

Nantucket Planning and Resilience



Nantucket Coastal Conference
June 26, 2019

Town of Nantucket
Holly Backus – Local Hazard Mitigation Plan Coordinator
Chuck Larson, P.E. – Manager of Strategic Projects
Jeff Carlson – Director of Natural Resources
Milone and MacBroom, Inc
Noah Slovin

Coastal Resilience & Hazard Mitigation

WHAT HAS HAPPENED SINCE JUNE 2017

- Completed the HMP Update
- Conducted a Community Resilience Building workshop and prepared a summary report (FY19 MVP Grant). Nantucket obtained certification as a MVP Community
- Developed an initial draft of a Coastal Resilience Plan
- Performed a study to visualize flooding conditions in downtown area and the results are being showcased on Friday (FY19 CZM Grant)
- Using the HMP and MVP portfolio of projects/needs and are tracking them against possible funding sources (grants, capital, operational budgets, etc.)

Extreme Weather

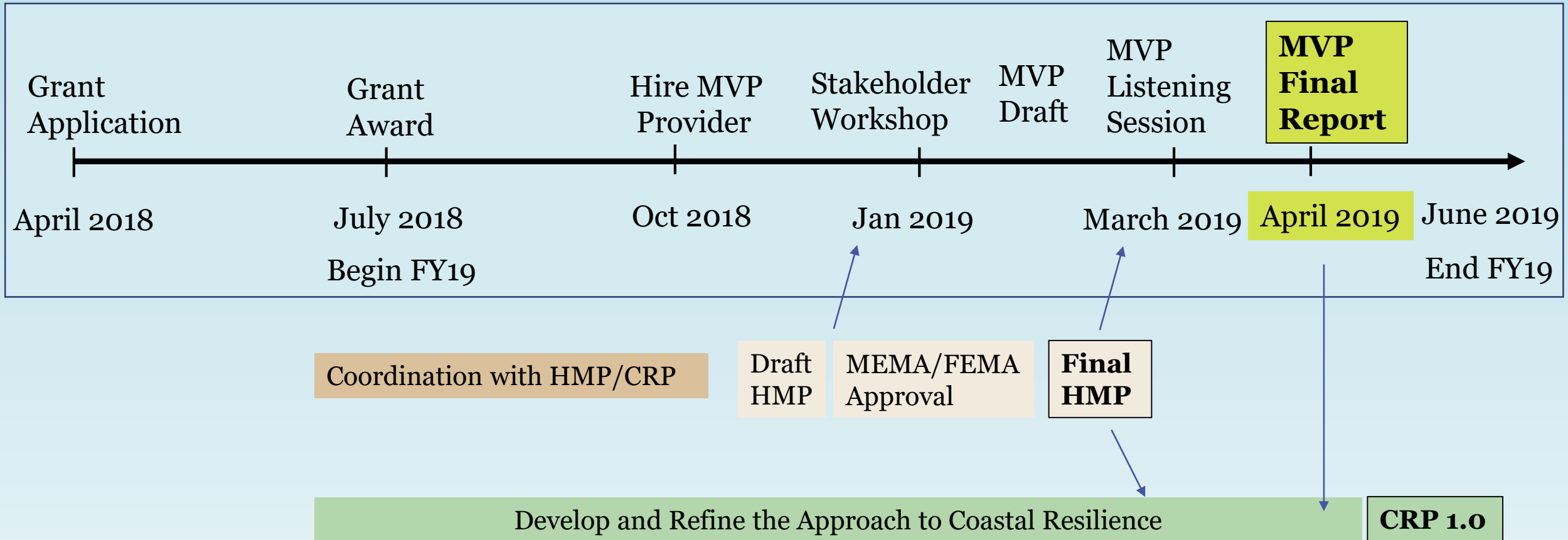
- 10/29/2017 storm causing washover at head of Hither Creek. Loss of the iconic stilt house and scour impacts to Millie's Bridge (west end of island)
- 1/4/2018 Nor'easter (Bomb cyclone). Extreme temperatures, winds, and flooding, and the second highest water level recorded at the NOAA tide station. 16" PE sewer force main suffered a catastrophic failure during the storm.
- March 2018 Nor'easters causing breach of Sesachacha Pond and loss of a section of Polpis Rd (major road, east end of island)



MVP - Municipal Vulnerability Preparedness

- The State's program to foster climate adaptation practices and resilience planning, launched in 2017
- Supports cities and towns to identify and build awareness of local strengths and vulnerabilities to climate change and prioritize actions to create a safer and more resilient community
- Conducted an 8-hour workshop to characterize climate related hazards, identify community strengths and vulnerabilities, and come to agreement on the top priority actions for the community.
- Communities who complete the MVP program become certified as an MVP community and are eligible for MVP Action grant funding and other opportunities
- 155 of 351 communities are MVP certified or in the process of certification

The Nantucket MVP



What Did We Learn?

