENEFITS	OBSTACLES	
Smarter building practices that consider reclaimed water, or water retention infrastructure.		
LEAD/CHAMPION	**SUPPORT**	
Department of Planning	Department of Utilities, Communication Officer, Building Department, University of Rhode Island (URI) Coastal Resource Center.	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
City General Funds	Unknown	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
4. Improve Stormwater Education *d.* Educate residents on the damaging effects of phosphorus loading.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☒1 ☐2 ☐3 ☐4 ☐5 ☒6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Freshwater lakes and ponds have experienced algal blooms as a result of historic and ongoing phosphorus loading. In addition to being unsightly, algae blooms create high biochemical oxygen demand (BOD) as the algae decomposes and uses up available oxygen supplies. This low oxygen environment threatens the survival of fish and other aquatic organisms. There is local data to prove that nutrient loading is coming from neighboring lawns.

BENEFITS	OBSTACLES	
Healthier ecosystems		
LEAD/CHAMPION	**SUPPORT**	
Department of Utilities	RIDEM, City Communication Officer	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
City General Funds	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

See https://www.usgs.gov/special-topic/water-science-school/science/phosphorus-and-water?qt-science_center_objects=0#qt-science_center_objects

VULNERABLE AREA: Flood Prone Drainage Systems, Streets, or Infrastructure

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
5. Require the use of the CRMC Coastal Hazards Analysis Worksheet for all development and redevelopment.	☒ Local Plans and Regulations ☐ Structure and Infrastructure ☐ Natural Systems Protection ☐ Education and Awareness	☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6	☐ High ☒ Medium ☐ Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
The State requires eligible applicants to go through the exercise of evaluating the risk of climate change on the project. The City of Newport would like to require development applicants to of potential coastal hazards such as sea level rise, storm surge and associated flooding and shoreline erosion.

BENEFITS	OBSTACLES
Development/re-development that has is built smarter to be more resilient to future flooding.	
LEAD/CHAMPION	**SUPPORT**

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
City General Funds	Staff time	☐ Short Term (0-3 years) ☒ Medium Term (3-5 years) ☐ Long Term (more than 5 years)

OTHER NOTES
See http://www.crmc.ri.gov/coastalhazardapp.html

VULNERABLE AREA: Bridges

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
6. Evaluate evacuation routes/timing for Coasters Island.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☐2 ☒3 ☒4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Coasters Island is the base of operations for the U.S. Navy Newport Training Station and the U.S. Naval War College.

BENEFITS	OBSTACLES	
Improved pre-disaster planning.		
LEAD/CHAMPION	**SUPPORT**	
Naval Station Newport	City of Newport, University of Rhode Island	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Military Installation Resiliency Review (MIRR) grant	Part of a larger $600,000 grant.	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

MIRR Goals:

- Produce a Military Installation Resilience review and implementation action plan to 'protect and preserve military readiness and defense capabilities' while supporting continued community economic development
- Model feasible current and future storm scenarios (e.g Nor'easters, hurricanes) and scenarios combined with projected seas level rise
- Assess the impacts to infrastructure assets and consequences that could potentially adversely affect the installation related to key infrastructure and services.
- Develop a decision-support tool that can be used for real-time preparedness and response, as well as longer term planning.

VULNERABLE AREA: Bridges

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
7. Mitigate Goat Island Causeway at Newport Harbor to protect from sea level rise. RIDOT to assess for major rehabilitation work, superstructure, and/or total bridge replacement.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness *Implementation of this action will directly reduce the storm impact.	☐1 ☒2 ☒3 ☐4 ☒5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Protection for SLR in the future, address current deterioration.

BENEFITS	OBSTACLES	
Infrastructure resilience		
LEAD/CHAMPION	**SUPPORT**	
Rhode Island Department of Transportation	Newport Public Services	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
State Transportation Improvement Program (STIP) 2022-2025	$21.26 million over 4 years	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Wastewater

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
8. Evaluate flooding frequency and magnitude of the roads near the WWTF outfall at Coddington Point.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☐3 ☐4 ☐5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The roadways on Navy-owned property used to access the outfall may be compromised due to flooding. Stress from development on the North End has exacerbated the flooding issue.

BENEFITS	OBSTACLES	
Reduced flooding.		
LEAD/CHAMPION	**SUPPORT**	
Department of Planning	Naval Station Newport	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Military Installation Resiliency Review (MIRR) grant	Part of a larger grant	☒Short Term (0-3 years) ☒Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

Part of the City's Transportation Master Plan. Potentially install a tide gate.

VULNERABLE AREA: Other Services/Utilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
9. Implement solutions to natural gas resiliency on Aquidneck Island.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☒2 ☐3 ☒4 ☒5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Follow-up from assessing the long-term resilience of the natural gas supply.

