NANTUCKET TOWN ASSOCIATION MEETING

August 22, 2023, at 4:00 pm

Meeting held in the Learning Lab of the Atheneum and by Zoom

FINAL AND APPROVED MINUTES

Attendance in the Atheneum: Trish Bridier, Barbara Cohen, Mary Anne Easley, Bill Seay, Anne Terry, and Henry Terry.
Attendance by Zoom: Doris Hanna, Lee Saperstein, Charley Walters, and Paula Williams.

Guest: Leah Hill, Nantucket Coastal Resilience Coordinator.

Thanks to the Atheneum, Samantha Aguiar, for hosting the meeting. which was recorded and the link to the video is included here: : https://youtu.be/fFcIEJJaLcE.

I. Call the August 22, 2023, Nantucket Town Association Meeting to Order.

President Henry Terry called the meeting to order at 4:03 pm. He announced that the meeting is being recorded and those who could not attend are welcome to use the above link to watch the recording.

II. Approval of minutes of the Meeting of July 25, 2023.

Henry Terry asked for approval of the minutes of the meeting of July 25, 2023; Anne Terry moved their approval, Trish Bridier seconded them, and the vote to approve was unanimous.

III. Treasurer's Report.

Henry Terry noted that the Treasurer was unable to attend and that he would give the Treasurer's Report orally from information sent to him by the Treasurer. The starting balance was $3617.01, which was increased by a dues payment of $20.00 less a PayPal fee, giving an ending balance of $3635.82. The report, attached, was accepted upon a motion made by Trish Bridier, seconded by Anne Terry, and approved unanimously.

IV. Guest Speaker, Leah Hill, Nantucket Coastal Resilience Coordinator.

Before introducing Leah Hill, Henry Terry asked if there was any objection to re-ordering the agenda so that our guest could speak first. Seeing none, he proceeded to introduce her.

She thanked the Nantucket Town Association for its invitation and then began her presentation, which is attached. The presentation is based on the information in the Coastal Resilience Plan, which is on the Town's website and can be consulted for more detail: https://www.nantucket-ma.gov/2030/Coastal-Resilience-Plan. In concert with her slides, she laid out the problem. Nantucket has 2373 structures at risk for sea-level rise, SLR. The federal agency, NOAA, in 2022, created six scenarios of sea-level rise that range, lowest to highest, from 2.49 to 6.66 feet by the year 2100. From 1965 to 2022, SLR was 8 inches.

Applying the highest estimate to downtown Nantucket, she showed a sequence of projections of areas that would be flooded with each progressive SLR. In 30 years, one in four structures on Nantucket will be affected. Protection of structures requires a determination of the risks to structures, identified as extreme, high, moderate, and low, and the assignment of costs for each designation. Costs will range by protective measures that range from protect, adapt, to relocate. These projections are tabulated on several of her slides. By 2070, in aggregate, losses could sum to $3.4 billion. Nantucket's Coastal Resilience Plan, estimates that it will take an investment of $900 million in the next 18 years to protect the at-risk structures. The plan delineates 40 detailed recommendations for projects to protect Nantucket structures; six of them are in the Downtown District. These projects have been designed to integrate protection into the existing look of downtown. An example of this is the recently announced cooperative scheme for Washington Street proposed by the Nantucket Island Land Bank and the Town.

Resilience, she said, is a cycle such as the "Plan, Do, Act, Check" cycle recommended for many such continuing ventures. For coastal resilience, it has been translated into "Assess risk and vulnerability; plan and prioritize; implement; recovery actions; and monitor, evaluate and adapt plans." As a planning cycle, the intent is to repeat the cycle on a regular basis. The Coastal Resilience Advisory Committee has divided the Island into protection districts and then provided guidance on resilience for each district. A home-owner's toolkit provides specific actions for each level of protection.

When she reached the end of her presentation, there was time for a few questions. Charley Walters asked it she could explain what was meant by "flood walls" in the line 2-2, "flood barriers", for the Downtown District. These, she said, would be portable walls that could be installed quickly before a predicted flood such as might occur in a hurricane or nor'easter. Lee Saperstein asked if the licensing requirements of Chapter 91 were considered when devising the protective projects and she replied, "yes."

V. Old Business.

Henry Terry thanked Leah Hill and then asked if there was any old business for the Association to consider. Charley Walters asked if it would be possible to repeat the Zoom sign-in link in the agendas for forthcoming meetings. Now that the link has been established for the balance of the calendar year, this can be done easily said Henry Terry.

VI. New Business.

"Any new business," Henry Terry then asked. Mary Anne Easley said that she wanted to devise an appeal for new members and wanted support for it. Asked about how this would be done, she said that our e-mailing list has several hundred names on it but we have only 42 members. She proposes to write to everyone on this list. She said that her suggestion was a motion to which Paula Williams added a second and everyone present voted yes.

VII. Adjournment.

The meeting adjourned at 5:01 pm.

***Next meeting is the Association's Annual Meeting and will be on September 26, 2023. It will be hybrid with an in-person meeting in the Atheneum and a virtual one via Zoom; if one uses Zoom, the address is** https://us02web.zoom.us/j/87455121153.

Lee W. Saperstein, Secretary, saperste@mst.edu.

AUGUST TREASURER'S REPORT:

Available Balance at last report: $ 3,617.01 on 7/25/23

Dues Received	$ 20.00	through Paypal
	$ 0.00	checks

Total Income	$ 20.00	
Expenses:	$ 0.00	
Paypal Fees:	$ -1.19	

Balance as of 08/22/23:	$ 3,635.82	

2022 had 48 paid memberships
2023 has 42 paid memberships so far, including some new members.

COASTAL RESILIENCE ADVISORY COMMITTEE

Nantucket's Coastal Resilience P
Risks and Expensive Solutions

Nantucket Town Association
Tuesday August 22, 2023

Leah Hill, Coastal Resilience Coordinator

Town of Nantucket Natural Resources Department
Lhill@nantucket -ma.gov
508-228-7200 ext. 7603

COASTAL RISKS

EROSION

GROUNDWATER TABLE RISE

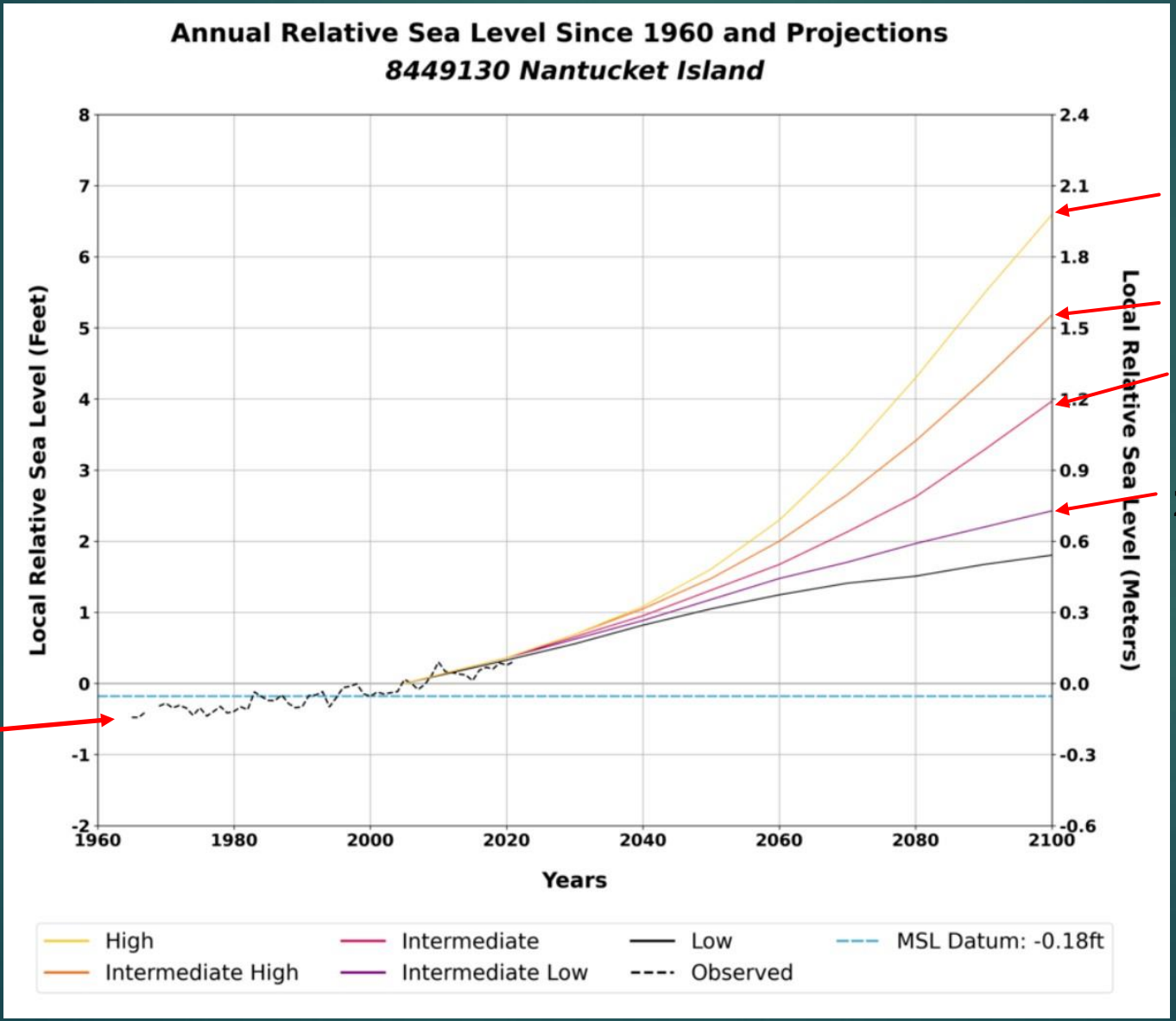
COASTAL FL

- **2,373** structures at risk through 2070
  - 34 are **essential community facilities**
- **84%** of at -risk buildings are **residential**
- **9%** of at -risk buildings are **commercial**
- **49%** of at -risk buildings are **historic**
- **9%** of at -risk buildings are **tourism-related**

