

# HIGH WATER MARK INITIATIVE FOR COASTAL NH

## CASE STORY: PORTSMOUTH, NH



### OVERVIEW

The City of Portsmouth has coastline bordering the Atlantic Ocean, Piscataqua River and several inland tidal tributaries. Its coastlines are protected by a variety of natural landforms and constructed barriers including sand and cobble beaches, bedrock outcrops, tidal wetlands/saltmarsh, seawalls, revetments and bulkheads.

Portsmouth has a thriving and diverse coastal tourism economy, public parks and beaches, and a working waterfront of fish and shellfish industry, businesses, restaurants, and recreational facilities. Although a popular tourist destination, Portsmouth has a significant coastal residential population centered around the downtown business district and Historic District. NH Route 1, a major local and Seacoast region transportation route, connect Portsmouth to other coastal towns and portions are highly susceptible to coastal flooding during storm events. Lead by municipal staff, boards and commissions, and residents, Portsmouth has taken tangible steps over the past few years toward a more resilient future including community outreach, long range planning, and regulatory changes.



*Mechanic Street, Portsmouth.  
Photo credit: Rich Beauchense*

### COMPLETED ACTIONS

#### Coastal Resilience Initiative

In 2013, Portsmouth partnered with the Rockingham Planning Commission and researchers at the University of New Hampshire to conduct a vulnerability assessment of critical assets in the city's highest risk flood areas. The Coastal Resilience Initiative (CRI) report and maps have formed the basis for several additional assessments conducted by the city and has informed city-wide dialog about the impacts of flooding from projected future sea-level rise and storm surge. The CRI report and maps are available on the Prepare. Protect. Portsmouth. website at: [www.cityofportsmouth.com/planportsmouth/cri](http://www.cityofportsmouth.com/planportsmouth/cri)

#### Tides to Storms Vulnerability Assessment

In 2015, Portsmouth participated in meetings to learn about the mapping and statistical data produced by the Rockingham Planning Commission's Tides to Storms Vulnerability Assessment. Stakeholders including Department Managers, emergency management, and municipal staff offered insights about local flooding issues and recommended actions to address deficits in planning, emergency response, infrastructure management, and investments in adaptation measures. The report and maps are available at: [www.rpc-nh.org/regional-community-planning/climate-change/tides-storms](http://www.rpc-nh.org/regional-community-planning/climate-change/tides-storms)

#### Hazard Mitigation Plan

In 2017, Portsmouth updated its Hazard Mitigation Plan and incorporated results from the Tides to Storms Vulnerability Assessment (2015) including maps, asset impact statistics, and recommended actions to reduce flood risk and vulnerability from sea-level rise and storm surge. Incorporating climate change information into this plan provides a solid rationale for implementing proactive, preventative and adaptive measures that address changing conditions and community priorities. The Plan is available at: [cityofportsmouth.com/fires/Portsmouth\\_HazMit\\_May2017.pdf](http://cityofportsmouth.com/fires/Portsmouth_HazMit_May2017.pdf)

#### Climate Highlights

- ✓ Coastal Resilience Initiative
- ✓ Theme-Based Master Plan
- ✓ Historic Resources Vulnerability Assessment

## Master Plan Update

The Portsmouth Planning Department and Planning Board completed a comprehensive update of the city's Master Plan in 2017. Climate change, adaptation and resilience are integrated broadly across their new "theme based" 2025 Master Plan format - Vibrant, Authentic, Diverse, Connected and Resilient – including actions focused on planning, land development and regulations, natural resource protection, community services, and preservation of community character. The Plan is available on the Planning Department website at: [www.cityofportsmouth.com/planportsmouth/master-plan](http://www.cityofportsmouth.com/planportsmouth/master-plan)

## Historic Resources Vulnerability Assessment

Partnering with consultants from GEI, Rockingham Planning Commission and Search in 2017, Portsmouth completed a vulnerability assessment of its historic resources located in the highest risk coastal flood areas. Adaptation recommendations for certain neighborhood and building types were identified that could be transferrable to similar historic resources impacted by flooding. The Historic Resources Vulnerability Assessment included an Advisory Committee comprised of members of the historic district commission, conservation commission, residents and local businesses. The report is available on the Planning Department website at: [www.cityofportsmouth.com/planportsmouth/historic-properties-climate-change-vulnerability](http://www.cityofportsmouth.com/planportsmouth/historic-properties-climate-change-vulnerability)

## ONGOING INITIATIVES

### Strawberry Banke Museum

In recent years, Strawberry Banke Museum staff have gathered data and observations about flood damage to specific historic properties in the Puddle Dock neighborhood from groundwater rise caused by rising seas. Flood damage to basements routinely occurs even during highest annual tides such as a 2018 King Tide event captured on video at: [www.youtube.com/watch?v=IHAPJUQGwjg](http://www.youtube.com/watch?v=IHAPJUQGwjg) (David J. Murray, Clear Eye Photo). Strawberry Banke Museum participated as a Local Advisory Committee member for Portsmouth's Historic Resources Vulnerability Assessment (2018). Strawberry Banke Museum is also the site of one of six *High Water Mark Initiative* sign installations across the New Hampshire coastline. The sign describes the varied history of the Puddle Dock neighborhood from inland waterway to dry land, and perhaps with rising seas the groundwater, back to tidal waters once again.

## NEXT STEPS

### Public Outreach and Education

The City intends to continue its public outreach activities by engaging stakeholders in ongoing and new projects focused on identifying climate change related impacts and strategies to address them. Outreach will be coordinated with other similar efforts in the City such as PS21 activities.

### Climate Ready Land Development Standards

As recommended in the Coastal Resilience Initiative (CRI) report, the City hopes to continue evaluating how climate adaptation and resilience can be incorporated into land development standards such as in zoning and regulations including appropriate standards for the City's Historic District.

**[Visit the High Water Mark sign in Portsmouth at the Marcy Street parking area at Strawberry Banke Museum.](#)**

For more information about the High Water Mark Initiative for Coastal NH visit: [www.rpc-nh.org/highwatermark](http://www.rpc-nh.org/highwatermark)



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