BENEFITS	OBSTACLES	
Dependable fuel source year-round.	Public Utilities Commission Political criticism	
LEAD/CHAMPION	**SUPPORT**	
City Administration	National Grid	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Self-funded by National Grid	Unknown	☒Short Term (0-3 years) ☒Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

See Aquidneck Island Long-Term Gas Capacity Study
https://www.nationalgridus.com/media/pdfs/other/aquidneckislandlong-termgascapacitystudy.pdf
National Grid has proposed a suite of solutions.

- Maintaining a seasonal LNG storage and vaporization facility on Old Mill Lane in Portsmouth
- Offshore LNG storage and vaporization facility
- Various options which include building new gas facilities and pipelines on Aquidneck Island.
- Non-infrastructure option: curb natural gas use through energy efficiency, reducing consumption, and switching to electric-powered equipment

City's role: promote the importance of this project.

Considering moving more toward electrification.

VULNERABLE AREA: Communication Equipment

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
10. Upgrade Police Department radio systems (including portables).	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☐4 ☒5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Radio communication systems need to be kept current.

BENEFITS	OBSTACLES	
Continuity of operations.	Keeping up to date on RIEMA communication towers.	
LEAD/CHAMPION	**SUPPORT**	
Police Department	RIEMA	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Newport Capital Improvement Plan (CIP) Police Department Grants	$275,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Ongoing assessments being done.

VULNERABLE AREA: Communication Equipment

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
11. Monitor available upgrades for mobile communications in Police cruisers.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☐4 ☒5 ☐6	☐High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Keeping up with the latest technology upgrades can ensure that the mobile communication systems and cell towers remain compatible.

BENEFITS	OBSTACLES	
Continuity of operations.	None	
LEAD/CHAMPION	**SUPPORT**	
Police Department		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Newport Capital Improvement Plan (CIP) Police Department Grants	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Ongoing assessments.

VULNERABLE AREA: Dams

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
12. Design and construction as per results of the second round of the Easton Pond Dam study.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness *Implementation of this action will directly reduce the potential flood impact and secure drinking water supply.	☒1 ☒2 ☐3 ☐4 ☐5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Protecting drinking water supply. The aging dam and moat infrastructure has deteriorated over the past 70 years, which is now resulting in soil loss and threatening the future structural stability of the dam. The runoff from these neighborhoods as well as activities in and around the dam and moat system generate significant bacteria loadings that lead to beach closures at Easton Beach

BENEFITS	OBSTACLES	
Improved resiliency	Funding	
LEAD/CHAMPION	**SUPPORT**	
Department of Utilities		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
FEMA's Building Resilient Infrastructure and Communities (BRIC) grant to advance two design alternatives	$20-40 Million	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Final design and construction may be awhile.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
13. New generator for the EOC. *a.* Perform a study on building needs *b.* Purchase and install a generator at Innovate Newport/Emergency Operations Center (EOC)	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☐4 ☒5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
The EOC should have appropriate redundancies in place.

BENEFITS	OBSTACLES	
Backup power in case of emergency.	Funding	
LEAD/CHAMPION	**SUPPORT**	
EMA Director	Public Services	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Annual Defense Community Infrastructure Program (DCIP) grant	TBD	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES
Can request a portable generator from RIEMA in the meantime.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
14. Relocate Fire Station 1 out of the floodplain.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness *Implementation of this action will directly reduce the flood impact.	☒1 ☒2 ☐3 ☒4 ☒5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Flooding during extreme weather events can damage critical infrastructure and increase emergency response time.

BENEFITS	OBSTACLES
Continuity of operations.	Funding, priorities
LEAD/CHAMPION	**SUPPORT**
Fire Department	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
FEMA Assistance to Firefighters Grant FEMA Building Resilient Infrastructure and Communities (BRIC) Grant		☐Short Term (0-3 years) ☐Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES
Potential site has been located. However, the focus has been on other critical infrastructure right now.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
15. Develop a Disaster Recovery Plan	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☐4 ☒5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** From 2016

RATIONALE- WHY IS THIS IMPORTANT?
Imperative for a resilient and speedy recovery process after a natural disaster or pandemic strikes.

BENEFITS	OBSTACLES
Having this type of plan in place before a natural disaster occurs will minimize risks associated with natural disasters and provide seamless coordination of recovery efforts.	Department priorities
LEAD/CHAMPION	**SUPPORT**
EMA Director	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
FEMA Hazard Mitigation Grant Program	$35,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

The purpose of a Disaster Recovery Plan is to mobilize different agencies, utilities, and aid programs as quickly as possible following a natural hazard event and help them work together cohesively to provide a calm and speedy recovery process. Completion of this plan will facilitate a more efficient recovery operation to restore and revitalize the social, economic and environmental health of the city.

Align with the precepts contained in the National Disaster Recovery Framework.