HIGH TIDE FLOODING

Canoeing on Broad Street (having come around Easy Street) in a Nor'easter in Janu

NOAA reports 2022 SLR scenarios for Nantucket



Feet

6.66

5.24

4.04

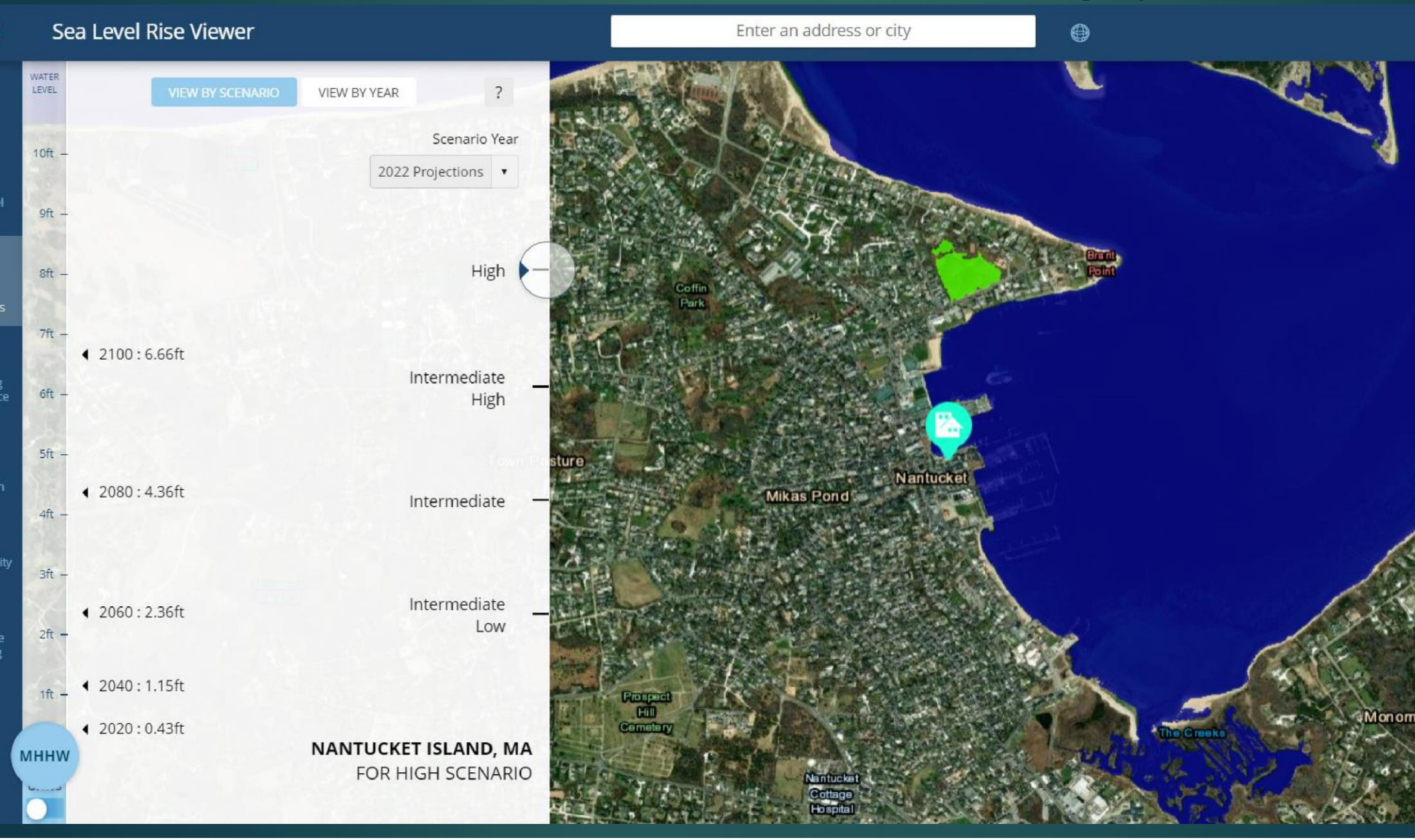
2.49

Represents the 8 inches we have already seen

- NOAA adjacen Steamb
- **1965-**
- 6 differ
- Based o emissio
- That im ice melt levels ri
- For exa slides, g HIGH s
- Plan for hope fo

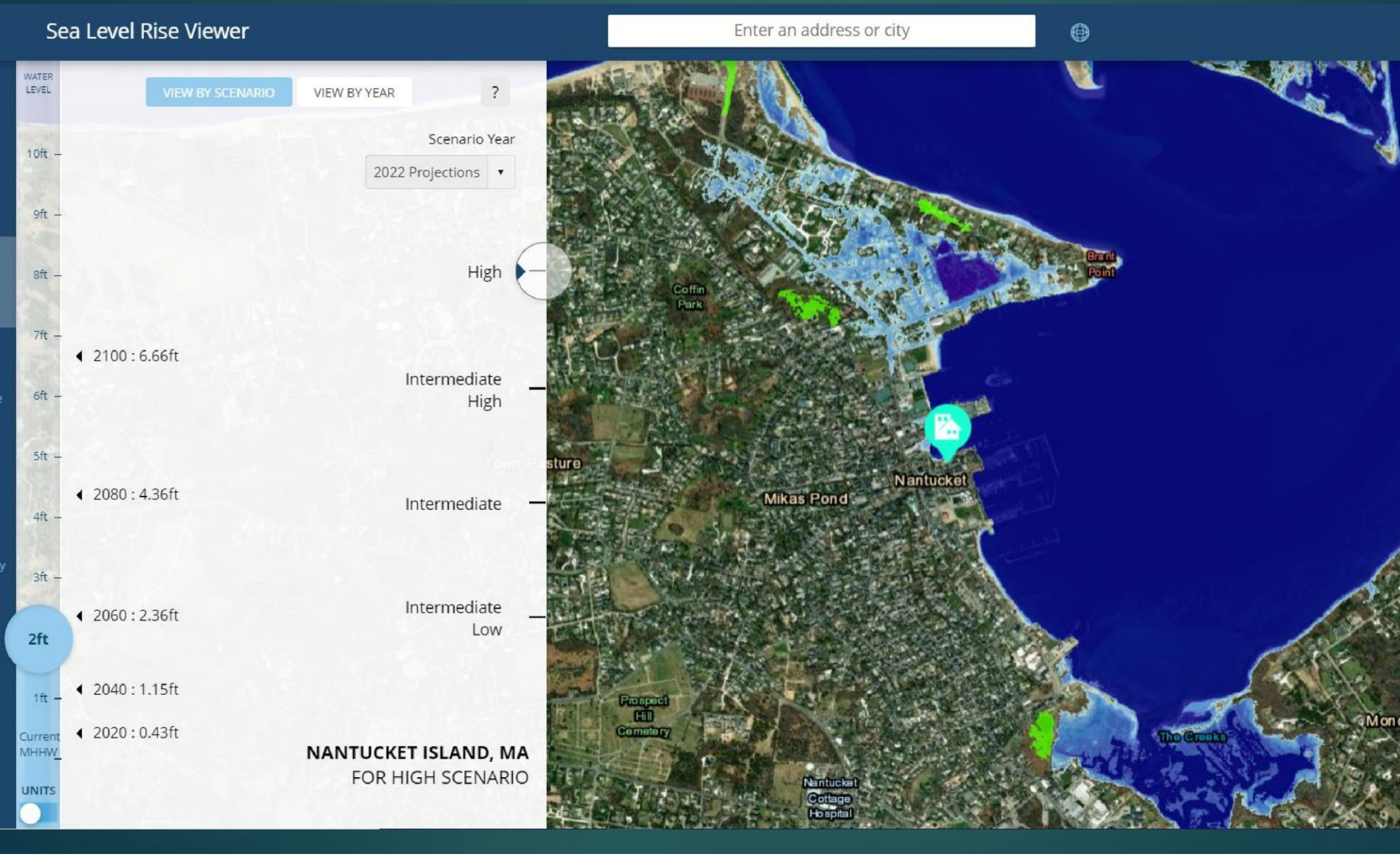
NOAA Sea Level Rise – Normal Day High Tide – PRESE

