# Coastal Resilience Advisory Committee (CRAC)

4th QUARTER REPORT TO SELECT BOARD FOR OCTOBER-DECEMBER 2023

COASTAL RESILIENCE ADVISORY COMMITTEE

# HIGHLIGHTS FROM THE QUARTER

- CRAC started to work on high priority #1-1 Outreach on Property Owner Resilience Best Practices
- Wrote a broad support letter for updated Wetlands Regulations as it aligns with CRP recommendation #1-3
- Produced annual report
- Developed outreach plan
- Given multiple presentations by regional experts

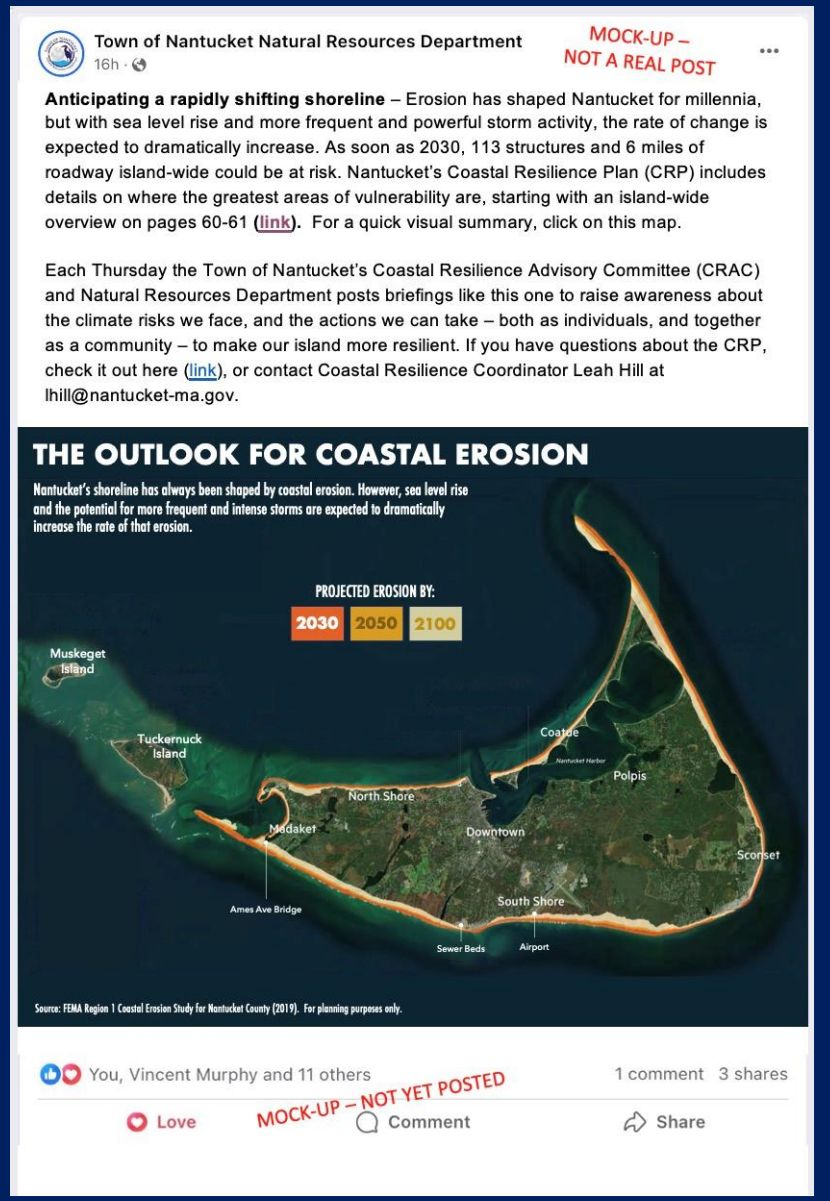
#ACKLOCAL COASTAL RESILIENCE

COASTAL RESILIENCE ADVISORY COMMITTEE

# Public Outreach

- Working on CRP recommendation #1-1
- Created a schedule and content with coastal resiliency related topics for social media
  - @NRDACK
  - Town of Nantucket Natural Resources Department
  - Posts are translated into Spanish
  - Aligned organizations share on their accounts too
  - Weekly scorecard to track impressions

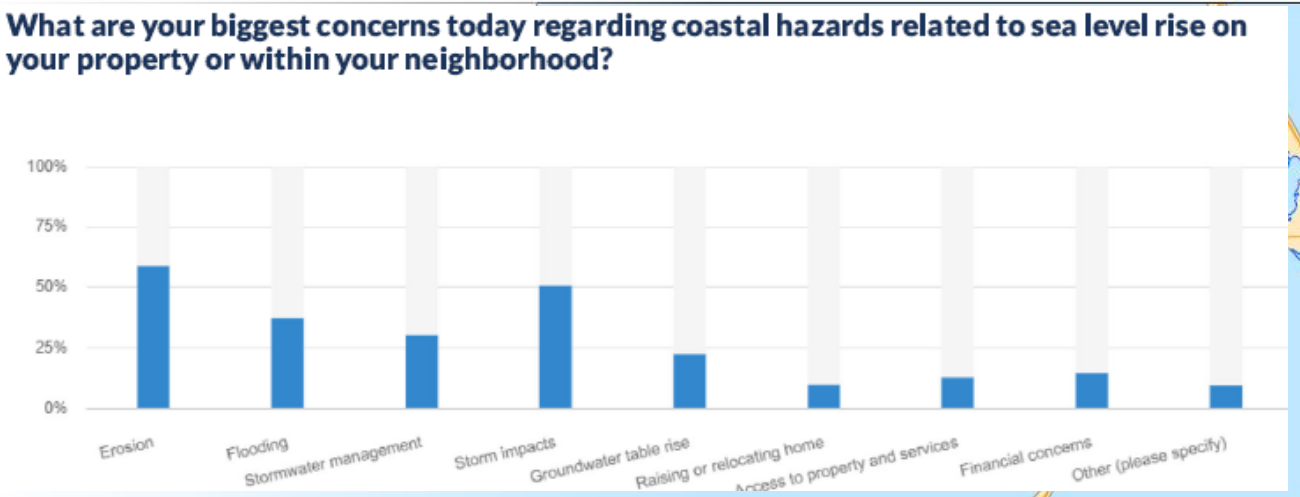
- Content in aligned organization's newsletters
  - ACKlimate, Nantucket Land Bank, Town of Nantucket
  - Nantucket Chamber Members, Nantucket Coastal Conservancy
  - Linda Loring Nature Foundation, Conservation Foundation
  - Nantucket Land & Water Council, The Maria Mitchell Association
  - Nantucket Field Station, Remain Nantucket/ Envision Resilience