VULNERABLE AREA: Critical Municipal Hazard Response Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
16. Formally organize the current Emergency Management volunteers into a Citizens Emergency Response Team (CERT).	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☐4 ☒5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Maintain momentum of the volunteers have helped out during the pandemic.

BENEFITS	OBSTACLES
Educating volunteers about disaster preparedness and training them in basic disaster response skills. Professional responders can rely on this cadre during disaster situations.	Interest
LEAD/CHAMPION	**SUPPORT**
EMA Director	

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
FEMA Preparedness or Training grants	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

See https://www.ready.gov/cert

Discussions have begun. Taking advantage of Train the Trainer opportunities.

VULNERABLE AREA: Populations

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
17. Improved Public Education *a.* Education on storm drain road flooding- wait it out. *b.* Better guidance on 72-hour shelter in place. *c.* Effects of buildout on sea level rise and stormwater connections. (same as action 4c) *d.* Climate change adaptation	☐ Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒ Education and Awareness	☐1 ☒2 ☒3 ☐4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Education can encourage changes in behavior and help people make informed decisions

BENEFITS	OBSTACLES
Fewer drivers getting stranded in floodwaters, more informed building decisions, reducing damages from rising sea levels.	Funding
LEAD/CHAMPION	**SUPPORT**
Department of Planning	Department of Utilities, Communication Officer, Building Department, University of Rhode Island (URI) Coastal Resource Center.

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
City General Funds	Unknown	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Businesses

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
18. Develop guidelines for waterfront redevelopment post-disaster.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☒3 ☐4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** From 2016

RATIONALE- WHY IS THIS IMPORTANT?

To facilitate pre-disaster planning in a way that guides long-term recovery efforts (five years or more) following a disaster. Rebuilding damaged structures or infrastructure in the same location and/or in the same way may leave the community at risk from similar disaster losses in the future.

BENEFITS	OBSTACLES	
Swifter return of community stability.	Funding	
LEAD/CHAMPION	**SUPPORT**	
Department of Planning	Building	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Capital Improvement Program As part of a larger grant opportunity	TBD	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

May be a longer term project.
See: https://www.fema.gov/sites/default/files/2020-07/post-disaster-redevelopment-planning.pdf

VULNERABLE AREA: Schools

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
19. Develop a student bus transportation plan to safely evacuate students during a storm.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☐4 ☐5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
In the event that the school district needs to alter standard bus routes.

BENEFITS	OBSTACLES	
Improved student safety during an emergency.		
LEAD/CHAMPION	**SUPPORT**	
School Superintendent		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
School Department	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Schools

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
20. Invest in broadband improvements for schools to boost remote learning capabilities.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☒4 ☒5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Flexible learning options to allow students to continue their lessons regardless of if they are in the school or not.

BENEFITS	OBSTACLES	
Improved digital experience.		
LEAD/CHAMPION	**SUPPORT**	
City Administration	School Superintendent	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
CDBG Grants	$1 Million	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

Determine how far the broadband infrastructure goes through Newport. At first glance, it looks like OSHEAN fiber stops at Old Fort Road. Does not go to Rogers High School.

VULNERABLE AREA: Recreation Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
21. Develop a comprehensive management plan for the Cliff Walk.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☐3 ☐4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
The Cliff Walk is a valuable natural resource both locally and regionally. A management plan must be developed that will address issues relating to the preservation and maintenance of the Cliff Walk.

BENEFITS	OBSTACLES	
Management of the resource in a sustainable manner.		
LEAD/CHAMPION	**SUPPORT**	
Public Services	Cliff Walk Commission	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Van Buren Funding	TBD	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Recreation Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
22. Design and install a splash pads at two playground facilities.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☐2 ☐3 ☐4 ☐5 ☐6	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Warmer days will increase the demand at local beaches. More people will be looking for ways to cool off. Splashpads provides free access to water play.

BENEFITS	OBSTACLES	
Enhance the quality of urban life by providing relief from hot summer days.	Funding	
LEAD/CHAMPION	**SUPPORT**	
Recreation Department		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Green Bonds Rhode Island Department of Environmental Management Green Space Grant	$140,000	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Recreation Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
23. Evaluate reconstruction/ relocation options for the Easton's Beach Carousel/snack bar facilities to improve resiliency from coastal storms and high tides.	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness *Implementation of this action will directly reduce the coastal flood impact.	☐1 ☒2 ☐3 ☐4 ☐5 ☐6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
The buildings are both extremely deteriorated and unstable. The carousel horses date back to 1950s and are a popular beachside attraction. Both attractions are revenue generators.

BENEFITS	OBSTACLES	
Preserving a historic landmark.	Funding	
LEAD/CHAMPION	**SUPPORT**	
Public Services	City Administration	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Bonds	Millions for Easton's Beach projects	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

June 2021: April report from DBVW Architects and Yoder + Tidwell structural engineers "Easton's Beach Pavilions: Evaluation of Existing Conditions with Recommendations". Structures needs to be rebuilt.