- Clarified the definition of Resilience:
 - The ability to become strong, healthy or successful again after something bad happens
 - Includes activities of the community to prepare and plan for, absorb, recover and more successfully adapt to adverse events
- Resilience Planning encompasses multiple areas of focus (community specific)
 - Infrastructure Resources (the built environment)
 - Environmental Resources (the natural environment)
 - Economic Resources
 - Social/Cultural Resources (the social environment and community well-being environment)
 - Historic Resources
- Resilience Planning requires consideration of the people and social assets (behaviors) along with the “hard assets” that support a community

Priority Actions – Top 5 From the Workshop

1. Resiliency Coordination

Establish a municipal “Resilience Coordinator” position with the following responsibilities:

- Facilitate and coordinate Town-wide resiliency initiatives
- Review existing and new Town Bylaws and Regulations to ensure consistency and efficiency
- Develop new resiliency policies
- Foster ongoing community resilience discussions within the community, including with the MVP workshop stakeholder group, through meetings and hosting subject-matter experts

Priority Actions

2. Isolation from the Mainland

Develop an “Isolation Master Plan” that addresses resiliency and redundancy of access routes to and from Nantucket. The plan should address:

- Resiliency of existing transportation infrastructure and facilities to climate change and severe weather events
- The potential for development of permanent alternative access routes and/or facilities
- Emergency protocols in case key routes are blocked or facilities damaged

Priority Actions

3. Tidal Wetland Restoration

- Enact a long-term wetland restoration and preservation strategy to protect and grow this important community asset. Landward migration of tidal wetlands with sea level rise should be considered.

Priority Actions

4. Historic Preservation Guidelines

- Develop guidelines to preserve historic streetscapes while mitigating hazards.
- These guidelines should provide information specific to the different and unique types of historic resources found on Nantucket, as well as the different and unique hazard threats in different areas of the Island.

Priority Actions

5. Infrastructure Resiliency Plan

Develop a plan to ensure redundancy and reliability of the Island's roadway, water, and wastewater systems in the face of a changing climate and severe storms. The plan should include and address:

- Through a long-range plan, similar to a roadway/pavement management plan
 - Development of alternate routes in case roads or bridges are rendered impassible
 - Identification and prioritization of sites for road relocations, elevations, and/or hardening
 - Identification and prioritization of sites for culvert or bridge upsizing or construction
- Water and wastewater utility system resiliency

Next Steps

- Strengthen and formalize Resilience Planning across all Town Departments – an integrated effort
- Coordinate and expand grant projects with the Energy Office
- Obtain new grant opportunities building on the current MVP and HMP plans
- Continuously learn and seek out new information and knowledge to improve our Resilience Planning and Sustainability Planning efforts

Hazard Mitigation Plan 2019 Update

*To mitigate the detrimental impacts of natural hazards to Nantucket, while maintaining and enhancing the Island's quality of life, **historic essence**, aesthetic beauty, and natural and habitat resources”*

September 2017 – initiation meeting
October 2017 – 1st public meeting
November 2017 – 2nd public meeting
December 2017 – interviews with Town staff
October through December 2017 – public online survey



Select Board & FEMA adopted March 2019

Areas of Concern:

- Access to the Mainland
- Isolation within the Island
- **Historic Resources**
- Power Supply Resiliency
- Climate Change

New Goals:

- Reduce the loss or damage to life and property caused by natural disasters
- Protect Town infrastructure, and natural, cultural, **historic** and economic resources from natural disasters
- Maintain the Island's emergency response capabilities
- Reduce public and private natural disaster damage and insurance costs
- Reduce the social, emotional, and economic disruption associated with natural disasters

Hazard Mitigation Plan 2019 Update

- ❑ Approximately 60 Mitigation Actions and Strategies
- ❑ As of June 2019:
 - 23 underway
 - 2 completed

Table 11.4: Mitigation Actions and Strategies for Recreation

Item	Priority	Responsible Department	Timeline	Estimated Cost	Potential Funding Sources
1. Develop a comprehensive plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
2. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
3. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
4. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
5. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
6. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
7. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
8. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
9. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
10. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
11. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
12. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
13. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
14. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
15. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
16. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
17. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
18. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
19. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
20. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
21. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
22. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
23. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
24. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
25. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
26. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
27. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
28. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
29. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
30. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
31. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
32. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
33. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
34. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
35. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
36. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
37. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
38. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
39. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
40. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
41. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
42. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
43. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
44. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
45. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
46. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
47. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
48. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
49. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
50. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
51. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
52. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
53. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
54. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
55. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
56. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
57. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
58. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants
59. Develop a plan for the development and management of the town's recreational resources.	High	Recreation Department	2019-2021	\$100,000	Grants
60. Conduct a survey of the town's recreational resources to identify areas for improvement.	Medium	Recreation Department	2019-2020	\$50,000	Grants

Town of Nantucket Prioritized Hazard Mitigation Strategies	
Administration	
Emergency Management	
Fire Department	
Natural Resources	
Public Works (Building, Energy, HCC, Planning)	
SFPW	
Sewer Department	
Water Department (Watermain)	
Nantucket Public Schools	
OTHER	

Strategy HSC1	
Complete the Community Coastal Resilience Plan and become an MPP community	
Total STAPLES Score	0
Primary Hazard	Sea Level Rise, Shoreline Changes, and Erosion
Status	Underway
Responsible Department	Administration, Public Works, Natural Resources
Timeline	7/2018-6/2019
Estimated Cost	\$10,000
Potential Funding Sources	Grants

Strategy HSC2	
Participate in a limited public-private partnership with Nantucket Engineering & Survey to complete a study of the falling mill truck watershed, in particular the hydrologic conditions at Polpi Road, to identify design alternatives for improvements to this area.	
Total STAPLES Score	0
Primary Hazard	Flooding
Status	Underway
Responsible Department	Public Works, Natural Resources
Timeline	7/2018-6/2020
Estimated Cost	250,000 - 500,000
Potential Funding Sources	Gift to Town