Bath Tub Model - All water rises equally

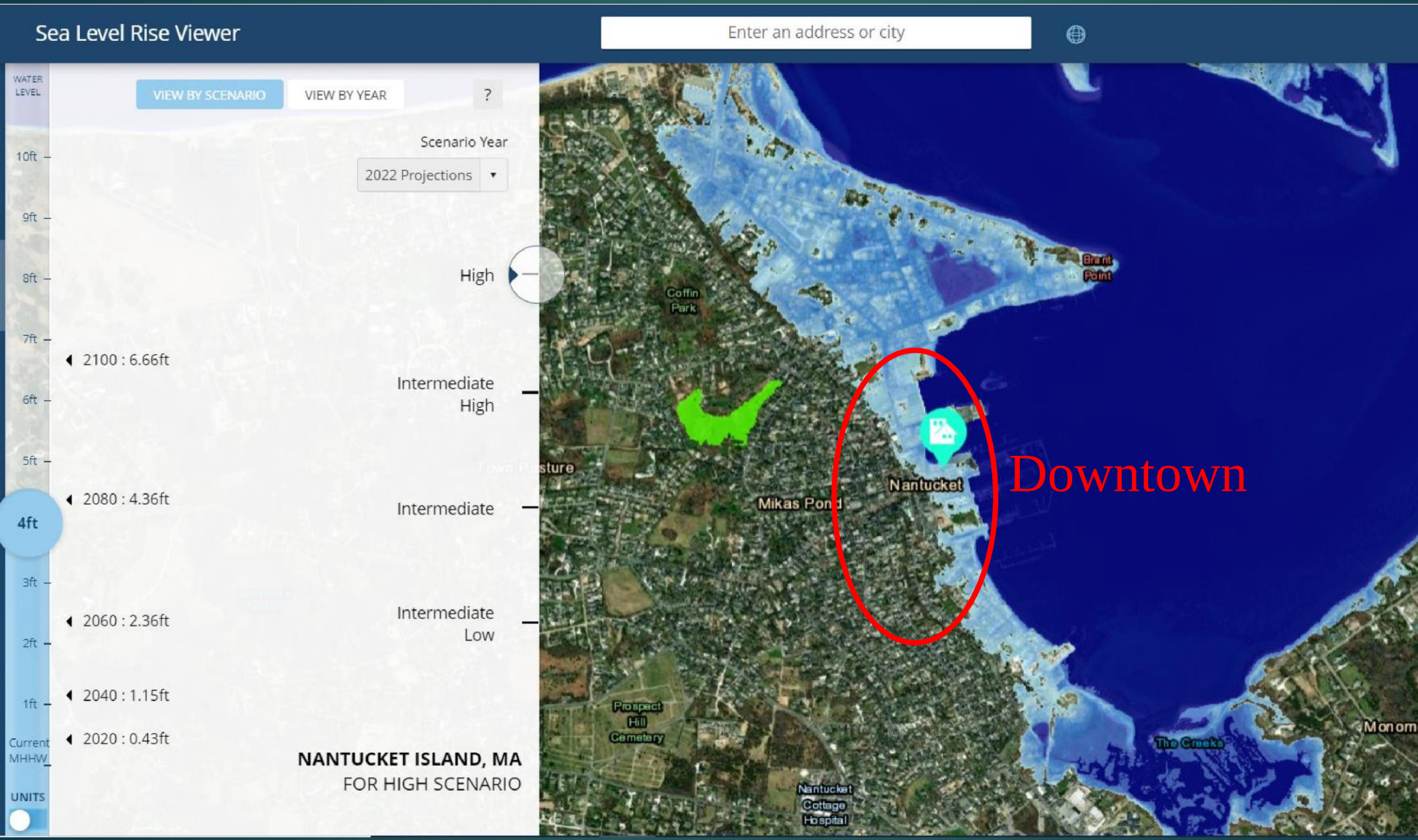


NOAA Sea Level Rise – Normal Day High Tide – 2030

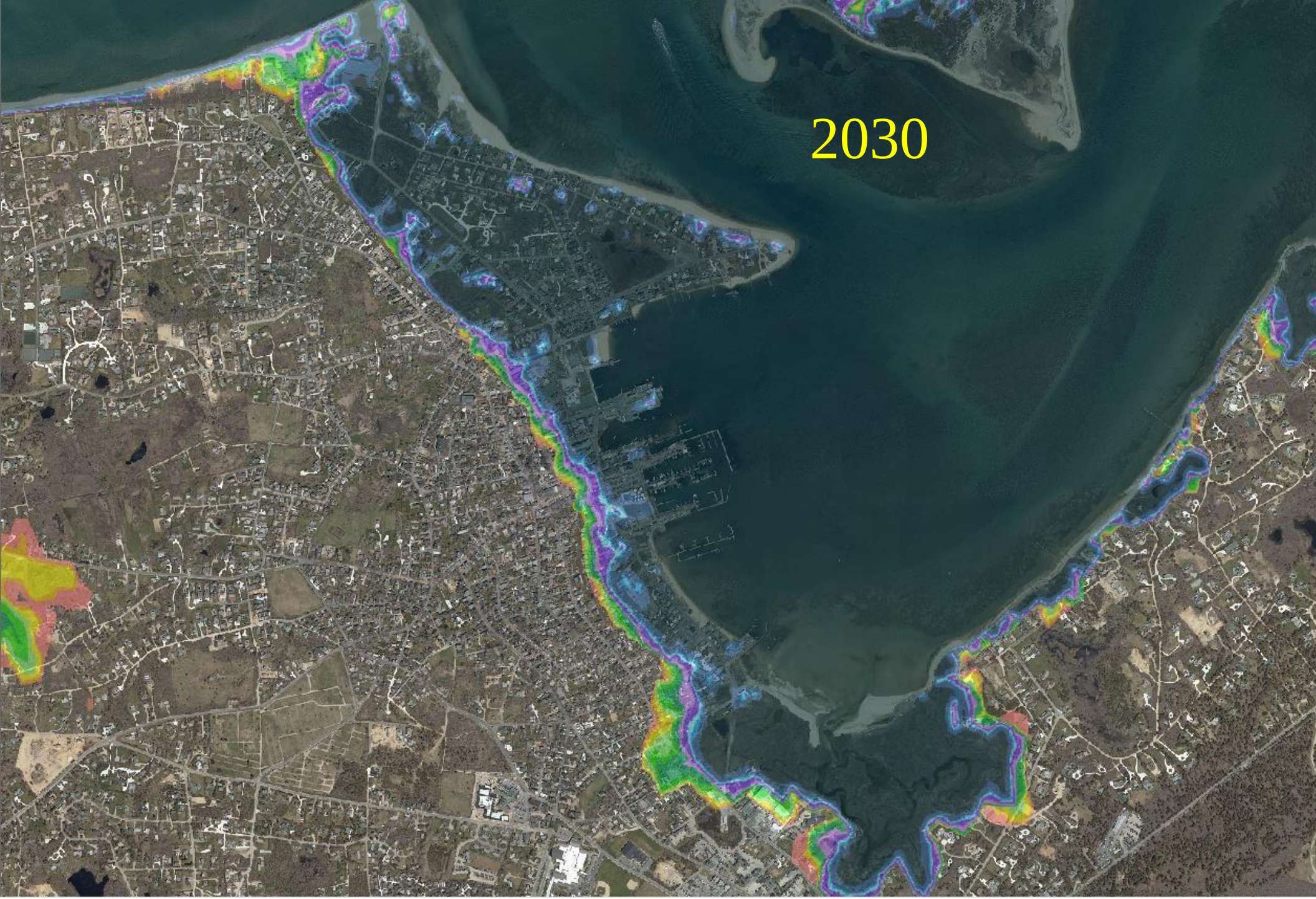
NOAA Sea level Rise – Normal Day High Tide – 2050