September 15, 2021 Workshop

VULNERABLE AREA: Recreation Facilities

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
24. Improvements to the Martin Recreation Center ("The Hut") a. Needs assessment for interior and exterior b. Implement improvements	☐Local Plans and Regulations ☒Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☒2 ☐3 ☐4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The recreation department offers various indoor and outdoor activities for the community. The main recreation building is not equipped with air conditioning, thus limiting some indoor activities during the warmer months. Trees near the building should be cut back or removed to eliminate the risk of endangering the public or damaging the building.

BENEFITS	OBSTACLES	
A recreation center that can act as a cooling shelter and refuge from summer thunderstorms.	Funding	
LEAD/CHAMPION	**SUPPORT**	
Recreation Department		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
Capital Improvement Plan	TBD	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Natural Resources

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
25. Develop a steep slope ordinance.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☒6	☐High ☐Medium ☒Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

When disturbed, steep slopes are highly susceptible to erosion, landslides, and subsidence which can endanger the public, degrade water quality, and damage structures. Needed to reduce the impacts to natural systems and stormwater.

BENEFITS	OBSTACLES	
Reduce erosion, reduce stormwater runoff		
LEAD/CHAMPION	**SUPPORT**	
Department of Utilities		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
City General Funds	Staff time.	☐Short Term (0-3 years) ☒Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

"Defining what constitutes "steep" for the purposes of slope regulation is at the discretion of each municipality, provided that the definition is reasonable. Some communities regulate slopes starting at 15%, which ties in neatly with soil survey slope classifications. Others start at 25%, another soil survey threshold and a clear benchmark for land-use limitations. Others establish more than one minimum slope threshold based on use (e.g., 25% for residential uses and 40% for non-residential uses). Some municipalities, particularly those in hilly locations, regulate development of specific steeply sloping soil types." (conservationtools.org)

Steep Slope Overlay District, or
Supplemental Regulations to control disturbance

(example: development off Girard Ave.)

VULNERABLE AREA: Natural Resources

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
26. Continue to support our partners in habitat restoration. -Newport Tree Program -Aquidneck Island Land Trust -Save the Bay -Clean Ocean Access	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☒1 ☐2 ☐3 ☒4 ☒5 ☒6	☒High ☐Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The City depends on the efforts of countless groups to maintain a healthy ocean and open space.

BENEFITS	OBSTACLES	
Improved habitat restoration.	Funding for projects	
LEAD/CHAMPION	**SUPPORT**	
Department of Public Services		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
CRMC grants RIDEM grants SNEP grants	Staff time.	☒Short Term (0-3 years) ☒Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

VULNERABLE AREA: Natural Resources

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
27. Establish a tree trust for development projects.	☒ Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐ Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☒6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
A dedicated tree trust can offset the costs of maintaining a healthy tree population in Newport. Supports Newport's mission to "plant for the future".

BENEFITS	OBSTACLES	
Better air quality, reductions in stormwater runoff, beautification, reduce heat island effects.		
LEAD/CHAMPION	**SUPPORT**	
Public Services, Tree Warden	Rhode Island Tree Council	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
RIDEM grants	Staff time.	☒Short Term (0-3 years) ☐ Medium Term (3-5 years) ☐ Long Term (more than 5 years)

OTHER NOTES
Project funding comes from impact fees and "fee in lieu of" from development projects in the City.

VULNERABLE AREA: Historic Resources

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
28. Follow up and document what has been done since Keeping History Above Water.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☐1 ☐2 ☐3 ☐4 ☐5 ☒6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

Increases in tidal flooding and heavy downpours increases the stress on historic properties in coastal communities. A team of consulting architects, engineers, landscape architects, city planners, academics, and community members participated in a conference in January 2016 to discuss resiliency for historic homes.

BENEFITS	OBSTACLES	
Protecting or preserving important historic resources.		
LEAD/CHAMPION	**SUPPORT**	
Department of Planning and Historic District Commission	URI CRC	
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
City General Funds	Staff time	☒Short Term (0-3 years) ☒Medium Term (3-5 years) ☒Long Term (more than 5 years)

OTHER NOTES

Website: https://historyabovewater.org/74-bridgest/

VULNERABLE AREA: Historic Resources

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
29. Engage in a community discussion after the U.S. Army Corps of Engineers (USACE) Rhode Island Coastline Coastal Storm Risk Management (CSRM) Feasibility Study is complete.	☐Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☒Education and Awareness	☒1 ☒2 ☒3 ☐4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?
Community education and support.

BENEFITS	OBSTACLES
Public education and to gain support of proposed recommendations	
LEAD/CHAMPION	**SUPPORT**
Department of Planning	Communications Officer

POTENTIAL FUNDING SOURCES	ESTIMATED COST	TIMELINE
City General Funds	Staff time	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES
Study is currently underway.