Strategy HSC3	
Complete mutual aid agreement with the NCS, Nantucket Land Council, Nantucket Land Bank, and/or Massachusetts Audubon Society for firefighting assistance.	
Total STAPLES Score	0
Primary Hazard	Wildfire
Status	Completed
Responsible Department	Fire Department
Timeline	7/2018-6/2018
Estimated Cost	Less than \$10,000
Potential Funding Sources	Operating Budget

Hazard Mitigation Plan 2019 Update

SOME of the Mitigation Actions & Strategies:

- Complete the Community / Coastal Resilience Plan and Become an MVP Community **(completed)**
- Complete mutual aid agreement with the Nantucket Conservation Foundation, Nantucket Land Council, Nantucket Land Bank, and Massachusetts Audubon Society for firefighting assistance **(underway)**
- Review the Nantucket Intermediate School and Elementary School and determine their abilities to serve as emergency shelters
- Develop a comprehensive storm water management plan that addresses needs and priorities to reduce flooding and improve drainage **(underway)**
- Develop a plan to relocate important hard-copies of Town records (including records in Finance, Health, Natural Resources Departments) to a new storage location outside of the locations susceptible to flooding
- Obtain necessary radios and chargers for DPW staff and equipment to operate efficiently during town-wide emergencies **(completed)**
- Design and complete repairs to Children's Beach storm water pump and outfall to improve reliability, reduce/eliminate backflow into the pump and drainage system during high tides **(underway)**

Hazard Mitigation Plan 2019 Update

- ✓ Included Historic & Cultural Resources within the HMP
- ✓ Prioritized Strategies identified:
 - *Strategy #A10 – Conduct a targeted hazard vulnerability assessment of historic structures and offer technical assistance to property owners.*
 - *Strategy #F8 – Adopt a set of design guidelines to encourage flood proofing and elevation of structures while maintaining their historic characters. The NFIP Floodplain Management Bulletin FEMA P-467-2, “Historic Structures.”*



Rising tides...

Massachusetts Sea Level Rise and Coastal Flooding Viewer

Interactive maps of coastal flooding areas and community facilities and infrastructure based on: sea level rise scenarios, Federal Emergency Management Agency coastal flood zones, and hurricane surge models.

[Intro](#)[Sea Level Rise](#)[FEMA Coastal Flood Zones](#)[Hurricane Surge](#)

This map shows the National Oceanic and Atmospheric Administration (NOAA) modeling of coastal flooding above Mean Higher High Water (MHHW, the average height of daily highest tide) with six increasing levels of sea level rise (1-foot increments up to six feet). This map does not account for storm surge, waves, erosion, and other dynamic factors. Future updates to the viewer will include maps that depict water levels from storm-driven flooding under sea level rise scenarios. See CZM's [Sea Level Rise Guidance](#) (PDF, 3.0 MB) for more information on sea level rise rates and projections, as well as general advice in the selection and application of scenarios for coastal vulnerability assessments.

Zoom in until the mapped extents of the sea level rise scenarios come into view. Community facilities and infrastructure are identified with an icon and facility outline. Click the icon for a pop-up box displaying the facility name, type, town or city, and water levels under the sea level rise scenarios. Flood levels represent water depth in feet above 0 NAVD 88, rather than above the ground surface. See the [Sea Level Rise Scenario figure](#) (PDF, 155 KB) for a visual representation of the information depicted on the map. Coastal flood data can be directly compared for each facility by switching viewer tabs.

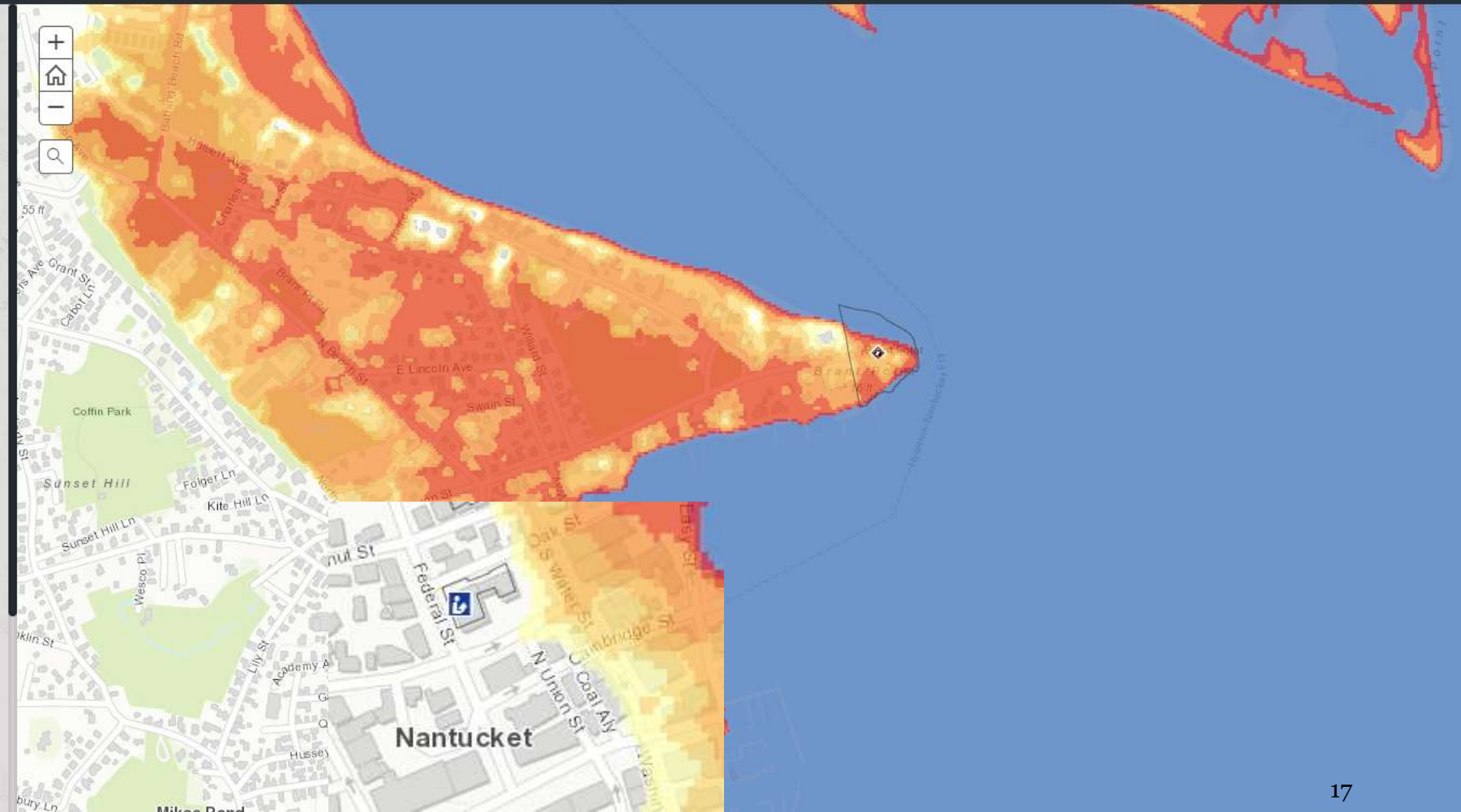
For planning purposes only. Sea level rise data courtesy of NOAA, January 2013. Please see the [technical report](#) (PDF, 272 KB) for data sources and processing steps.