- Update coastal resilience webpage so relevant and easy to navigate
- Developing informational brochure for real estate agents and homebuyers

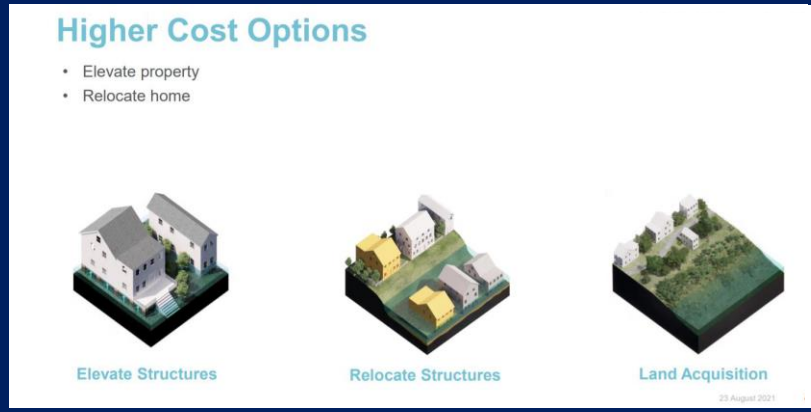
# DEVELOPED SURVEY QUESTIONS FOR HOMEOWNER'S ASSOCIATIONS

- Implement CRP high priority #1-1 Community Outreach on Property Owner Resilience Best Practices
- Worked with Nantucket Civic League to distribute surveys to its 25 homeowner's associations
  - Over 300 participants!
- Goal: Gain clarity on homeowners worries about coastal hazards they experience on their property and within their neighborhood, so CRAC can develop informational materials for homeowners to use to implement best practices
- Materials will be tailored to each neighborhood and expanded to other areas around the Island



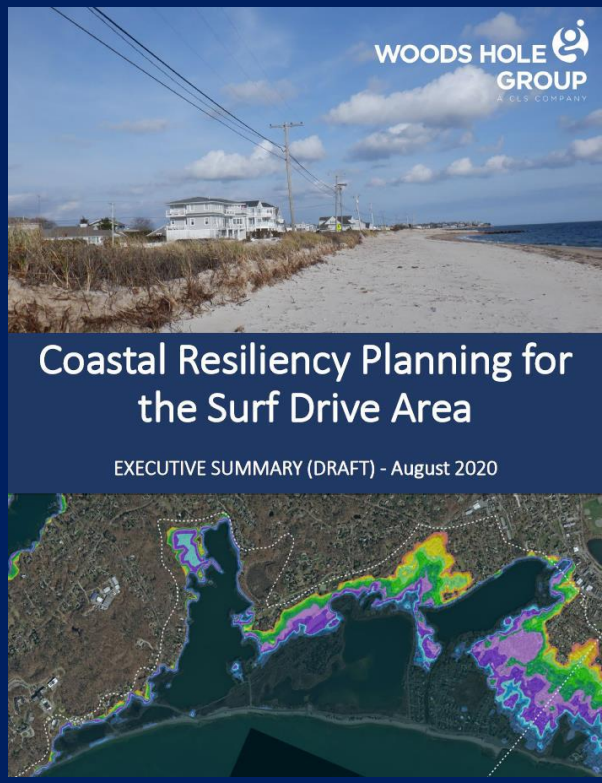
# Example Presentation Given to Homeowner Associations by Leah Hill

- Summer 2023 gave 4 presentations
- Generally structured the same:
  - ID coastal risks
  - Future flooding probabilities
  - Future erosion probabilities
  - CRP overview
  - Dive into CRP recs in their area
  - CRAC overview
  - End with what homeowner's can do to make their property more resilient




# Dynamic Adaptative Policy Pathways (DAPPs) by Kurt Bosma

- Senior Coastal Engineer/Vice President of Innovation at the Woods Hole Group
- DAPPs are a phased management approach for complex projects such as coastal resilience projects
  - Buys time and removes pressure
  - Reduces uncertainty by using events not time for decisions
  - Flexibility to reflect changing circumstances, doesn't box you in
  - Keeps options open until there is more information, funding, or support
  - Allows for learning along journey
  - Can handle complex decision making