VULNERABLE AREA: Historic Resources

MITIGATION ACTION	ACTION TYPE	ALIGNMENT WITH PLAN GOALS	ACTION PRIORITY
30. Develop a Managed Retreat Plan for the Point Neighborhood.	☒Local Plans and Regulations ☐Structure and Infrastructure ☐Natural Systems Protection ☐Education and Awareness	☒1 ☒2 ☒3 ☐4 ☐5 ☐6	☐High ☒Medium ☐Low **ACTION STATUS** New

RATIONALE- WHY IS THIS IMPORTANT?

The Point neighborhood contains some of the best preserved examples of houses built before the American Revolution. This historic neighborhood is located only a few feet above sea level and is susceptible to damage from rising tides.

BENEFITS	OBSTACLES	
Protecting historic buildings and reducing damage.		
LEAD/CHAMPION	**SUPPORT**	
Planning Department		
POTENTIAL FUNDING SOURCES	**ESTIMATED COST**	**TIMELINE**
FEMA BRIC grant	$130,000	☒Short Term (0-3 years) ☐Medium Term (3-5 years) ☐Long Term (more than 5 years)

OTHER NOTES

See the example in Warren, *Market to Metacom* which proposes to buy vulnerable, flood-prone properties and relocate the displaced to a redeveloped corridor, where a setting of retail, restaurants, and mixed-income housing would offer safety out of the floodplain.
https://experience.arcgis.com/experience/6243398bbb804cc794fbdfbf2e5a71c0

A case for strategic and managed retreat https://www.science.org/doi/10.1126/science.aax8346

7

Implementation and Adoption

Prioritization of Mitigation Actions

Implementing the Plan

The City of Newport and the Newport Hazard Mitigation Committee realize that successful hazard mitigation is an ongoing process that requires implementation, evaluation, and updates to this plan. The City also understands the importance of integrating appropriate sections of the plan into the City's Comprehensive Land Use Plan, Emergency Operations Plan, and site plan review process. It is intended that this plan and the ongoing efforts of the HMC will preserve and enhance the quality of life, property, and resources for the City of Newport.

Adoption of this mitigation plan increases Newport's eligibility for federal hazard mitigation grants. These grants originate from FEMA's Building Resilient Infrastructure and Communities (BRIC) (formerly Pre-Disaster Mitigation), Flood Mitigation Assistance (FMA), and post-disaster Hazard Mitigation Grant (HMGP) Programs.

Monitoring

The HMC, under the leadership of the City Planner, will meet annually (or more frequently if necessary), to monitor and evaluate the actions contained in the plan. At each meeting, the committee members will discuss the actions assigned to them to ensure continual progress with mitigation efforts. The status of each mitigation action will be documented, and minutes recorded for the record. The HMC will also continue to re-evaluate membership on the committee to ensure effective engagement of the appropriate parties. New members may be invited to serve on the HMC as priorities shift.

Evaluation

At the annual meetings, the HMC will evaluate both the actions and the planning process. The HMC will base its evaluation on whether or not the actions have met the following

criteria: increased public awareness/education, reduction in hazard damage, actions being implemented in the designated time frames, and actions staying within the cost estimate. The Committee will document and report its findings to the Planning Board and City Council. The HMC will involve the public in the action evaluation process by holding an annual advertised public meeting in order to review the evaluation and solicit input.

During the annual evaluation process, the plan will be promoted online for public review. Comments and suggests can be sent directly to City Planner or brought up at the advertised public meeting.

Revisions

Recognizing that this is a living document, the HMC will make changes to the Plan after a disaster or as conditions warrant. These revisions will also reflect changes to priorities and funding strategies that may have been implemented.

A full revision of the plan will commence a year in advance of the current plan expiration date in order to ensure the City always has an approved plan. The update will be completed every five years and will incorporate a formalized process for prioritizing actions and weighing the cost/benefit of such actions. All updates or revisions to the plan will be submitted to the RIEMA. The City Council will involve the public in the plan revision process by holding an annual advertised public meeting to present recommended revisions and solicit input. Revised plans will also be sent to the neighboring communities for comment.

All future meetings will again be open to the public and it is the hope of the HMC that once the public education and outreach actions begin, public involvement in the Plan will increase and will be reflected in future revisions. The HMC will involve the public in the annual meeting by posting it on the website, in the local library, and in the local newspaper to encourage involvement.

Adoption

After each update/evaluation cycle (every 5 years), the Newport Hazard Mitigation Plan will be presented to and adopted by the City Council. The associated ordinance documentation will be kept as part of this plan.