Potential Extent of Mean Higher High Water (MHHW) with Sea Level Rise

- MHHW
- MHHW + 1 ft Sea Level Rise
- MHHW + 2 ft Sea Level Rise
- MHHW + 3 ft Sea Level Rise
- MHHW + 4 ft Sea Level Rise
- MHHW + 5 ft Sea Level Rise
- MHHW + 6 ft Sea Level Rise

Public Facilities and Infrastructure

- Airport



March 2018



Washington Street



Polpis Road



Protection



Adaptation



Retreat



NANTUCKET COASTAL RESILIENCE PLAN

Bringing together the HMP and MVP

NANTUCKET COASTAL CONFERENCE

JUNE 26, 2019



MILONE & MACBROOM

AGENDA



Plan Overview



Coastal Resilience



Community
Vulnerabilities



Resiliency Strategies

PLAN OVERVIEW



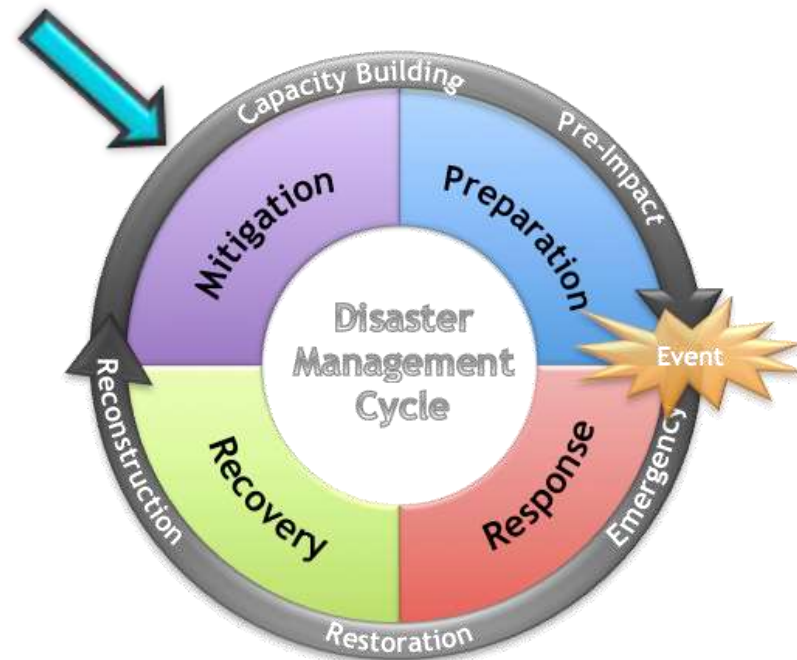
PLAN OVERVIEW

OTHER PLANNING EFFORTS



Hazard Mitigation Plan

- All Natural Hazards
- Regulatory Document
- Affects Flood Insurance
- Positions for Mitigation Grants
- Limitations
 - 5-year planning window
 - Focus on loss reduction
 - Highly prescribed
 - Risks defined by looking at past