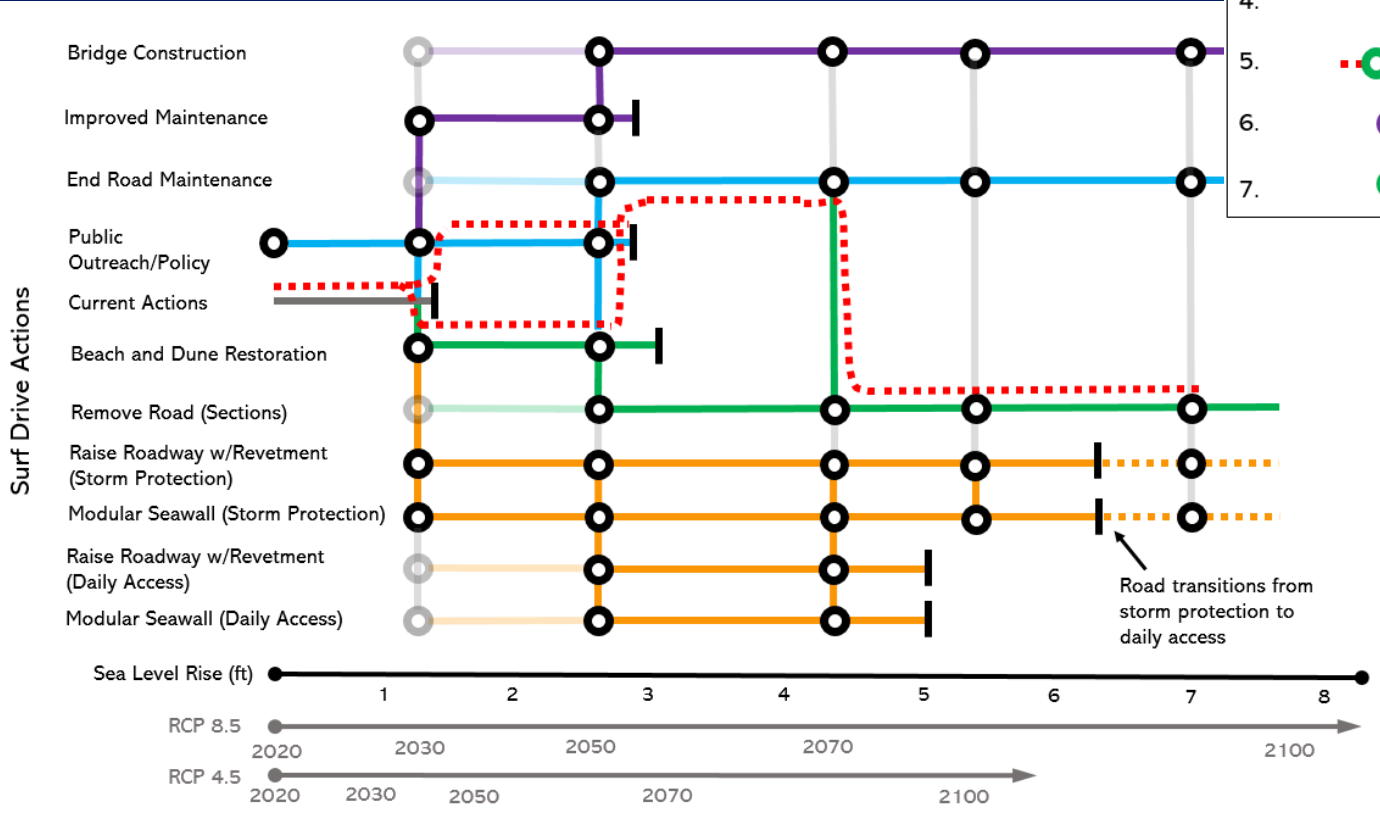

- DAPPs process:
  1. ID problem
  2. ID key assets
  3. Develop regional themes (managed retreat, natural resources, protection, connection, etc.) and potential actions short, mid, and long-terms
  1. Access efficacy of actions
  2. Develop DAPPs map and route to take

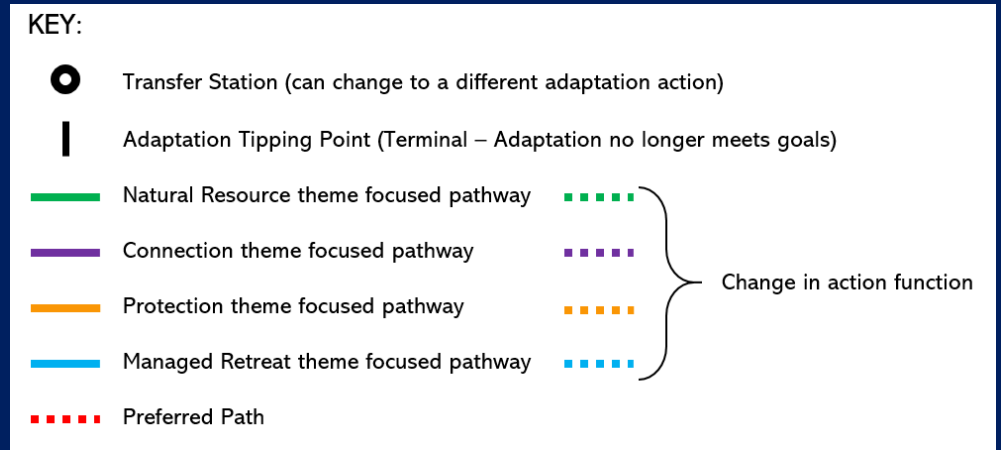
# Dynamic Adaptative Policy Pathways (DAPPs) Cont.

- Used in Falmouth, MA for Surf Drive
- Allowed Town an initial action plan with flexibility to switch “paths” in the future if goals, funding, conditions change; build consensus; define key triggers to adjust planned timeline in future