Appendix A: Survey Results

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9. Street flooding

1	anonymous	Various roadways throughout given poor drainage, clogged drains, grade/slope/pitch of road surface, based on rain amount and duration
2	anonymous	Broadway and Marlborough St.
3	anonymous	Third and Poplar
4	anonymous	Marchant
5	anonymous	Bedlow/Hillside
6	anonymous	Elm Street by America's Cup Avenue
7	anonymous	Corner of Warner and Gould since were up hill it rarely is standing water
8	anonymous	Wellington Avenue
9	anonymous	Bridge
10	anonymous	Malbone Road/Smith Ave.
11	anonymous	Memorial/ old Beach
12	anonymous	Homer and Garfield streets
13	anonymous	Backyards of homes on west side of Eustis Ave between Kay St and Ellery Road
14	anonymous	Broadway & Arnold Ave.
15	anonymous	111 Harrison Ave. also at Harrison and Halidon/Brenton Roads
16	anonymous	Harrison Ave.
17	anonymous	Gibbs Ave. and Ellery
18	anonymous	marchant @ atlantic
19	anonymous	Harold at Carroll
20	anonymous	Pond Avenue
21	anonymous	Narragansett Ave - between Thames and Spring St
22	anonymous	Kay Blvd Ellery Rd

23	anonymous	Rhode Island Avenue
24	anonymous	Wilbur Ave and Taber St
25	anonymous	Beacon Hill, Lower end
26	anonymous	Sycamore at Bayside
27	anonymous	Maple Ave
28	anonymous	kay blvd ellery road
29	anonymous	Roseneath/ Wellington Ave
30	anonymous	Sycamore
31	anonymous	Roseneath and Wellington
32	anonymous	Ellery and Eustis
33	anonymous	Marsh St at 2nd St
34	anonymous	Garfield/Homer
35	anonymous	Gibbs Ave/ Robinson ST
36	anonymous	Broadway / ayrault
37	anonymous	Kay Street near Rhode Island Avenue (but it's not really bad flooding, just clogged storm drains)
38	anonymous	Bliss Mine Rd
39	anonymous	Annandale Rd
40	anonymous	Broadway and Ayrault
41	anonymous	Admiral Kalbfus Road
42	anonymous	Memorial
43	anonymous	Seaview Ave/Cliff Ave
44	anonymous	Aborn st
45	anonymous	Houston Avenue

11. Is your street subjected to "sunny day" flood events"? If "yes", please provide the street name and nearest cross street. Or tell us of a place you know floods when there is no associated rain event.

ID ↑	Name	Responses
1	anonymous	Marchant
2	anonymous	I have no idea what " sunny day" flood events means
3	anonymous	Wellington Ave
4	anonymous	No
5	anonymous	Water always running down west side of Eustis ave between Kay st and Ellery Road due to resudences pumping water from their yards into the street
6	anonymous	Don't understand what a sunny day flood is.
7	anonymous	No
8	anonymous	Wellington Ave still floods in areas- Marchant/ Clinton. Klng park floods, Spencer Park and West Narragansett Flood.
9	anonymous	.?
10	anonymous	No
11	anonymous	No
12	anonymous	High tide from Kings Park--over seawall--seawall not high enough to protect flooding

16. Additional thoughts on how Newport can better prepare for the next natural event/disaster.

Faster alerts. Middletown is quicker. 2. Prepare for outside-the-box disasters like cyber attack / ransomware on top of a regionalized disaster. 3. Push CERT volunteerism down into the neighborhoods and schools as other states have done. 4. Beg elected leaders to actually "own" preparedness as a civic priority -- good luck ;-)
A workshop on hurricane risk, preparation, videos of past (recent) hurricanes and impact on Newport, discussion with folks who dealt, first-hand, with past (recent) hurricanes (I don't mean 1938!). Something to make preparations/planning more concrete and actionable.
be honest with the integrity of our water supply: how secure is it if / when south Easton Pond is breached, how many people can it support in the tourist season? off season? where are the gas leaks in the City that could cause low pressure? should be public!!!
Better snowplowing of side streets after snow storms. Better assistance for elderly to find services to clear driveways. Tree trimming near power lines. Update/improve natural gas lines.
Better stormwater management
Build a higher seawall around Easton's Beach. Create larger outflow trench along reservoir at Easton's Pond.
Clean storm drains for flooding
Comprehensive flood management plan for ALL neighborhoods. Be prepared to make unpopular decisions.
Correct the low pressure residential gas supply problem.
Cut back tree branches that hang over streets and roadways.
First Beach area flooding, flooding in the Downtown area, and sometimes flooding on Ocean Drive are areas of concern. Poor condition of sidewalks is a hazard however in any sort of weather!!
Fix the streets that flood regularly like the one I mentioned, Harrison Ave. near Halidon and Wellington, which is in a high wave zone. You must know this and have never taken any action to mitigate or solve the flooding problem. Why not?
Get AHEAD if the problem. Middletown and Portsmouth do a MUCH better job communicating with the public AHEAD of time. Newport is always tepid and LATE reporting potential problems!
Hold and record a Zoom meeting with several key city leaders. Encourage Red Cross training especially for shelter volunteers on the island
I do like the land line phone notification We do not have smart phones and do not have or cell phones most times So thank you for the service you do provide
I see we are working on it. We need to continue to invest in the infrastructure. We need to plan if we were knocked out for several weeks without power and easy resupply how we will survive.
I would like to see the city develop a plan for sand bagging offerings in the event of another hurricane or major flooding event. That would entail a location to harvest the sand, bags in preparation ect. For instance I would like to be able to block 4 basement windows in such a disaster which would require 4 bags of sand . . . so the question is what does the city have in mind if they're not planning on flood gates like on the Thames in London or in Holland?