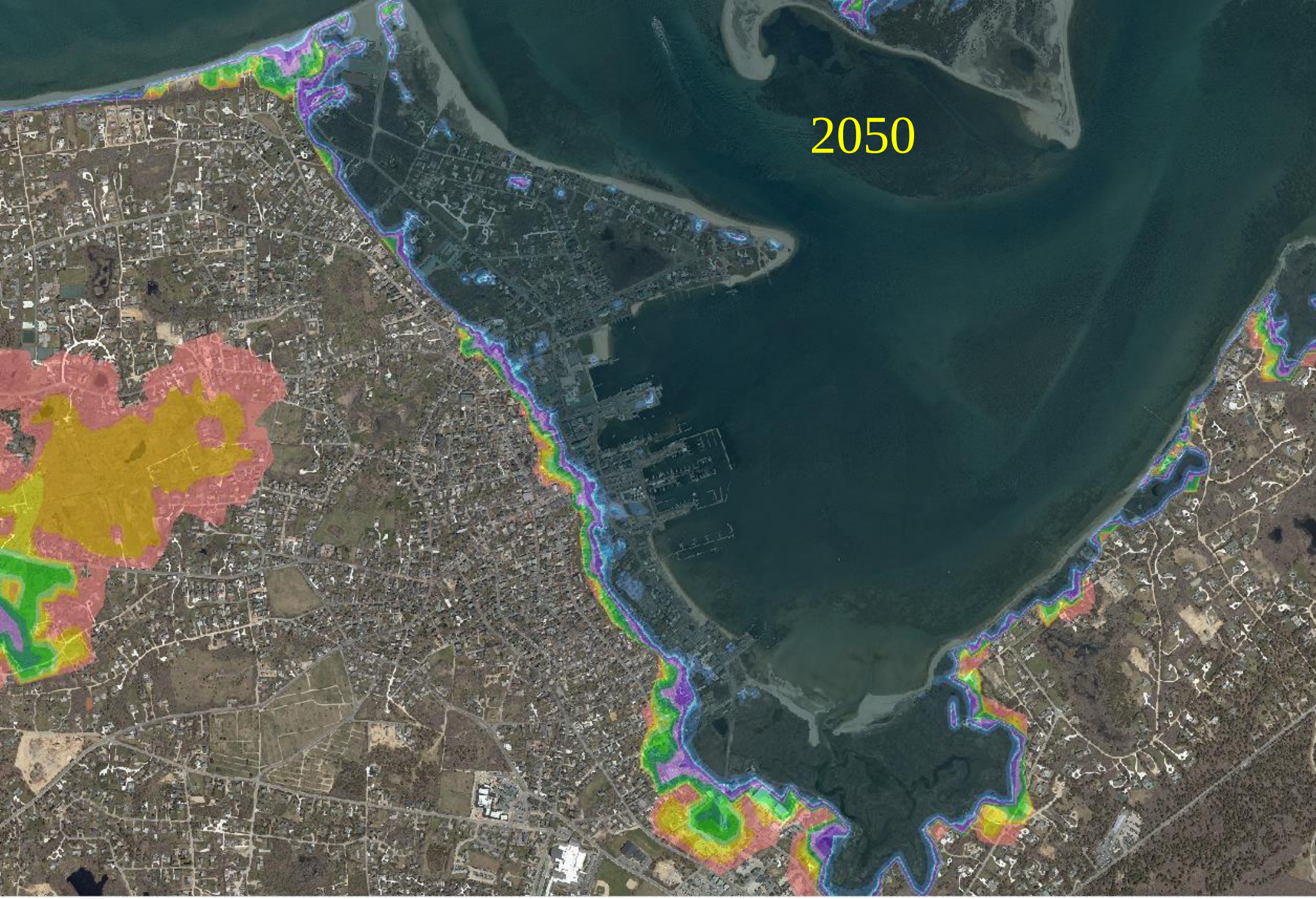


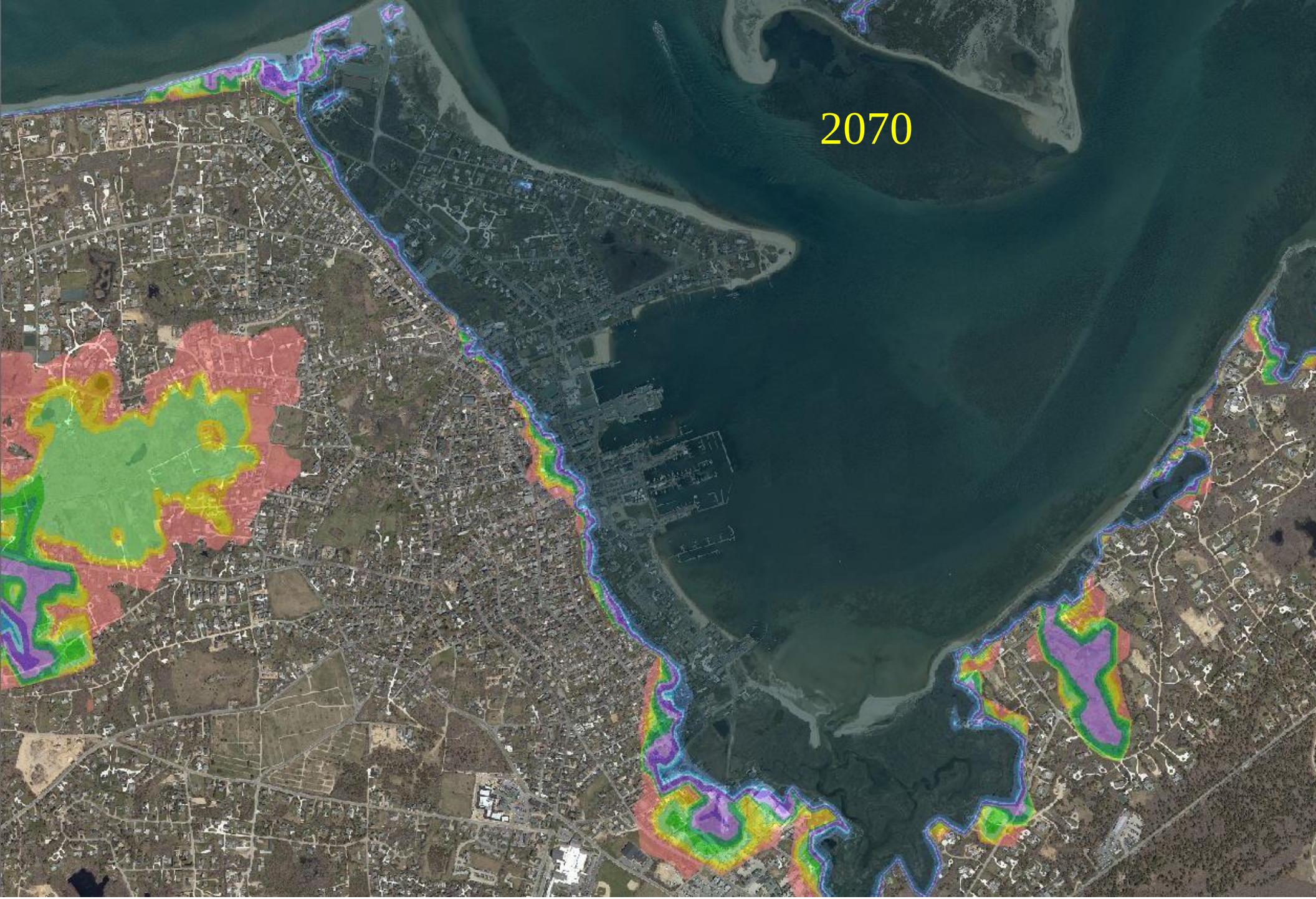
NOAA Sea Level Rise – Normal Day High Tide – 2070




Massachusetts Coastal Flood Risk Model (MC
Includes: high tide, storm flooding and wave run -up, future hurr
and Nor'Easters
Probabilistic model and 10ft x 10ft resolution
Present