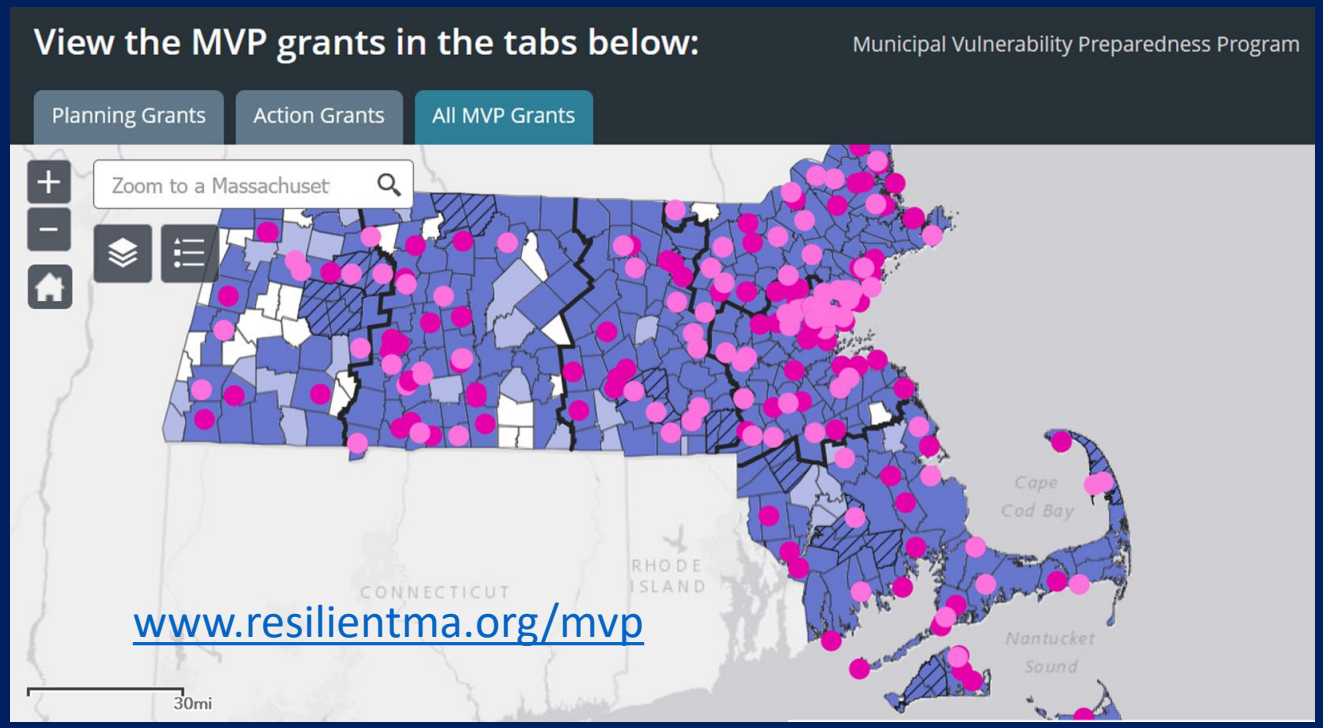
**Pathway Scorecard**

| | Path Actions | Relative Costs | Target Effects | Side Effects |
|---|---|---|---|---|
| 1. | Managed Retreat | + | Balances present uses with increased costs and risks in the future through a multi-phase retreat plan | Loss of Homes<br>No Connection via Surf Drive<br>Loss of Accessible Beach |
| 2. | Protection | +++++ | Protects operational capacity of existing Infrastructure and features | Loss of Accessible Beach<br>Aesthetics/Visuals |
| 3. | Natural Resources | +++ | Preserves and enhances coastal and marine ecosystem functions | Loss of Homes<br>No Connection via Surf Drive |
| 4. | Connection | ++++++ | Maintains important public access, utility Connections and transportation corridors | Loss of Homes |
| 5. | Preferred | +++ | Balances present uses w/increased costs and risks in the future through a multi-phase retreat plan, while enhancing ecosystems | Loss of Homes<br>No Connection via Surf Drive |
| 6. | | +++ | Improved maintenance for short-term uses w/a long-term focus on ecosystem restoration | Loss of Homes<br>No Connection via Surf Drive |
| 7. | | +++++ | Coastal habitat restoration in the short term, w/protection of existing infrastructure in the long-term | Loss of Accessible Beach<br>Aesthetics/Visuals |



# Municipal Vulnerability Preparedness Program
# By Courtney Rocha




- Overview of MVP's Action Grant Program
- FY25 out now and generally $100-$200K per project but up to $3M per project
- Planning, capacity building, regulatory/zoning updates, design & permitting, infrastructure improvements
- Gave examples of projects
- Looked over CRP recommendations to see which would qualify & be competitive
  - 1-1: Community outreach re Property Owner Best Practices
  - 1-4: Strategic Retreat and Relocation Program
  - 6-2: Surfside Wastewater Plant - relocation alternatives

# Discussion with Daniel Padien

- Waterways Program Chief at Division of Wetlands and Waterways Massachusetts Department of Environmental Protection
- In 2022, CRAC sent a letter to DEP regarding Ch.91 licenses
  - For seawalls and revetments, property owners required to maintain public access for fishing, fowling and navigation
  - Erosion and sea level rise can result in no fronting beach for public access
  - CRAC  requested that applicants be in compliance with existing license criteria in advance of going to Conservation Commission for reconstruction permits
- Gave an update about the proposed Ch. 91 and Waterways regulation updates that now include planning for sea level rise in projects, encouraging nature-based solutions, use Resilient.ma.gov for best available data, new coastal floodplain standards

# Offshore Wind Grant Discussion

- Sunny Daily, Executive Director of the Community Foundation outlined the goals and application process
- CRAC expressed interest in submitting an application
- CRAC members put a list of potential Coastal Resilience Plan recommendations to move forward in an Offshore Wind Grant application
- Submitted one for CRP translation into Spanish and produce a video about coastal resiliency on Nantucket

# Harbors Sediment Transport Study Update by Vince Murphy

- For Nantucket, Polpis, and Madaket Harbors to understand sediment movement and address navigational needs
- Priority recommendation in CRP
- Create a sediment transport model to help guide resilient decision-making by:
  - Identifying sediment resources
  - Prioritizing erosion management locations
  - Potential to create an island sand bank & ID a location
  - Understand and protect sensitive habitats
- 8 months into the project and collected water level data, bathymetric surveys, eelgrass bed mapping, and sediment sampling (appears to be free of pollutants and appropriate for re-use)
- Due to be completed in October 2024
- Questions regarding a need for a south shore study
  - Should be undertaken in segments and tied directly to a specific CRP recommendation; expensive; south shore very dynamic

# Coastal Zone Management Grant Update


- Awarded **$421,875 (total $532,500)**
- Town contribution **$30,000** (in-kind staff time) + **$110,625** cash (Article 10)
- Task 1: Existing Conditions and Flood Risk Assessment
  - Data Collection and Gap Analysis
  - Coastal and Stormwater Risk Assessments
  - Existing Conditions and Flood Risk Assessment Report
- Task 2: Alternatives Development and Pre-Permitting Feasibility Assessment
  - Preliminary Feasibility Assessment
  - Concept Design Development
  - Concept Design and Preliminary Feasibility Report
- Task 3: Community and Stakeholder Engagement Planning Strategy
- Task 4: Preliminary Design Development for Preferred Alternative and Basis of Design Report
  - Preliminary Design for Preferred Alternative
  - Cost Estimation and Timing
  - Permitting Assessment
  - Benefit Cost Analysis and Funding
  - Final Project Report

# REQUESTS AND RECOMMENDATIONS

Are there current or upcoming issues for which the Select Board would like the CRAC's advice?

The Coastal Resilience Advisory Committee generally meets on the **second** and **fourth Tuesday** of each month at 10 am via Zoom. Meeting notices and agendas are posted on the Town's website at: https://nantucket-ma.gov/1391/Coastal-Resiliency-Advisory-Committee

Contact Leah Hill, Coastal Resilience Coordinator, lhill@nantucket-ma.gov

**Compiled CRAC Priorities 2024-2030**

## Matt Fee

#1. Not listed. Betterment - CRD payment modeling and regulations.

#2. 1-2 Zoning

#3. 6-2 Sewer

#4. 1-4 Retreat

#5. 1-11 Sediment budget

#6. 2-1 SSA

#7. 3-5 Landfill Resilience

#8. 3-2 Ames Ave

#9. 3-4 Madaket Erosion pilot

#10. 6-4 Surfside Emergency Access

## Gary Beller

1-2
7-2
1-11
1-10
1-4
2-1
1-12
1-13
3-5
3-1

## Jen Karberg

Strategic Retreat and Relocation Program
Zoning updates
Steamboat Wharf Resilience
Madaket rd raising and bridge conversion
Surfside Treatment plant
DPW and landfill resilience
Codfish park dune restoration
Storm water updates and management plan

**Rachael Freeman**

1) Surfside Wastewater Treatment Plant Dune Restoration & Nearshore Breakwater Study (consider this here and not Sconset but information may be slightly transferable efforts in Sconset)
2) Updates to Zoning by Law
3) Strategic Retreat & Relocation Program (include Surfside Emergency Access Planning & Ames Avenue Bridge)
4) Stormwater Management Plan, By-Laws Assessment & Regulations Update
5) Numerical Modelling Study of Coatue Breaching
6) Sediment Budget
7) DPW Resilience – How much of an issue is this right now? I have seen the flood predictions but what are they seeing on the ground today?