Improve the sewer drain service cleanouts. Hire somebody to clean out the storm drain catchers the grills on the road. Have been overlooked and neglected. When Street lights-out have an officer direct traffic. Tuckpoint Memorial Boulevard ocean barrier breaker Stonewall that goes clear up from the ocean Easton's Beach to Thames St.
Influence govt about global warning precautions; invest in wind energy; shore up systems to protect our water reservoir/ponds
Information made available on safe places to gather ahead of events/disasters. Easy access to all for information on preparation for unusual events/disasters.
Kings Park could be redesigned to provide more protection from sea level rise and storm surge. Vulnerabilities in heating/cooling/water supply should be well understood to prevent incidents like the ones that followed the winter storms in Texas. An aggressive tree planting campaign should take place in the North End to reduce heat island effect - greening the new Connell Highway bike path should be a priority.
List of emergency shelters
locate utility lines below ground .. don't know whether underground cables can be protected from severe flooding.
Long term planning and preparation need to be prioritized. Preparation also needs to be a much higher priority on the part of City leadership to coordinate better internally, as well as across the community.
Make street pavement permeable. Plant more trees and gardens. Open Spaces. Have a contingency plan
Make sure all hazard mitigation plans are current. Review these plans annually for changes. Have studies completed for the most current ways to mitigate flooding at King/ Spencer Park, Thames St and in the Point Area. Procure any available grant monies to accomplish mitigation for sea level rise, stormwater runoff. Regulate all development in flood zones as fill or other material can obstruct flood flows just as structures can. Make changes to planning regulations for homes being built or added to in flood zones-require permeable paving, rain gardens, etc.. Do not allow concrete or asphalt paving in these areas.
Make sure storm drains are cleared and ready. Manage tree issues next to power lines to avoid outages. National Grid and the natural gas pressure is awful when demand is high. Please continue upgrade the utilities and sewers
Newport should provide sand bags for those whose streets flood. The streets are not closed off during flooding. Trucks and cars plow through the flooded streets and push the water into and onto the houses--more water to go into flooded yards/basement from the cars/trucks.
Recruit volunteers to train for opening and staffing shelters (where is the Red Cross on Aquidneck Island these days?
reduce the number of storm drains emptying into the moat!!!!
Stop building on the waterfront. Figure out how to deal with rising tides. Consider turning landfill reclaimed areas back to water.
Stop over-stressing the city's existing infrastructure. Stop building and allowing over-sized business development in the city's waterfront's flood plains.

the disaster of the gas line break 2 years ago caused major damage throughout the island!! This type of disaster INCLUDING major power outage was not mentioned anywhere AND is more real than many of the issue you have above. Houses and businesses WILL be damaged as we saw in the Gas Main failure.....how are you addressing these????
This survey doesn't allow for an accurate description of "hazards" that have faced the North End in recent years – including the gas outage and the COVID pandemic, which have created disaster conditions from which the city does not seem to have learned much. There is stormwater flooding in the North End on a regular basis (although not in front of the building I work in), but that is just a foreshadowing of the inevitable effects of the climate crisis that lie ahead for the North End: more intense and more frequent storms, more heat-island effects in the streets without or with few trees, no community-based systems for organized response ahead of the coming weather disasters, and no municipal preparation for communicating with North End residents in ways that work for a community with poor broadband services, limited cellphone and data capacity, and other technological hurdles that leave residents last on the list for public communication and concern – even though these recent experiences are vivid and hold important lessons.
Those with limited resources will be least likely to be able to take care of themselves and most likely to be unable to leave in the event of a disaster. The City will need to have a plan to provide assistance in the long term. I'm not sure why "pandemic" isn't listed as a natural disaster. I've seen the City's response to both the gas outage and the pandemic and have not been impressed with the ability to provide support and resources to the most in-need. A community-driven approach might work better and the City needs to listen to it's residents.
Trailer regularly with NGOs hand in hand (amateur radio, MRC, Red Cross, DMAT teams, etc) call for assistance earlier. In the gas outage it seemed like outside assistance was delayed. Pool experienced professional volunteers from construction and other trades to be ready to assist with hazard identification after storms (flooded out, structural damage and so on)
when residents are told to evacuate, there should be an increased police presence to prevent robberies hasn't happened in past, which is why people won't evacuate!!
When town repaved my street they put crown in road...ever since bottom of my driveway ALWAYS floods....especially bad in winter as it all turns to ice. Bad pace job did this. Please fix Harold Street.