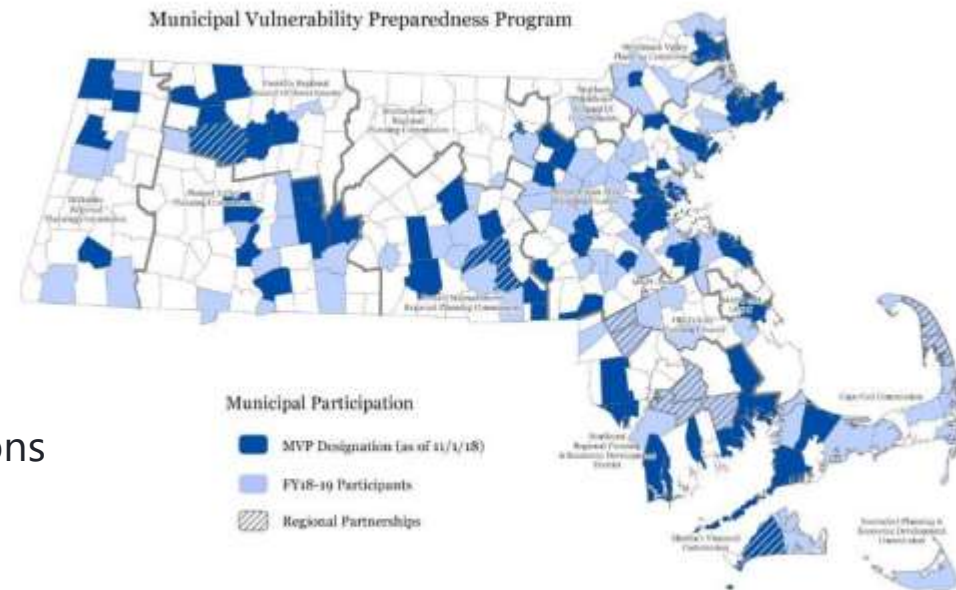


PLAN OVERVIEW

OTHER PLANNING EFFORTS

- Massachusetts Commonwealth-Wide
- Community Resilience Building (**CRB**) Approach
 - Stakeholder-Developed Priorities
 - Develop Relationships and Support
 - Process is Part of the Goal
- Two Opportunities
 - MVP Planning Grant
 - Stakeholder Workshop
 - Public Listening Session
 - Identification of Top Actions
 - MVP Action Plan
 - Implementation of Top Actions
 - Must be MVP Certified
- Other Benefits
 - MVP Communities get Priority for State Funding

UTILIZE
PARTNERSHIPS &
LEVERAGE EXISTING
STRENGTHS



PLAN OVERVIEW

COASTAL RESILIENCE PLAN

Coastal Resilience Plan

- Coastal Hazards
 - (flood, wind, erosion)
- Community-wide Vision
- Positions for Various Funding
- Strengths
 - Focus on resilience
 - Long-term planning window
 - Comprehensive
 - Cross-sector
 - Interdisciplinary
 - Forward-looking
 - Flexible content & format



PLAN OVERVIEW

COASTAL RESILIENCE PLAN

Three Intentions

- **Assess Risk and Vulnerability** using GIS mapping and projections of future conditions
- Present a **Menu of Resiliency Solutions** the Town can choose from to achieve resiliency goals
- Identify **Policy Changes** to be considered by the Town's Coastal Resiliency Advisory Committee and Coastal Resiliency Coordinator, that will enable implementation of resiliency solutions



COASTAL RESILIENCE

PHOTO: HURRICANE SANDY.JASON GRAZIADEI

COASTAL RESILIENCE

WHAT IS IT?

What is Resilience?

- Capacity to establish a positive trajectory after a disturbance or event
- Resist (prepare), Absorb, Recover, Adapt

$$\text{Risk} = \text{Vulnerability} \times \text{Frequency}$$

Vulnerability: how susceptible to loss or damage?

Frequency: how often does the event happen?