2030

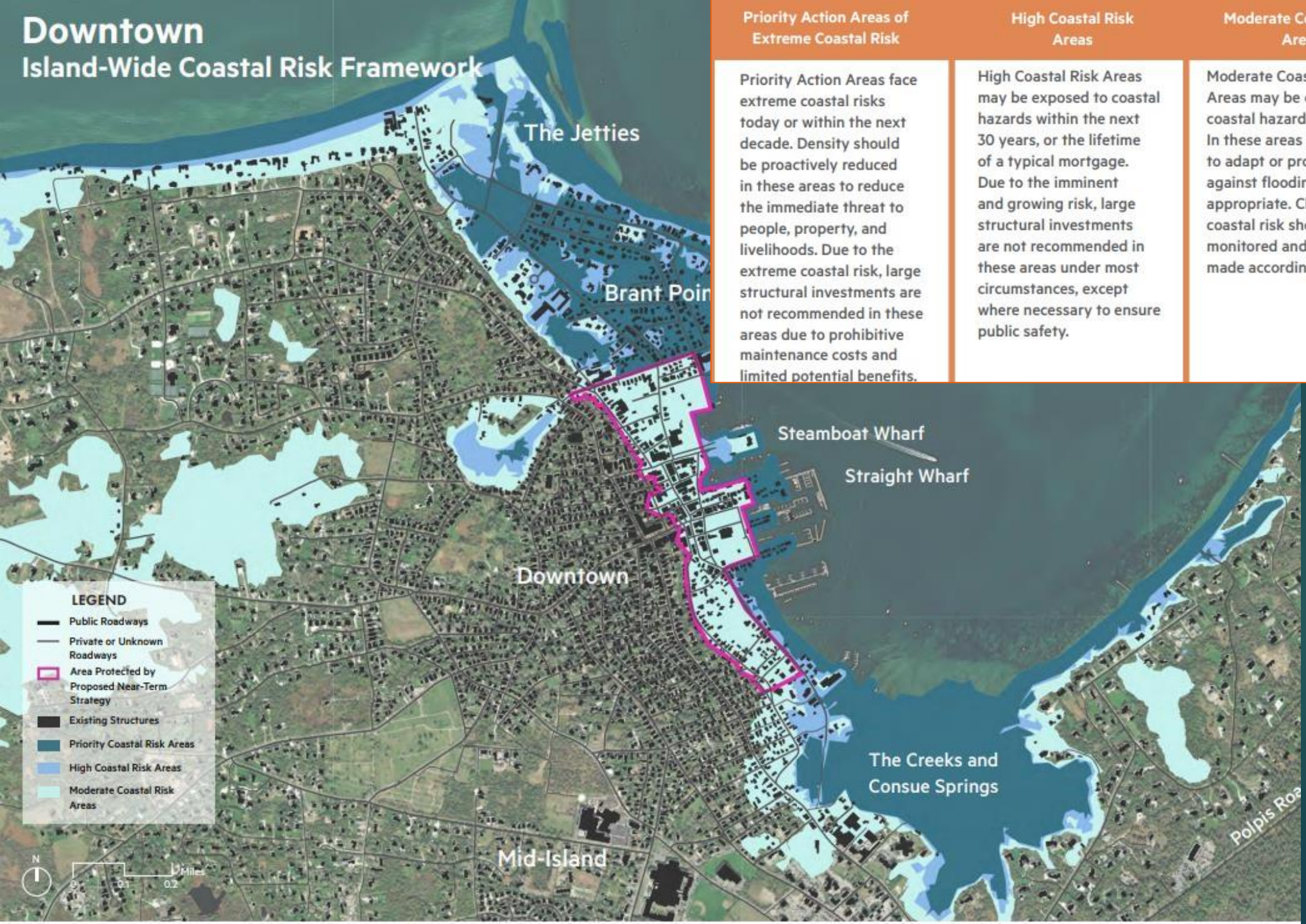

2050


2070

January 29th, 2022
Nor'easter that brought
about 3 feet of storm surge
to Nantucket harbor.

Storm pumps working to drain the area, just as the tides recede

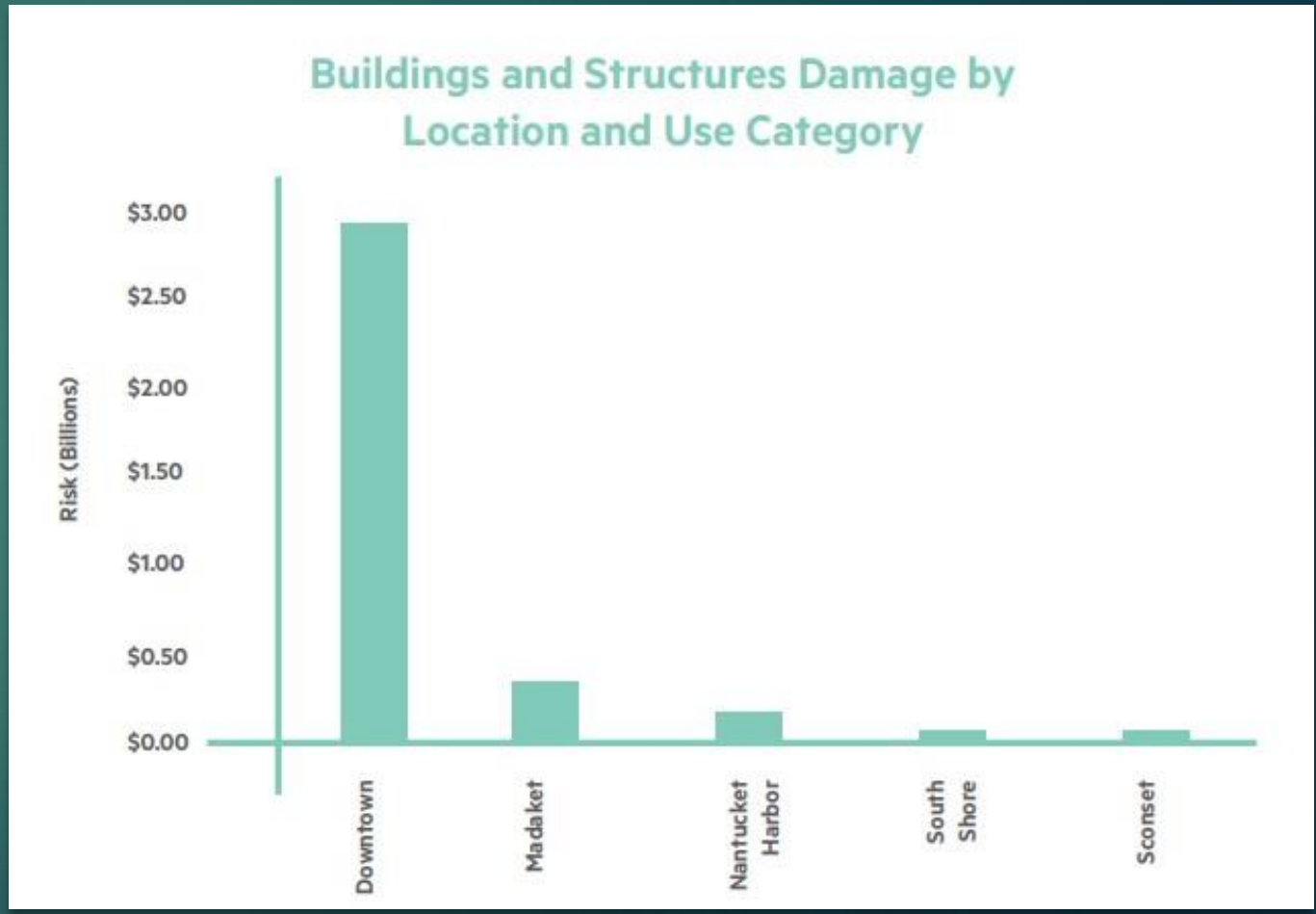
Downtown
Island-Wide Coastal Risk Framework



Priority Action Areas of Extreme Coastal Risk	High Coastal Risk Areas	Moderate Coastal Risk Areas	Lower Coastal Risk Areas
Priority Action Areas face extreme coastal risks today or within the next decade. Density should be proactively reduced in these areas to reduce the immediate threat to people, property, and livelihoods. Due to the extreme coastal risk, large structural investments are not recommended in these areas due to prohibitive maintenance costs and limited potential benefits.	High Coastal Risk Areas may be exposed to coastal hazards within the next 30 years, or the lifetime of a typical mortgage. Due to the imminent and growing risk, large structural investments are not recommended in these areas under most circumstances, except where necessary to ensure public safety.	Moderate Coastal Risk Areas may be exposed to coastal hazards by 2070. In these areas approaches to adapt or protect against flooding may be appropriate. Changes in coastal risk should be monitored and decisions made accordingly.	Lower Coastal Risk Areas are not likely to be exposed to coastal hazards by 2070. Comprehensive planning is recommended to strategically optimize opportunities in lower risk areas.

Downtown Risks

- Top 5 Priority Assets: Steamship Authority, Coast Guard Station, Stop & Shop, Hy -line Cruises, National Grid
- Steamboat Wharf is the most essential and at risk facility on Nantucket
  - Loss of service at high tide by 2050 to the wharf
- Loss of service to Easy St. by 2030 at high tide
- High tide flooding on Easy St. has increased 6 fold in the last 40 years
  - Chronic inundation = flooding 26 x/year that disrupts the community and requires mitigation action. First seen in 2010 and constant since 2016
  - Using NOAA's intermediate SLR (~4ft by 2100) Easy St. projected to flood 61 days in 2030




Total Coastal Flood and Erosion Risk to Buildings
Miles
0
0.5
1
2
N
$3.4 Billion in calculated damages and losses to 2070
BILLION, not million.
Muskeget Island
Tuckernuck Island
Nantucket Sound
Atlantic Ocean
Nantucket Harbor
Brant Point
Coatue
Nantucket Harbor
Polpis
North Shore
Madaket
Downtown
Sconset
South Shore
LEGEND
1% Annual Chance Flood*
2030 1% annual chance coastal flood*
2050 1% annual chance coastal flood*
2070 1% annual chance coastal flood*
*The 1% annual chance event, or 100-year storm, is a benchmark used to plan for coastal flooding. Properties within the extent of the 1% annual chance event have a 1 in 4 chance of flooding over the course of a 30-year home mortgage.
Total Quantitative Risk
< $500k
< $1.0 Million
< $2.5 Million
< $5.0 Million
< $10 Million
< $50 Million

COASTAL RESILIENCE TOOLKIT

Protect

Examples in Dionis- west is a bulkhead and east is a rock revetment

Adapt

Raised house on Easton Street

Relocate

Picture from Tuscana Inc.

A house at the end of Hummock Pond Rd.