**Peter Brace**

1. Surfside Wastewater Treatment Plant Dune Restoration
2. Steamboat Wharf Resilience
3. Updates to Zoning Bylaw
4. Strategic Retreat & Relocation Program
5. Madaket Road Raising & Bridge Conversion
6. Stormwater Management Plan
8. Numerical Modeling Study of Coatue Breaching
9. Department of Public Works Facility & Landfill Resilience
10. Siasconset Bluff Dune Restoration

**Leah Hill (Staff)**

1. Strategic retreat and relocation
2. Surfside wastewater treatment facility dune restoration
3. Steamboat Wharf resilience
4. Stormwater management plan, stormwater by-laws assessment, stormwater by-law and regulations update
5. Updates to zoning by-laws
6. Building scale resilience at 37 Washington St.
7. Madaket road raising and bridge conversion
8. Numerical modeling study of Coatue breaching
9. Surfside emergency access

10. Ames Ave Bridge resilience, Madaket Erosion management plan and Ames Ave Bridge protections
11. Added 2-23-24 Polpis Rd at Folger's move implementation year up

**Compiled Recommendations with Tallies**

Not listed. Betterment - CRD payment modeling and regulations. = **1**

#1-2 Zoning = **6**

#1-4 Retreat and relocation program = **6**

- Include Ames Ave bridge and Surfside emergency access

#6-2 Surfside wastewater treatment plant dune restoration = **5**

#2-1 Steamboat Wharf Resilience = **5**

#3-5 DPW and Landfill Resilience = **5**

#1-10 Stormwater Management Plan = **5**

#1-12 Stormwater by-laws assessment = **4**

#1-13 Stormwater by-law and regulations update = **4**

#3-1 Madaket road raising and bridge conversion = **4**

#1-11 Sediment budget = **3**

#4-4 Numerical model of Coatue breaching = **3**

#3-2 Ames Ave bridge resilience = **3**

#6-4 Surfside Emergency Access Planning = **3**

#3-4 Madaket Erosion pilot = **2**

#7-2 Sandpumping feasibility = **1**

#5-2 Codfish Park dune resilience = **1**

#5-4 Sconset Nearshore breakwater study but do in front of Sewer plant = **1**

#5-1 Sconset Bluff dune restoration = **1**

#2-5 Building scale resilience at 37 Washington St. = **1**

**CRP Recommendation Ranking by Staff Based on CRAC's Compiled Responses**

1. #1-3 Retreat and relocation program
    a. #1-2 Zoning bylaw updates
    b. #6-4 Surfside emergency access
2. #6-2 Surfside wastewater treatment plant dune restoration
3. #2-1 Steamboat Wharf Resilience
4. #3-5 DPW and Landfill Resilience
5. #1-10 Stormwater Management Plan
    a. #1-12 Stormwater by-laws assessment
    b. #1-13 Stormwater by-law and regulations update
6. #3-1 Madaket road raising and bridge conversion
7. #3-2 Ames Ave bridge
8. #4-4 Numerical model of Coatue breaching
9. #1-11 Sediment budget
10. #3-4 Madaket Erosion pilot

Discussion to add?

- Funding mechanism for coastal resiliency projects
- Bridge conversion at Folger's Marsh- move up timeline to 2025 because risk increased

**Coastal Resiliency Issues and Recommendations for Updated Harbor Plan**

The table below contains a summary of issues and recommendations to be considered for the 2024 Nantucket and Madaket Harbors Action Plan Update in the coastal resiliency and climate change section. The left side of the table contains general issues identified in public forums, committee meetings, and interviews during the planning process, while the right side contains potential solutions and recommendations to help address the issues.

Note: Coastal resiliency and climate change will also be discussed in other sections of the plan, as it relates to each section. The section below is primarily about coastal resiliency and the built environment/infrastructure. Coastal resiliency and climate change and how it relates to natural resources, fisheries, water quality, and other topics will be discussed in those sections.

This table is a working document in draft form and comments are encouraged.

| **Coastal Resilience - Infrastructure** | |
|---|---|
| **2023 Issues**<br>identified in public forums, committee meetings, interviews (will need to fit under a goal/objective statement) | **Suggested solutions/recommendations**<br>(most heard from public or committee) |
| General Issues:<br>1. Cohesion Between Plans<br>Nantucket Coastal Resilience Plan (2021) is the most recent Town plan with a comprehensive strategy and roadmap up to 2100 dealing with the effects of Climate Change and Sea Level rise in Nantucket and Madaket. The Nantucket and Madaket Harbor Plan should agree with and support other Town Plans. | Have inter-committee meetings to share objectives, challenges, and project prioritizations<br><br>Highlight "living" sections of the CRP within the Harbor Plan, reflecting changing conditions and increasing/reducing risk<br><br>Work with partners to address identified data/planning gaps:<br>Need Groundwater-SLR modelling, study for where wetlands will develop. Need Research on Floodwall locations. Need Jackson Point Boat Ramp Study. More planning for Alt. Steamship Authority Location. Need study for additional in-town boat ramp.<br><br>Work with under-represented communities to address their climate needs/interests related to ecological restoration, coastal resilience, relocation, climate disruptions.<br><br>Cohesion between town and steamship authority in that they are open to resiliency work<br><br>Potential to hire more project managers – a lot more projects so should hire more people<br><br>Have hazard mitigation plan, and have MVP plan – make sure there is cohesion on state and federal level as well as local plans |

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| | Also should have more green infrastructure initiatives in town and along harbor<br><br>**Incentivize public to consider relocation/retreat within town initiatives [placeholder for Doug Rose's comment]**<br><br>Resilient Nantucket guidelines – designed guidelines for flooding and adaptation; joint partnership with FEMA<br><br>Invitation to not look at CRP as unchangeable or perfect document; our work would be additive<br><br>CRP – not many projects related to modeling groundwater – could be interesting additive; look at groundwater rising – there is a project that is happening but not ready for publication<br><br>Measuring groundwater and looking at levels in historical areas and how that would work with historic preservation<br><br>We should look at the hyline doc – NIR – they need to be in sync with us<br><br>Nantucket yacht club has formed a committee related to coastal resiliency – good to have it on the radar in a formal way<br><br>Great harbor – has working group on coastal resiliency<br><br>Perhaps CRAC is in touch with different committees – someone on implementation committee should be from CRAC<br><br>Should check with other groups to see if something we should add in, yacht clubs, NIR, coast guard – have a sit down with them at the end<br><br>Good to keep track of the progress of other groups – make sure they have all the documentation that will be provided<br><br>Talk to yacht club and boat basin and see where they are Should say we are periodically checking in with groups and see where they are with plans – keep tabs on them<br><br>Communication with yacht club and other organizations very important |