Minimize Vulnerabilities Capitalize on Strengths

- Infrastructure
- Social Capital
- Natural Environment



- Economic Environment
- Historic Resources
- The Nantucket Experience



MILONE & MACBROOM

COASTAL RESILIENCE

PRIORITY RISKS & HAZARDS ON NANTUCKET

TOP PRIORITY HAZARDS



**Coastal
Flooding**



**Severe
Storms**



**Sea Level
Rise**



Erosion



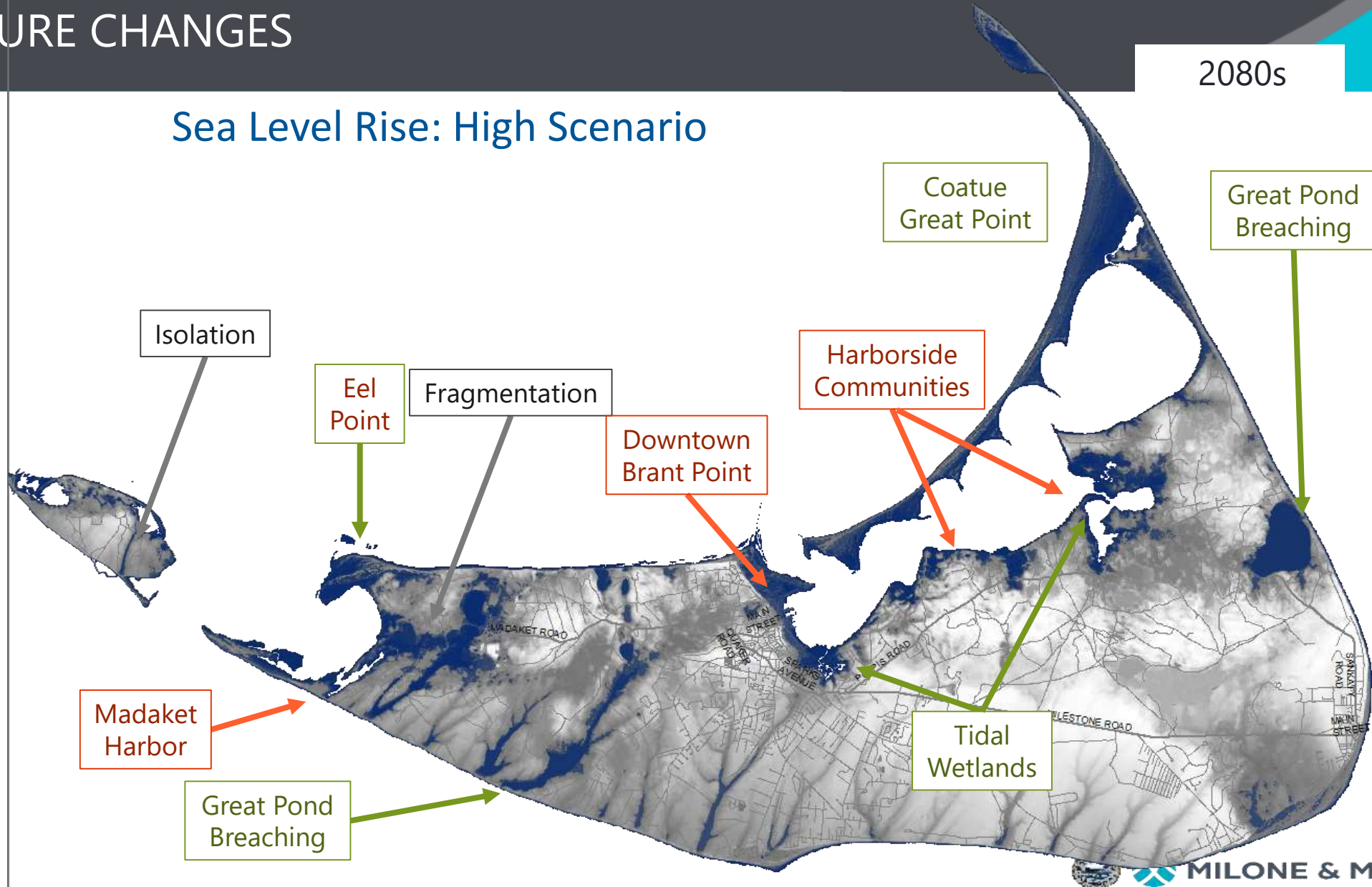
High Wind

COASTAL RESILIENCE

FUTURE CHANGES

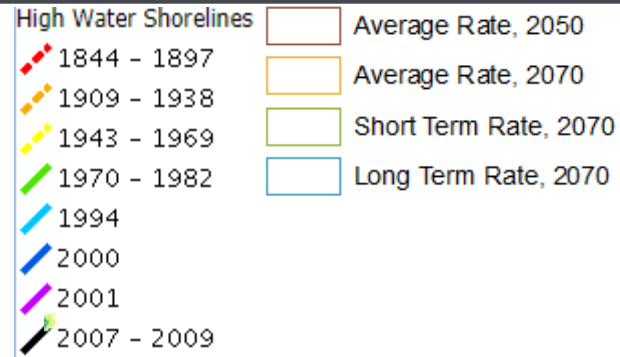
2080s

Sea Level Rise: High Scenario

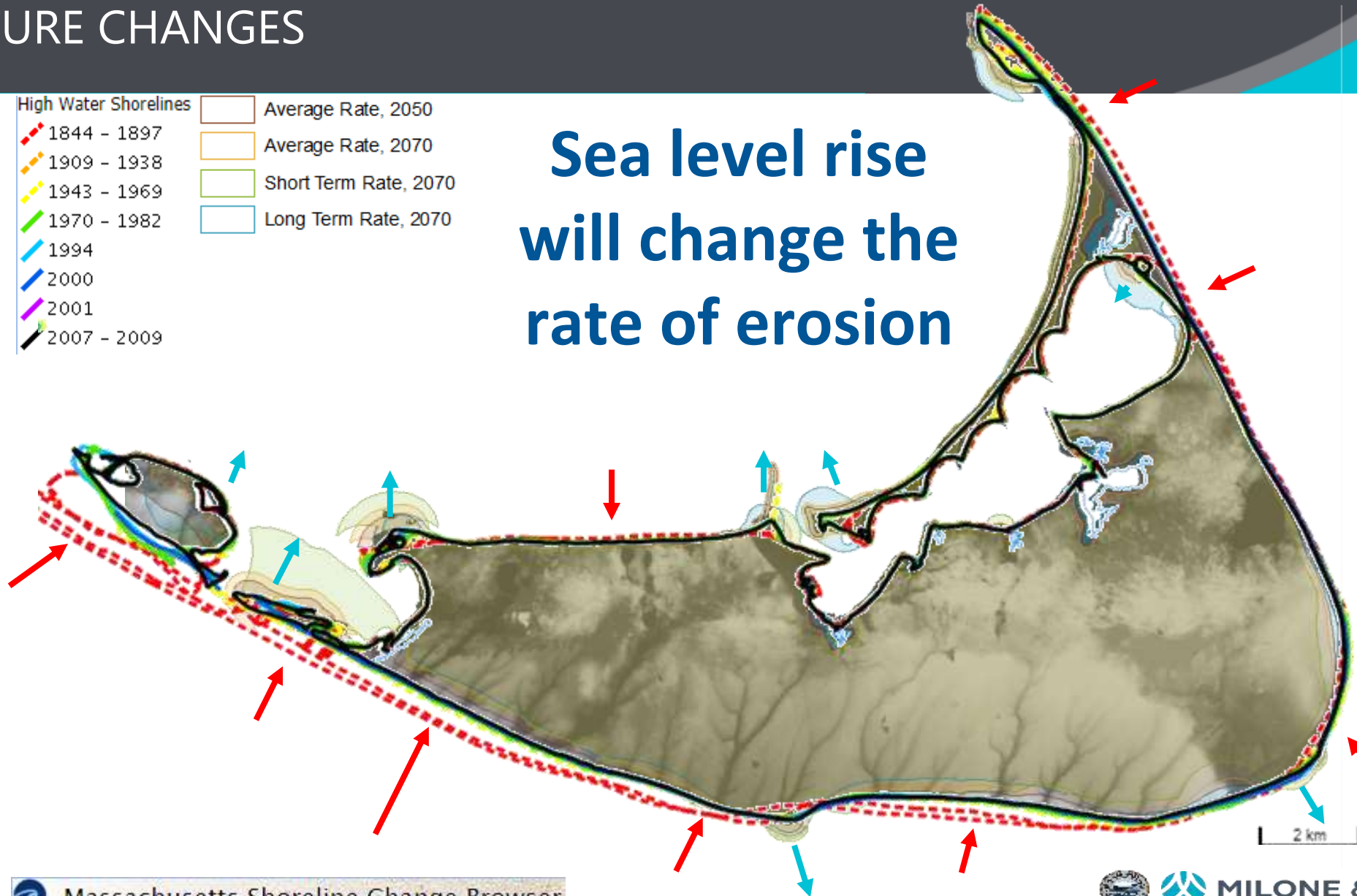


COASTAL RESILIENCE

FUTURE CHANGES



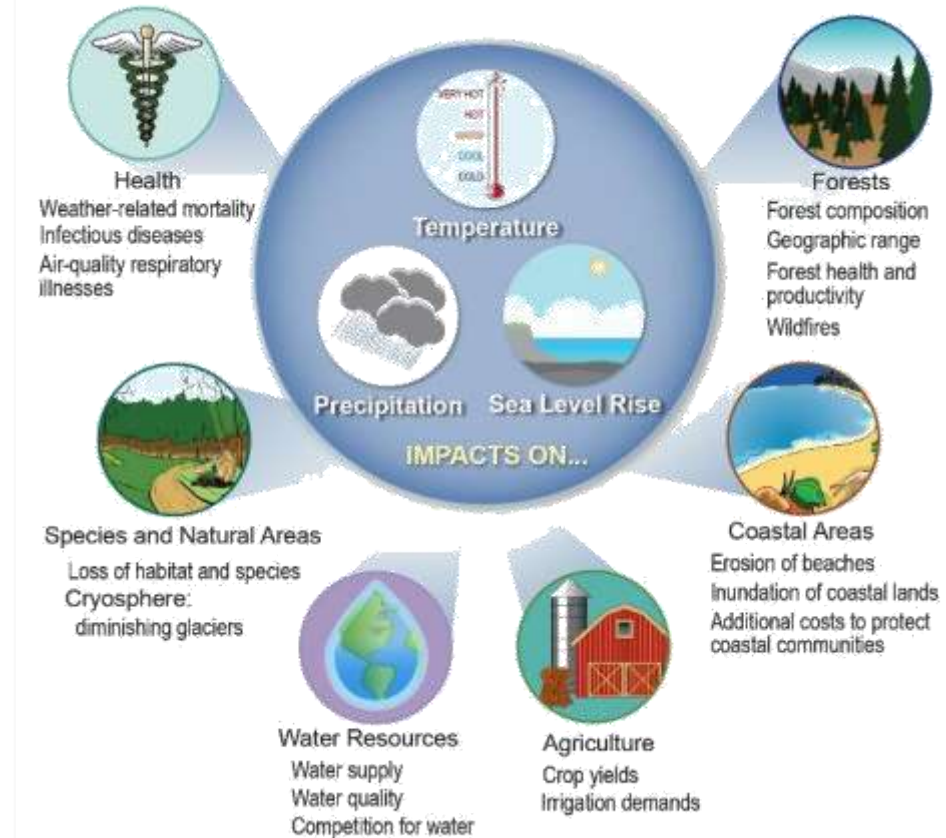
**Sea level rise
will change the
rate of erosion**



COASTAL RESILIENCE

FUTURE CHANGES

- Accelerated Sea Level Rise
- More Intense & Frequent Storms
- Increased Precipitation
- More severe droughts
- Warming Temperatures
- Other Changes
 - Accelerated Erosion
 - Insect & Tick-borne Illnesses
 - Changing Seasonal Patterns
 - Agricultural Impacts
 - Changing Habitats
 - Evolving Fisheries



COMMUNITY VULNERABILITIES

PRIMARY CHALLENGES FOR NANTUCKET

- Downtown and Brant Point flooding from storm surge.
- Downtown flooding during severe rain.
- Erosion in many parts of the island.
- Isolation from the mainland.
- Fragmentation risk if roads and bridges are damaged or flooded.
- Utility (water, wastewater, electric) systems in risk zones.
- Historic properties and sites threatened by flooding or erosion.
- Piecemeal mitigation structures lead to inconsistent protection levels.
- Lack of consensus re: hazard mitigation implementation best practices.
- Development pressure, growing summer population, increased traffic.