NANTUCKET COASTAL RESILIENCE PLAN

FINAL REPORT

NOVEMBER 2021

- Goals
1. Build coastal resilience and reduce coastal risks from flooding and erosion
2. Enhance safe access to, from, and across the island
3. Promote the health of natural ecosystems
4. Generate waterfront public space, connectivity, and safety
5. Develop implementable strategies that will result in reduction of flood and erosion risks

- CRP endorsed by Select Board in 2022
- Includes:
  - Risk and hazard assessment
  - Homeowner's toolkit
  - Resilient Nantucket: Flooding Adaptation & Building Elevation Design Guidelines for Historic Structures
- Uses NOAA's high scenario for sea level rise (6.6 ft. by 2100)
- Planned out to 2070
- 40 recommendations ranging from policy to nature based to structural
- Most recommendations should be implemented in the next 10-15 years
  - Cost $900 million to implement

TOWN OF NANTUCKET MASS INCORPORATED 1671

BACKLOCAL COASTAL RESILIENCE

COASTAL RESILIENCE ADVISORY COMMITTEE

ARCADIS

one architecture

THECRAIGGROU

40 Detailed Recommendations

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date	Implementation Champion	Project Co-Lead	Other Implementation Partners & Stakeholders	Immediate Next Steps	Funding & Partnership Opportunities	Permitability
1-1	Community Outreach on Property Owner Resilience Best Practices	Comprehensive outreach program to at risk home and business owners to raise risk awareness and provide guidance on best practices for reducing coastal risks for private properties.	Non-structural	Staff and Volunteer Time	N/A	2023, Ongoing	Coastal Resilience Advisory Committee	Natural Resources	PLUS, Town Administration, Planning Board, Conservation Commission, Historic District Commission, Nantucket Historical Commission, ACKlimate, ReMain Nantucket, Civic Associations, Private Property Owners, Business Owners	Develop outreach plan and strategy to share risk information and homeowner guidance through virtual meetings, social media, direct mail, websites, partnerships, and other means.	Town Operating Budget, Town Capital Budget, HVP Action Grant, CZM Coastal Resilience Grant	N/A

- The planning costs are potentially expensive with a low end contingency cost of $840 million and high end contingency cost of $930 million.
- Potential sources of funding from Federal, State and Local organizations and philanthropies, and potentially coastal resilience districts which are in early phase of development
- We know there are $3.4 billion in calculated losses to 2070. Rough calculation using $930 million is that for ever dollar spent on the proposed solutions in CRP, there is $2.6 that could be saved.
- Also being saved are peoples homes, businesses, livelihoods, access to the ferries that we rely on, historic resources, natural habitats – basically, our community
- Most of this has an intrinsic value, rather than a dollar value – how do you calculate that?

Up to date as of 8 -5-23

In development

Underway

Complete

ISLAND-WIDE (section 06)

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
1-1	Community Outreach on Property Owner Resilience Best Practices	Comprehensive outreach program to at risk home and business owners to raise risk awareness and provide guidance on best practices for reducing coastal risks for private properties.	Non-structural	Staff and Volunteer Time	N/A	2023, Ongoing
1-2	Updates to Zoning By-Law	Updates to the zoning by-law to encourage resilient design and limit investment in areas of high coastal risk.	Non-structural	Staff and Volunteer Time	N/A	2025
1-3	Updates to Wetland Ordinance and Regulations	Updates to the Nantucket wetlands by-law and regulations to encourage resilient and low impact design in resource adjacent areas while limiting impacts on resource areas.	Non-structural	Staff and Volunteer Time	N/A	2025
1-4	Strategic Retreat and Relocation Program	Develop and administer island-wide approach for pursuing strategic retreat and relocation in areas of priority coastal risks with an ongoing focus on risk communication and property owner outreach and education.	Non-structural	Staff and Volunteer Time	N/A	2024, Ongoing
1-5	Coastal Resilience & Sustainability Interdepartmental Working Group	Governance approach to encourage inter-departmental collaboration and coordination on issues related to coastal resilience and sustainability.	Non-structural	Staff and Volunteer Time	N/A	2022, Ongoing
1-6	Joint Staff Review of Development Proposals	Governance approach to maximize opportunities for coordinated decision-making and consistent customer communication by Town staff, particularly for projects located in or impacting coastal areas.	Non-structural	Staff and Volunteer Time	N/A	2022, Ongoing
1-7	Coastal Resilience and Sustainability Program	Governance approach to establish a formal program with necessary resources for managing coastal resilience and sustainability projects and programs across the island.	Non-structural	Staff and Volunteer Time	N/A	2023, Ongoing
1-8	Shoreline Change Monitoring Program	Employ mobile technology and other tools to engage community members in the process of monitoring shoreline change at pilot projects and across the island.	Non-structural	Staff and Volunteer Time	N/A	2024, Ongoing
1-9	Sediment Sourcing and Transport Study	Island-wide data collection and planning approach to identify sediment sources and define sediment movement across the island at various spatial and temporal scales in order to inform the design and planning of future sediment management projects.	Non-structural	High: $1M Low: $800K O&M: NA	N/A	2024
1-10	Stormwater Management Plan	Planning step to evaluate stormwater management issues across the island and identify recommendations for reducing stormwater flooding and improving water quality.	Non-structural	High: $650K Low: $400K O&M: NA	N/A	2025
1-11	Sediment Budget	Planning step to develop an operational sand budget for recommended shoreline projects.	Non-structural	High: $250K Low: $100K O&M: NA	N/A	2024
1-12	Stormwater By-Laws Assessment	Planning step to conduct an assessment of existing by-laws for opportunities to encourage stormwater management best management practices (BMPs).	Non-structural	High: $50K Low: $20K O&M: NA	N/A	2025
1-13	Stormwater By-Law and Regulations Update	Updates to stormwater management by-law and regulations to encourage best management practices (BMPs) that address water quality and quantity issues.	Non-structural	Staff and Volunteer Time	N/A	2025
1-14	Update locally-adopted sea level rise scenarios and Best Available Flood Hazard Data	Adopt sea level rise scenarios provide by the Commonwealth of Massachusetts and Massachusetts Coastal Flood Risk Model as the best available local flood hazard data.	Non-structural	Staff and Volunteer Time	N/A	2022

Project Priority

01 02 03

Up to date as of 8 -5-23

In development

Underway

Complete

MADAKET (section 07)

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
3-1	Madaket Road Raising and Bridge Conversion	Road raising project with conversion of existing culverts with bridges, with goal of prolonging service life of Madaket Road to provide access to and from Madaket, while advancing ecological restoration objectives for Long Pond.	Structural	High: $40M Low: $36M O&M: $440K	$6,200,000 – $17,600,000	2030
3-2	Ames Avenue Bridge Resilience	Maintain bridge for access to Smith's Point while protecting it from coastal erosion and flooding through dune restoration (see project 3-4). Continue maintenance and monitoring of existing Ames Avenue Bridge, with future elevation or relocation if necessary based on service population.	Nature-Based	See strategy 3-4	See strategy 3-4	2025
3-3	F Street Boat Ramp	Prolong service life of public boat ramp by elevating the top of the boat ramp, surrounding infrastructure, and access from F Street. Consolidate Madaket boat ramps in this location once loss of service is experienced at Jackson Point boat ramp.	Structural	High: $5.1M Low: $4.5M O&M: $57K	Not quantified; qualitative benefits include prolonging public boating access to Hither Creek and Madaket Harbor	2050
3-4	Madaket Erosion Management Pilot and Ames Avenue Bridge Protection	Dune restoration along shoreline from Madaket Road / Ames Avenue intersection to Esther's Island. Project involves natural dune construction techniques of sand and vegetation with fencing as needed. Project includes need for ongoing nourishment and maintenance of the dune at an interval determined through the design process.	Nature-Based	High: $96M Low: $86M O&M: $1.1M	$51,000,000	2025
3-5	Department of Public Works Facility and Landfill Resilience	Building scale resilience and operational resilience planning to reduce risk of damage and limit disruption to core operations at the facilities. The first step in this recommendation is a site-specific study to determine the appropriate risk mitigation approaches for the facility.	Structural	High: $300K Low: $150K O&M: NA	Not quantified; benefits are dependent on risk mitigation strategy developed through recommended site-specific study.	2024

Project Priority

01 02 03

In development

Underway

Complete

NANTUCKET HARBOR & COATUE (section 07)