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| | The crp is a document for people to come to; they don't need to go to every homeowner and group to tell them what to do – to be a resource – they don't make sure everyone is doing the right thing – they work with the other groups; how else could they communicate with those groups<br><br>UHI could go to these other groups – what we are doing, what is happening in the process<br><br>Future coordination with all waterfront property owners – be sure they are involved in project related activities etc.<br><br>In final plan, make sure we have link to the CRP<br><br>How much engage private property owners? Peter morrison's organization? – may be better to go through an organization versus go one by one<br><br>CRAC did a survey of civic league – important to know what the target is before ask people for their time<br><br>Asking the people what they are doing related to coastal resiliency – may be going backwards to go back to homeowners<br><br>We should focus on the big entities, and we will have more public forums<br><br>We could do an event at the yacht club<br><br>Public and private decision making should be coordinated – finances are also going to be a big discussion topic<br><br>Land bank – in second phase for Washington street – going to do a lot of stakeholder and public input<br><br>For anything to work, need very coordinated effort – bulkheads same height, etc.<br><br>Are there regulatory things that can be done so people have to do certain things |

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| 2. Rising Sea Levels<br>Nantucket is already experiencing the effects of sea level rise. The NOAA tide gauge for Nantucket, located on Steamboat Wharf, has recorded eight inches of SLR (+0.14in/yr) between 1965 and 2019. Sea level rise is expected to worsen and exacerbate existing coastal problems of flooding and erosion in the future. Sea levels in Nantucket Harbor are projected to rise 2.5-3.2ft by 2100 on average.<br><br>The Massachusetts Coastal Flood Risk Model by CZM and used by the State details extents and depths of flooding for 2030, 2050, and 2070.<br><br>Sea level rise increases the probability of hazards such as Storm Surge, Coastal Flooding, Tidal Flooding, and Coastal Erosion, all of which Nantucket and Madaket experience. | Utilize CRP for flooding and erosion planning.<br><br>Integrate MCFRM into policies and bylaws. Model wetland bylaw language is available through the Cape Cod Commission and can serve as an example. Model wetland regulations and zoning bylaws will be available through the Commission in the coming months.: https://capecodcommission.org/resource-library/file/?url=/dept/commission/team/projects/Project%20Files/MULTI-TOWN/EEA%20grant%20Responding%20to%20Climate%20Change/EEA%20Deliverables/ModelCoastalResilienceArticle.pdf could be used for many regulatory enforcement measures: bulkhead expansion if elevating houses Explore the opportunity for strategic retreat in extreme/high-risk areas (buyouts).<br><br>Develop a stormwater management plan. As part of that, conduct Groundwater - SLR modelling.<br><br>Join the Community Rating System of National Flood Insurance Program (Rewards communities for measures above federal minimums, discounts to policy holders, improve coastal resiliency, improved public awareness. Municipality - floodplain expert help, conserve resources, safer community).<br><br>It has been recommended to do the community rating system – Holly has it<br><br>Leah has updated data for sea level rise<br><br>Because the data changes, pointing to a source that is updated because it is changing is better<br><br>Noaa updates the data – also look at the high flooding scenario |
| 3. Infrastructure Protection and Prioritization<br><br>Large public desire to protect shared community infrastructure. General willingness to share costs associated with it.<br><br>Need to prioritize flooding and erosion prevention projects<br><br>Downtown, Steamship Wharf, and emergency services identified as most urgent attention | Adhere to project prioritization timeline from CRP and CRP update – update as risks change<br><br>Town has adopted using a high sea level rise scenario<br><br>Wet/Dry Proof + Elevate Town Buildings: Harbor Masters, 37 Washington St, 16 Broad St, Downtown Police Station. Likely won't raise 37 washington<br><br>Raise town dock to [MCFRM X% Y Year] or convert to floating docks. – Decide which SLR projection is of greatest |

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| | concern to the Town, and raise Town dock to accommodate, or convert to floating docks. Revisit future projections once the first projection is nearly met (e.g. in 2050). – constructing something that far into the future could make the infrastructure un-usable<br><br>They have a toolkit (Holly) – part of resilient Nantucket, available on town website<br><br>People pay in for when they receive more benefit – way to make financing a project more feasible |
| 4. Private vs. Public Cost<br><br>Erosion and flooding are an island-wide issue<br><br>Concerns on how the town will fund the projects in the CRP<br><br>Rights of private landowners to protect property, high individual costs, potential hazards, private assumption of risk<br><br>Responsibilities of Town to its citizens and historic conservation, high public costs~~4. Private vs. Public Cost~~<br><br>~~Erosion and flooding are an island-wide issue~~<br><br>~~Concerns on how the town will fund the projects in the CRP~~<br><br>~~Rights of private landowners to protect property, high individual costs, potential hazards, private assumption of risk~~<br><br>~~Responsibilities of Town to its citizens and historic conservation, high public costs~~ | Explore potential cost-sharing models (assessments, etc.). – and develop procedures for public private partnerships<br><br>Incorporate crp recs with other capital plans<br><br>Develop programs and policies through which homeowners assume risk due to erosion-caused loss of utilities or services.<br><br>Clarify regulatory expectations for private property owners.<br><br>Pursue funding opportunities: Increased embarkation fee, Ch91 non-compliance penalties, state and federal grants, coastal resilience districts, betterments within climate resilience districts<br><br>Increase Town Budget towards CR projects (current: $1M/yr).<br><br>Hire dedicated grant writer.<br><br>Embarkation fee – increasing it; dave submitted details on embarkation fee before<br><br>We should get ahead of issues by providing subsidies to homeowners for being proactive – give subsidies for moving properties in advance<br><br>Many articles on green vs grey infrastructure – we need some hard infrastructure for some places, but for most property owners, they want a bulkhead – but it ends up being more expensive and disturbing to the environment |

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| 5. Regulatory Updates – STOPPED HERE | Explore opportunities to modify regulations to promote resiliency and facilitate adaptation. As part of this, explore:<br>• Modify zoning bylaws and regulations. Consider (1) adaptive zoning, allowing modifications as conditions change, (2) stricter requirements in environmentally-sensitive areas, (3) preventing 2-level basements with bigger footprints than zoning allows for above ground, (4) encouraging resilient designs, (5) preventing construction in CRP defined High or Moderate risk areas, (5) offering regulatory relief for coastal resiliency-focused building changes, (6) basing building regulations on FEMA rules, developing, prioritizing green infrastructure where appropriate new building regulations based on MCFRM<br>• science-based triggers for policy updates<br><br>Develop Coastal Resilience Districts at Town Level with specific policies addressing different risk exposure.<br><br>Updated wetland regulations that (in addition to including MCFRM) (1) encourage resilient design, (2) prohibit development on bluffs, dunes and beaches; (3) limit pool installation; (4) Prevent construction in CRP defined High or Moderate risk areas, (5) prioritize green infrastructure where appropriate.<br><br>Enforce laws and regulations to ensure compliance.<br><br>Conduct education/outreach to ensure awareness of laws and regulations.<br><br>Implement policy for town to take over flooded areas, provide relocation.<br><br>Have coastal resiliency and public access regulations flexible to the specific uses of vulnerable areas.<br><br>Prioritize solutions offering multiple co-benefits. |
| 6. Community Involvement in Planning for Climate Change<br><br>When deciding on coastal resiliency and adaptation policies or projects, there is support on both sides for public-led decision making (through voting/referendum) as well as expert-led approaches. | Incorporate community science into monitoring initiatives.<br><br>Increase collaboration with On-Island Groups involved in coastal resiliency and adaptation (e.g., Conservation Commission with compensatory flood storage in Harbor, Nantucket Conservation Foundation with natural methods of sand-build-up, Land Bank with Housing crisis and |