RESILIENCY STRATEGIES

PHOTO: /WWW.SUSTAINABLENANTUCKET.ORG

RESILIENCY STRATEGIES

MENU

Categories of Options	Specific Options
Shoreline Protection	Seawalls & Bulkheads,
	Groins & Breakwaters,
	Floodwalls & Levees
	Beach & Dune Management
	Hybrid Techniques, Bioengineered Banks, Artificial Reefs
	Tidal Wetland Management
Community Infrastructure Protection	Stormwater Management & Surcharge Prevention
	Road Elevation & Alternate Route Identification or Construction
	Water Supply Adaptation and Protection
	Sewer Pumping Station Retrofits, Wastewater Treatment Plant Protection
Property Protection	Elevation, Floodproofing, Site-Scale Floodwalls, or Barriers
	Adaptive Re-use (Floodable Lower Floors)
	Property Relocation or Acquisition
Regulatory Tools	Flood Damage Prevention Ordinance Modifications
	Zoning Regulations Modifications
	Rolling Easements
Procedural Tools	Emergency Planning and Preparation
	Maintenance Planning and Operations
Public & Institutional Education	Education and Training for Municipal Staff
	Public Meetings, Workshops, Websites, and Publications
	Advise Property Buyers

RESILIENCY STRATEGIES

CONSIDER EXPLORING POLICY RECOMMENDATIONS

Managed Retreat

Empower and encourage residents to take the steps required for retreat when necessary.
Promote migration of tidal wetlands onto undeveloped adjacent land as sea levels continue to rise.

Protection & Elevation Policy for Downtown and Brant Point

Develop and adopt policies for asset protection and elevation in the Downtown and Brant Point areas (due to significant concentration of economic, infrastructural, cultural, and other values).

Design Guidance for Coastal Hazard Mitigation Infrastructure

Protect individual assets while integrating with an Island-wide resiliency strategy.
Examples from New York City and the Port Authority of New York and New Jersey.

Beach Nourishment

Beach nourishment can be an effective means of offsetting erosion effects. Many beaches around the Island are privately owned. The Town should work to make this action more accessible to private property owners.

Substantial Damage / Substantial Improvement Regulations

Any structure that experiences Substantial Damage or undergoes Substantial Improvement must be brought into compliance with the most recent regulations.

Resilience Plan for Public Ferries

Weather-related interruptions to ferry services may increase with climate change and sea level rise. Nantucket must develop a resilience plan for off-island transportation.

Relocate Municipal Facilities

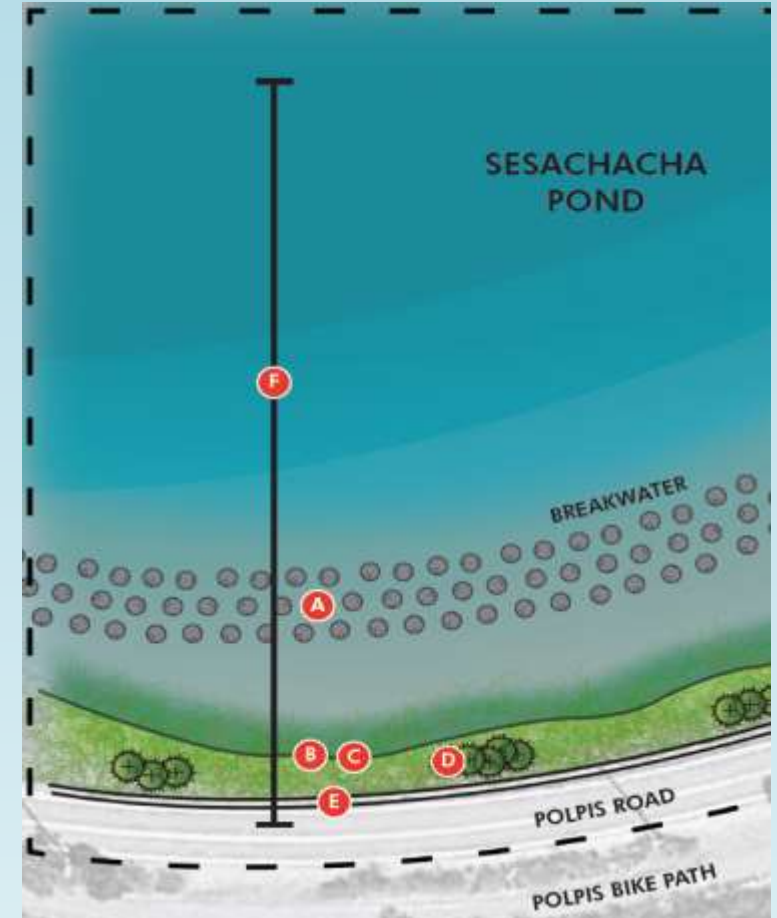
Key municipal facilities located in at-risk areas will need to be relocated over time.

Foster Business Resilience

Nantucket should work with business owners to identify business resiliency needs and barriers, create a regulatory framework that encourages businesses to take resiliency actions, and provide other incentives, assistance, and support.

Turning Plans Into Action

- Priority
 - Coastal Resiliency Advisory Committee
 - Coastal Resiliency Coordinator
- Outreach and Support
- Funding
 - Grants – Mass CZM, MVP Action Grants, NOAA
 - Operating Budgets
- Permitting
- Construction/Implementation



Sesachacha Pond/Polpis Road
Living Shoreline and Breakwater