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
4-1	Polpis Road Raising and Bridge Conversion at Folger's Marsh	Road raising project with conversion of existing culverts with bridges, with goal of prolonging service life of Polpis Road, while advancing ecological restoration objectives for Folger's Marsh.	Structural	High: $21M Low: $18M O&M: $230K	$5,800,000 – $14,250,000	2035
4-2	Polpis Road Raising, Culvert Expansion, and Wave Attenuation at Sesachacha Pond	Road raising, expansion of culverts or replacement with bridge, and installation of living breakwaters to reduce wave exposure, with goal of prolonging service life and maintaining emergency roadway access along Polpis Road, while advancing ecological restoration objectives for Sesachacha Pond.	Structural, Nature-Based	High: $45M Low: $40M O&M: $500K	$3,000,000 – $11,000,000	2035
4-3	Coatue Erosion Management and Dune Resilience	Dune restoration and wetland creation/enhancement to reinforce narrow low-lying sections of barrier island, between Five Fingered Point and Bass Point and between First Point and Second Point, to prevent washover and/or breaching into the harbor. Monitor performance of approach to assess need for ongoing nourishment and/or adaptation to higher design elevations.	Nature-Based	High: $41M Low: $36M O&M: $450K	Not quantified; qualitative benefits include ecological restoration and potential for reduced long-term flooding impacts in the Harbor as well as reduced impacts to fisheries, habitat, and navigation.	2025
4-4	Numerical Modeling Study of Coatue Breaching	Numerical modeling study to evaluate the likelihood and consequences of Coatue breaching for the Harbor and surrounding communities, including impacts to habitat and navigation, in order to inform decisions about future adaption measures on Coatue.	Non-structural	High: $250K Low: $100K O&M: NA	NA	2026

Project Priority

01 02 03

In development

Underway

Complete

SCONSET (section 07)

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
5-1	Sconset Bluff Dune Restoration	Dune restoration and construction to mitigate bluff erosion and increase resiliency. Natural dunes with vegetation are appropriate. Project includes need for ongoing nourishment and maintenance of the dune at an interval determined through the design process.	Nature-Based	High: $16M Low: $14M O&M: $180K	Not quantified; qualitative benefits include reduced long-term risk of erosion impacts to private residences and public infrastructure in Sconset.	2030
5-2	Codfish Park Dune Restoration	Dune restoration and construction to manage and slow bluff erosion. Natural dunes with vegetation are appropriate. Project includes need for ongoing nourishment and maintenance of the dune at an interval determined through the design process.	Nature-Based	High: $21M Low: $19M O&M: $240K	$7,000,000	2030
5-3	Baxter Road Relocation Planning	Planning for and implementation of road relocation, including acquisition of easements, access and maintenance agreements, finalization of road alignment, and development of final designs for construction.	Structural	High: $30M Low: $25M O&M: $600K	N/A	2030
5-4	Sconset Bluff Nearshore Breakwaters Feasibility Study	Conduct detailed feasibility study to assess technical constraints, potential impacts, and benefits and costs of nearshore breakwaters along the Sconset Bluff.	Non-Structural	High: $800K Low: $600K O&M: NA	N/A	2025

Project Priority

01 02 03

[No Title]

In development

Underway

Complete

SOUTH SHORE (section 07)

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
6-1	Nantucket Memorial Airport Dune Restoration	Dune restoration and construction to reduce risk of erosion to critical infrastructure. Hard core dunes are appropriate in this location given risk to critical facilities. Project includes need for ongoing nourishment or installation of near-shore underwater sand berm.	Nature-Based	High: $28M Low: $25M O&M: $310K	Not quantified; qualitative benefits include long-term mitigation of risk to airport infrastructure and assets, which could result in loss of service at the airport.	2035
6-2	Surfside Wastewater Treatment Plant Dune Restoration	Dune restoration and construction to reduce risk of erosion to critical infrastructure. Hard core dunes are appropriate in this location given risk to critical facilities. Project includes need for ongoing nourishment or installation of near-shore underwater sand berm. Strategic relocation alternatives for settling tanks closest to the coast at the wastewater treatment facility should be pursued in parallel.	Nature-Based	High: $38M Low: $33M O&M: $420K	Not quantified; qualitative benefits include long-term mitigation of risk to infrastructure and assets, which could result in loss of service for the WWTF.	2025
6-3	Tom Nevers Field Erosion Mitigation Pilot Project	Pilot program of dune restoration, sand fencing, and beach nourishment. Monitoring program to evaluate how well the pilot project performs to inform future investment in Tom Nevers Park, as well as erosion management elsewhere on the island.	[No Title]	High: $18M Low: $16M O&M: $200K	$7,100,000	2025
6-4	Surfside Emergency Access Planning	Develop emergency access and service plan for Surfside Neighborhood to ensure access to coastal areas in event of loss of service along Nonantum and Nobadeer Avenues, particularly near Lovers Lane.	Non-structural	Staff and Volunteer Time	N/A	2025
6-5	Sheep Pond Road Relocation Study	Planning step to work with property owners and Nantucket Conservation Foundation to develop and implement plan for relocation of public infrastructure on Sheep Pond Road.	Non-structural	Staff and Volunteer Time	N/A	2023

Project Priority

01 02 03

Up to date as of 8 -5-23

In development

Underway

Complete

NORTH SHORE (section 07)

Project Priority

01 02 03

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
7-1	North Shore Dune Restoration and Nourishment	Targeted dune restoration and construction to reduce risk of erosion along the North Shore, building on dune restoration strategies adopted by existing private property owners in area. Project includes need for ongoing nourishment or installation of near-shore underwater sand berm at key locations.	Nature-Based	High: $38M Low: $34M O&M: $420K	$16,000,000	2035
7-2	Sand Pumping Feasibility Study	Study the feasibility and impacts of a sand pumping and by-pass systems to connect sand sources from inlet to the North Shore.	Non-structural	High: $250K Low: $100K O&M: NA	N/A	2027

[No Title]

About **half** of the projects are in development, underway, or complete since the plan was completed 1.5 years ago, but no structural projects are underway or completed yet.

Up to date as of 8 -5-23

In development

Underway

Complete

DOWNTOWN (section 07)

Strategy ID	Strategy or Project Title	Near-Term Strategy Project Description	Type	Estimated Cost	Estimated Benefits	Target Implementation Date
2-1	Steamboat Wharf Resilience	Work with the Steamship Authority to develop adaptation plan for Steamboat Wharf with the preferred option of elevating the pier above future mean monthly high water. Building scale measures can be implemented on the wharf over time to reduce risk from coastal storms. The strategy should be integrated with the design of the Downtown Coastal Flood Barrier System (Strategy 2-2) to maintain access from Broad Street onto the Wharf. Final approach will need to be planned and design by the Steamship Authority but close coordination with Town resilience planning will be critical to a successful resilience strategy.	Structural	High: $120M Low: $110M O&M: $1.3M	$19,000,000	~~2030~~ 8-10 years away
2-2	Downtown Neighborhood Flood Barrier - Later Project Phases	The barrier system, which includes the first phase project described as Strategy 2-6, includes a number of elements to be implemented over time to provide comprehensive effective flood risk reduction against future mean monthly high water. The elements include raised roadways, raised bulkheads, reinforced dunes, and flood walls. The overall approach recommends passive measures that are integrated with the existing built environment, while maintaining access to key waterside facilities such the Children's Beach Boat Ramp, Steamboat Wharf, Straight Wharf, and the Town Pier. Implementation of the approach can be phased over a period of 10 to 15 years, focusing on the lowest lying areas first, such as Easy Street (Strategy 2-6). As the project is implemented, stormwater management needs will need to be studied and addressed via new drainage infrastructure.	Structural	High: $170M Low: $150M O&M: $1.9M Note that these cost estimates include costs for the Phase 1 project (Project 2-6)	$320,000,000	2050
2-3	Easton Street and Hulbert Avenue Road Raising	Road raising project to prolong service life of Easton Street and Hulbert Avenue for emergency and everyday access in Brant Point	Structural	High: $140M Low: $130M O&M: $1.6M	Not quantified; qualitative benefits include prolonging emergency and everyday access for Brant Point	2050
2-4	Washington Street Extension and Consue Springs Walkway Raising	Road raising to prolong service life of Washington Street Extension and public access in Consue Springs	Structural	High: $65M Low: $58M O&M: $720K	Not quantified; qualitative benefits include prolonging public access to Consue Springs natural area	2050
2-5	Building Scale Resilience at 37 Washington Street	Pilot project to showcase building-scale resilience best practices on a Town-owned facility, including potentially elevation of critical systems, protection of sensitive equipment and documents, and deployable flood risk reduction measures. The first step in this recommendation is a site-specific study to determine the appropriate risk mitigation approaches for this structure.	Structuvral	High: $150K Low: $50K O&M: NA	Not quantified; benefits are dependent on risk mitigation strategy developed through recommended site-specific study.	2024
2-6	Downtown Neighborhood Flood Barrier - Phase 1 Project	Phase 1 project to advance through feasibility and design a near-term project focused on the most vulnerable location along the planned extent of the Downtown Neighborhood Flood Barrier. The Phase 1 project should focus on the coastal segment located along Easy Street from Straight Wharf to Steamboat Wharf and may include raised bulkheads, sidewalks,	Structural	High: $13M Low: $12M O&M: $150K Note that these cost estimates	$120,000,000	2025

Project Priority

Potential to reduce the risk by protecting 2.5 miles of public roads and 230 structures within Nantucket Historic District from high tide flooding in 2070

Near-Term Strategy
2020-2030

Conceptual rendering of the Downtown near-term coastal resilience strategy.