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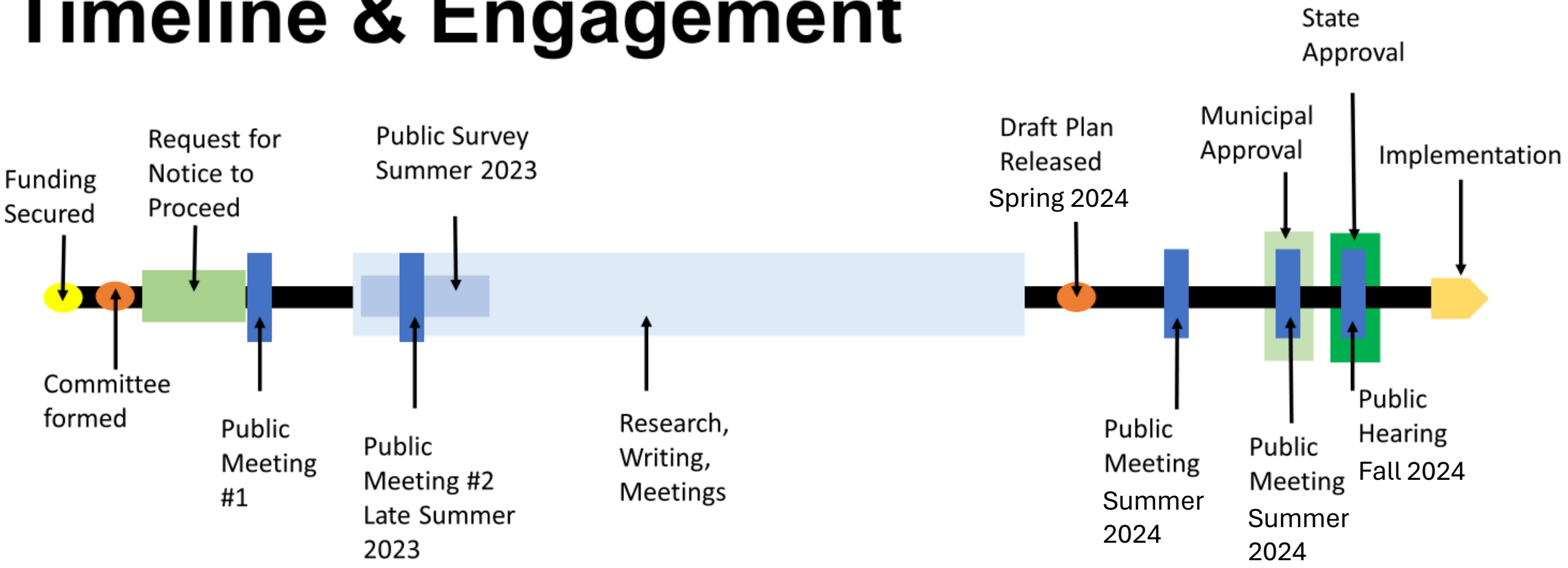
| | Washington St. Resilience framework, Landscaping with Native veg, more salt tolerant). |
| 7. Green vs. Grey Protections<br><br>Flooding and erosion protections exist on a spectrum from 'Hard' to 'Soft' interventions, 'grey' to 'green' infrastructure, and 'engineered' to 'nature-based' solutions<br><br>CRP states an emphasis on nature-based solutions where possible.<br><br>Public support is mixed<br><br>Requires a holistic comparison of alternative systems<br>Research needed on long-term viability of each option<br><br>Examples:<br>• Green: Beach grass planting, saltmarsh/wetland restoration, eelgrass planting, living shorelines, oyster reefs<br>• Grey: Dredging, concrete barriers, geotubes, groins, underwater wave breaks, bulkheads, rip-rap<br>• Both: Harbor Barrier, artificial shoals, living seawalls | In vulnerable areas, conduct site-specific assessments for protections. Where appropriate, include potential hybrid approaches that incorporate both green and grey measures.<br><br>Secure additional funding for natural solutions (oyster reefs, living shorelines, eelgrass restoration etc.).<br><br>Conduct monitoring of resilience and adaptation projects to ensure effectiveness and to inform future projects.<br><br>Create additional pocket Parks with native vegetation for stormwater holding.<br><br>Conduct a study to quantify Blue Carbon Storage in eelgrass and marshes. |
| 8. Education | Map vulnerable locations and make map publicly accessible online and through other means.<br><br>Develop a Town-wide map with likelihood of future protection to inform current and future homeowners<br>For example, 1. Developed (shore protection almost certain), 2. Intermediate (shore protection likely), 3. Undeveloped (shore protection unlikely), 4. Conservation (no shore protection).<br><br>Hire education coordinator for coastal resiliency and natural resource projects w/ science background.<br><br>Encourage property owners to take coastal resiliency steps (comment provided by public).<br><br>Include CRAC letter to MA Director of Waterways and DEP regarding public access, include in plan |

The table below contains CRP projects within the Harbor planning area, as well as the status of those projects as described by Leah Hill. We are seeking ideas/comments for ways the Harbor Plan/Committee can support projects and address potential barriers.