Appendix B: Public Outreach

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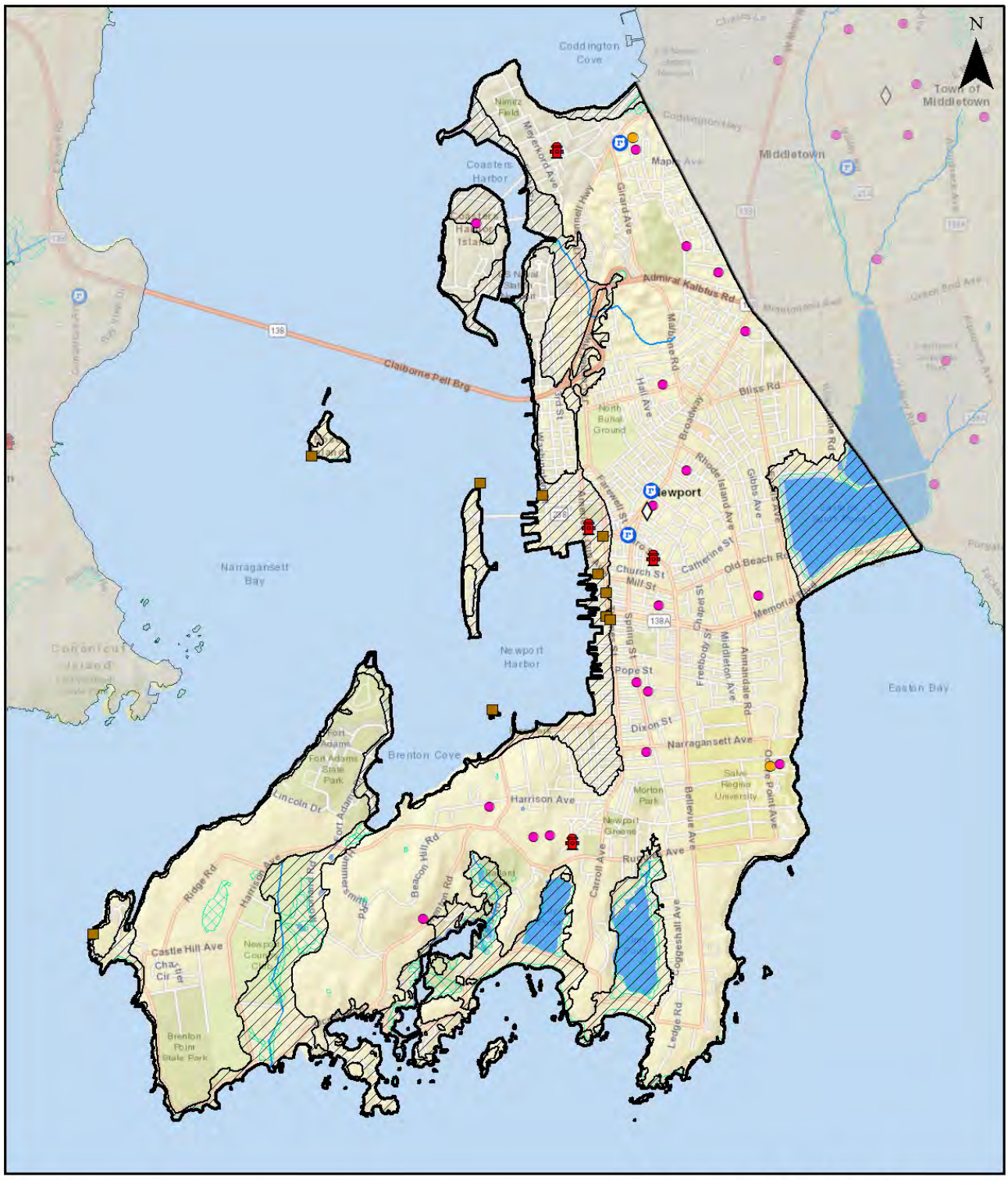
Appendix C: Community Assets Map



Legend

- City of Newport Boundary
- City Hall
- Police Stations
- Fire Stations
- HistPoints
- Schools
- CCRI and Salve Regina University
- Special Flood Hazard Area
- Wetlands
- Lakes, Rivers, Streams

Community Assets Newport, RI

0 0.25 0.5 1 Miles

Source: RI Geographic Information System, 2021