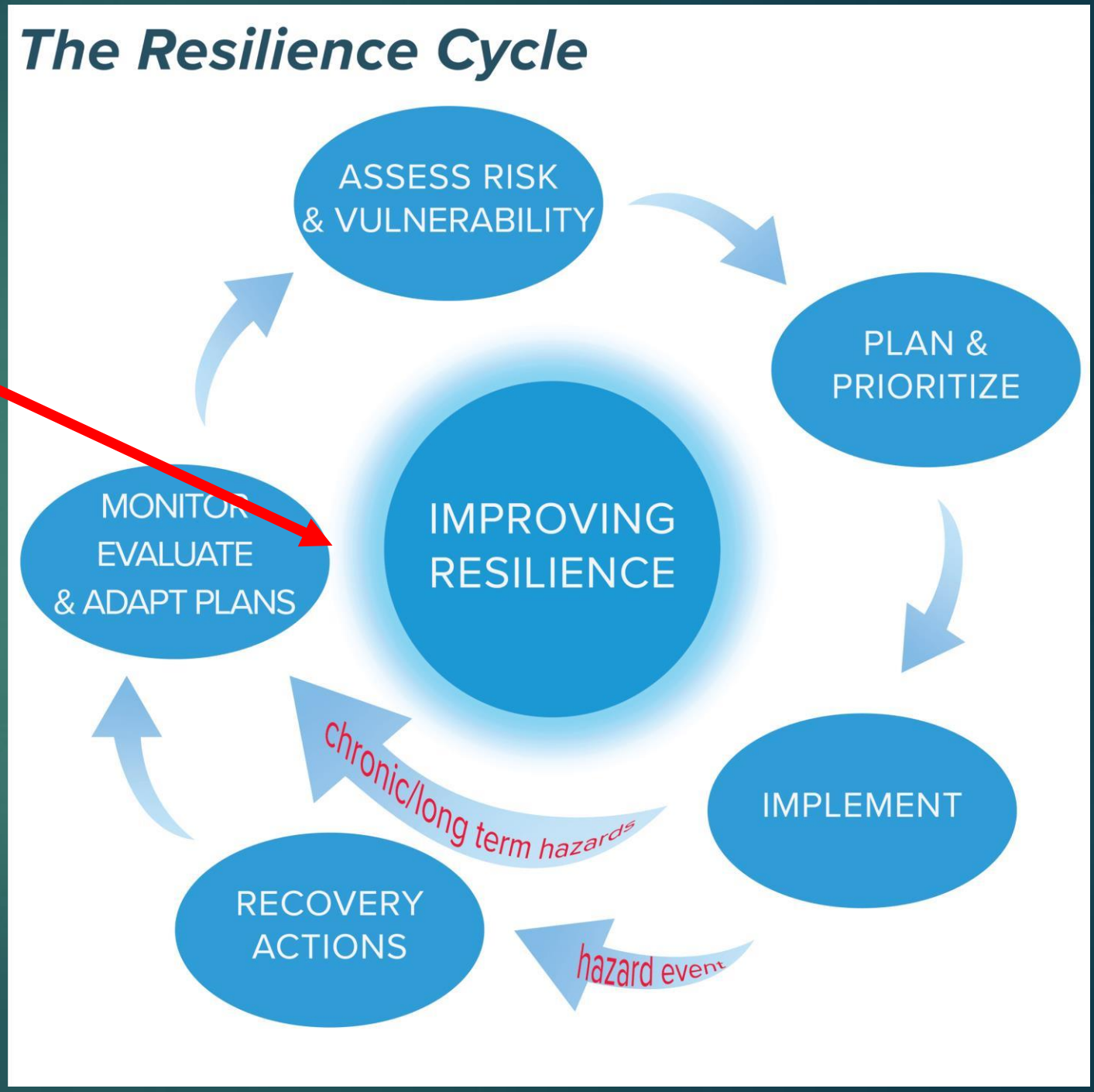
Road Raising Conceptual Designs

Conceptual example of a road raising strategy in a residential neighborhood, such as Brant Point. This long-term strategy to sustain emergency access to the neighborhood can be combined with elevation and other resilience upgrades to private residences to mitigate the risks from high tide flooding and groundwater emergence.

Conceptual Design of Land Bank's Washington Street Resilience Framework

Resilience is a process…

Always planning to improve resilience



Coastal Resilience Advisory Committee

- Charge: to provide advice to Select Board on coastal resiliency related projects and issues
- Meets every 2nd and 4th Tuesday on Zoom
- 11 members: consists of 3 at large, 1 Land Bank, 1 Advisory Committee of NonVoting Tax Payers, 1 Select Board, 1 Conservation Commission, 1 Nantucket Conservation Foundation, 1 Capital Program Committee, 1 Planning Board • Helped develop and implement Town's CRP
- Working on:
- Guidance for Coastal Resilience Districts- Geographically mapped districts in coastal areas where projects that aid in the retreat, protection or adaptation of the mapped area to be developed. This is a way of apportioning costs.
- Education and outreach
- Community Outreach on Property Owner Resilience Best Practices (#1-1; high priority)- Guidelines and road map for neighborhoods

Homeowner's Toolkit in CRP

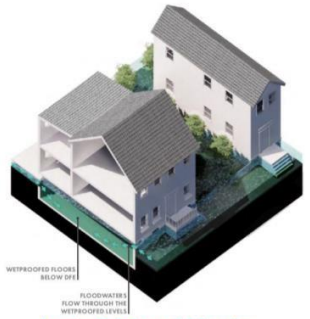
Lower Cost Options

Draft for Discussion Onl

- Elevate appliances and utilities
- Seal foundation and basement walls
- Use flood-resistant building materials
- Install flood vents

Elevate Utilities

Seal Foundation

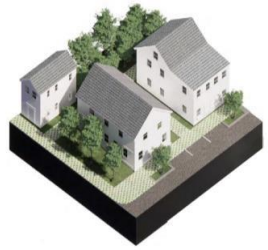


Install Flood Vents

Moderate Cost Options

Draft for Discussion

- Reduce impervious surfaces
- Raise first floor level
- Fill basement
- Anchor home



Permeable Pavement

Rain Garden

Fill Basement

Higher Cost Options

Draft for Discussion Or

- Elevate property
- Relocate home

Elevate Structures

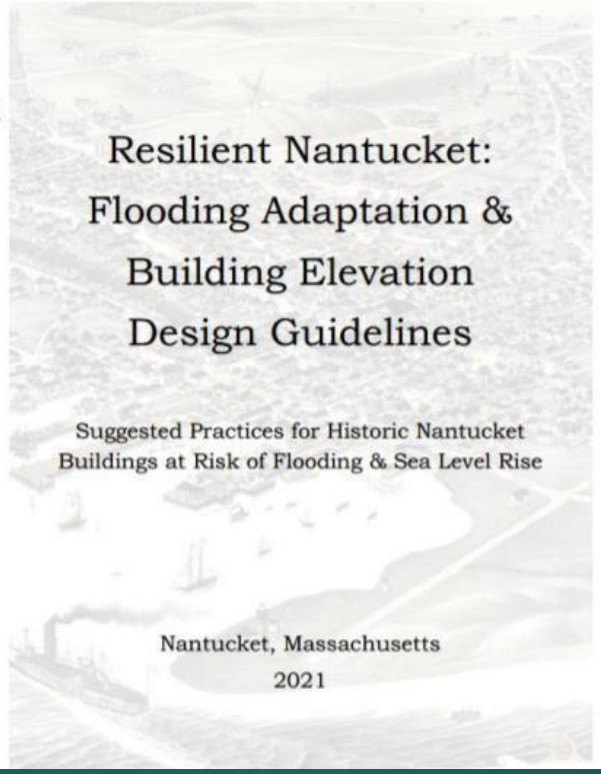
Relocate Structures

Land Acquisition

Historic Considerations

- Consistent with Resilient Nantucket: Flooding Adaptation & Building Elevation Design Guidelines
- Call outs throughout to indicate considerations for historic properties

New shutters should be appropriately sized to cover the window opening and should be in a historical style appropriate for Nantucket. The addition of storm windows and doors is encouraged to protect historic materials.



Utilities mounted on the exterior of a historic building should not be readily visible from the street or public right-of-ways and should be screened with appropriate landscaping to remain consistent with Nantucket's traditional designs.

[redacted]

What Can **YOU** Do to Help?

Native plant garden in front of Salt Marsh Center

- Know your risks - use the available models and tools out there
- Follow the Homeowner's toolkit in the CRP
  - Wet floodproof/dry floodproof homes
  - Elevate appliances, utilities, and personal belongings
- Attend CRAC meetings to stay up to date and provide public comment
- Support coastal resiliency projects and policies that will positively benefit you and the island as a whole
- Reduce carbon footprint
- Increase permeable surfaces on your property to reduce runoff on Coastal Banks, which can expedite erosion rates
- Plant native vegetation to become more resilient to climate change and sea level rise, increase biodiversity, and conserve water