| **CRP Projects In Harbor Plan Area** | **Project Status** | Recommendations |
|---|---|---|
| Updates to zoning bylaw | LH: not started but should start to encourage less development along the harbors | |
| Community outreach on property owner resilience best practices | | |
| Strategic retreat and relocation program | LH: not started. Will include areas along harbors | |
| Stormwater management plan | LH: not started but Sewer Dept received funding to start a small portion of this. Coincides with Stormwater Bylaws assessment and regulations update | |
| Sediment budget | LH: Sand Feasibility study not started | |
| Downtown neighborhood flood barrier (both phases) | LH: Downtown Neighborhood Flood Barrier- Initial phase Underway. This project is a Select Board high priority, CRP and Hazard Mitigation Plan high priority too. Like I mentioned above we just had the kickoff meeting for this project. Funding is secured for developing 4 alternatives and the one that is picked through community and stakeholder engagement and the Town will be developed to 30% design. We will need to secure funding to develop the design further and for construction. Downtown Neighborhood Flood Barrier- Later phase Not started. Can't start until Initial Phase is complete. | KU: Changes should incorporate public access (maybe) Ensure that these changes maintain important services for the island such as transport of goods and people |
| Steamboat wharf resilience | LH: Not started. Conversations were had with the Steamship 2 years ago and they said they won't be able to start this for another 8-10 years because they need to finish their terminal in Woods Hole first before they can think about this one. I will be in contact with them since the initial phase of the Downtown Neighborhood Flood Barrier just kicked off and they will be major stakeholders for that project. | KU: Ensure that Steamship Authority Ch91 License promotes public access and is inline with Town Goals |

| | | |
|---|---|---|
| Easton St and Hulbert Avenue Rd raising | LH: Not started | KU: Changes should incorporate measures to enhance pedestrian/bike use (we heard that parking and cars need to be addressed) and consider options to enhance visual access where appropriate? (not sure that's realistic) |
| Washington St. extension and consue springs walkway raising | LH: Not started. I imagine this happening once the Land Bank/Town Washington St resilience projects gets underway. | LH: Work with Land Bank to implement Washington St. Resilience Framework (Project) |
| Building scale resilience at 37 Washington st. | LH: Not started. I added this to your list because I believe it is in the boundary (its across from the Harbor Master's Building). I am planning to put this in for a local grant to get a risk assessment and feasibility study done first which will tell us what to do for this building. | |
| F street Boat ramp resilience | LH: Not started. | KU: As designs are developed, include exploration of measures to preserve (and increase if Jackson point sis going to lose service) parking, if needed. Develop plans to restore Jackson Point to natural state once it is no longer functional as a boat ramp. |
| Polpis Rd raising and bridge conversion at Folger's Marsh | LH: Not started. The planning phase of this is in for Capital request for this fiscal year 2025. This project needs to start because the culvert is undersized so its restricting the flow to the wetlands on the other side of the road. In addition the road is failing- there is a small sink hole. | KU: Consider designs that would allow the migration of the marsh system as sea levels rise |
| Coatue Erosion management and dune resilience | LH: I think underway. Nantucket Conservation Foundation and the Trustees of Reservation received a NFWF grant to start part of this project. I need to contact them to find out the exact location. I will be in touch with more information about this. | KU: The plan may think about how the above dune creation/maintenance will be funded – e.g., coastal resilience districts, fees related to con com permits, etc. |
| Numerical modeling study of Coatue breaching | LH: I added this in. Not started. This should start soon. We received a quote from Arcadis that it would cost $300k for modeling of 1 breaching and $800k for 5 breaching events. | |

# Timeline & Engagement



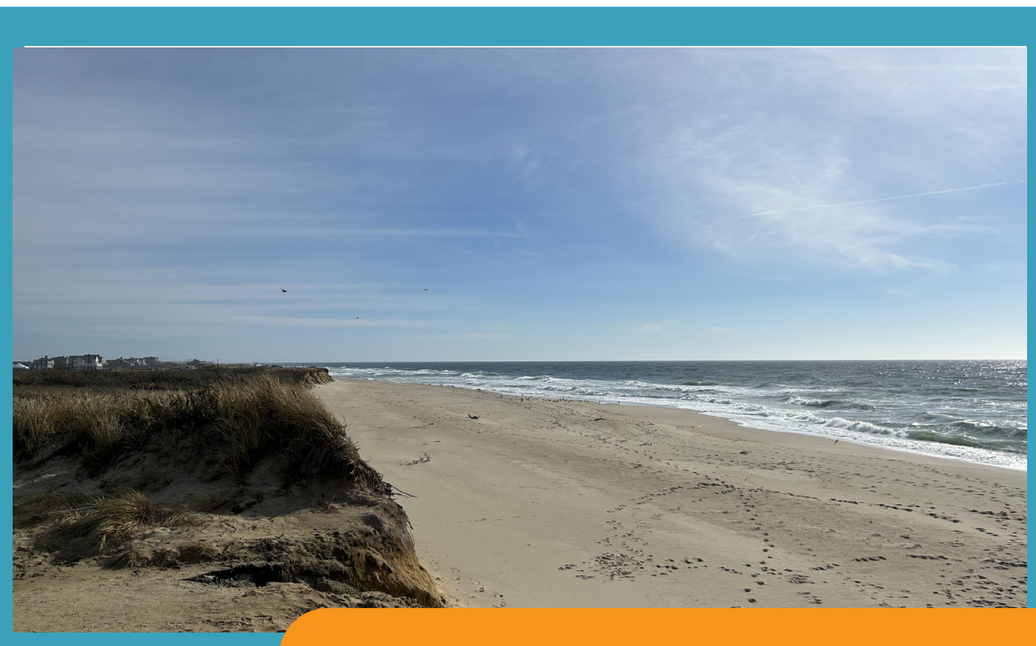

CoastSnap
community beach monitoring
1 Snap
Turn smartphone on its side, slide it into the cradle and take a photo on default setting.
End of Hummock Pond Rd
Did you know that Nantucket has some of the highest erosion rates in the state?
Your cellphone snaps* can help the town and the state record our changing coastline to inform management efforts.
* Use default setting. Do not zoom.
2 Share
Post your photo's camera or the QR code to open our project webpage and upload your photo. You may also upload your photo at this web URL:
For more information about Nantucket's Coastal Resilience Plan, go to
www.nantucket-ma.gov/CRP
For more information about the CoastSnap project, go to
http://MyCoast.org/MA
Questions?
coastalresilience@nantucket-ma.gov
Sea Grant
UNSW
MyCoast

# CoastSnap

## community beach monitoring

## 1 ▸ Snap

Turn smartphone on its side, slide it into the cradle and take a photo on default setting.



End of Hummock Pond Rd

## 2 ▸ Share

*Point your phone's camera at the QR code to open our project webpage and upload your photo. You may also upload your photo at this web URL:*

**mycoast.org/ma142482**

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**Questions?**
**coastalresilience@nantucket-ma.gov**

Nantucket's Coastal Resilience Plan (CRP) has 40 island-wide recommendations to reduce risks of flooding and erosion along our coastline while keeping people safe, promoting healthy and vibrant communities, and honoring the cherished built and natural heritage of Nantucket. If these recommendations are not implemented by 2070, the cumulative expected losses and damages could total $3.4 billion, which far exceeds the cost to implement the CRP.