



# Protecting Our Coast

## Scituate At Work!

July 30, 2019  
6:30 – 8:00 pm

PRESENTED BY THE TOWN OF SCITUATE  
COASTAL ADVISORY COMMISSION



**A coastline in need of help.**

# Who We Are and Why We Are Here

The Coastal Advisory Commission is town appointed. We are charged with investigating and reporting on factors influencing the shoreline, study of adaptation and mitigation strategies, programs for protection, education and engagement with citizens, fostering two-way channels of communication on priorities between citizens and town officials, making recommendations to the Board of Selectmen on issues raised by citizens, trends/input from expert sources, objectives for future grants and more.

## MEMBERS:

Louise Pfund Villani, Chair and Coastal resident	Jon Grant, Oceanographer and Coastal Engineer
Kyle Boyd, Coastal Management Officer	Lynda Murray Harding, Secretary and
Kevin Cafferty, DPW Director	Coastal Resident
John Murphy, Fire Chief for Scituate	Tom Hall, Inland resident
Frank Snow, Chair of Conservation Commission	Paula Jewell, Inland Resident

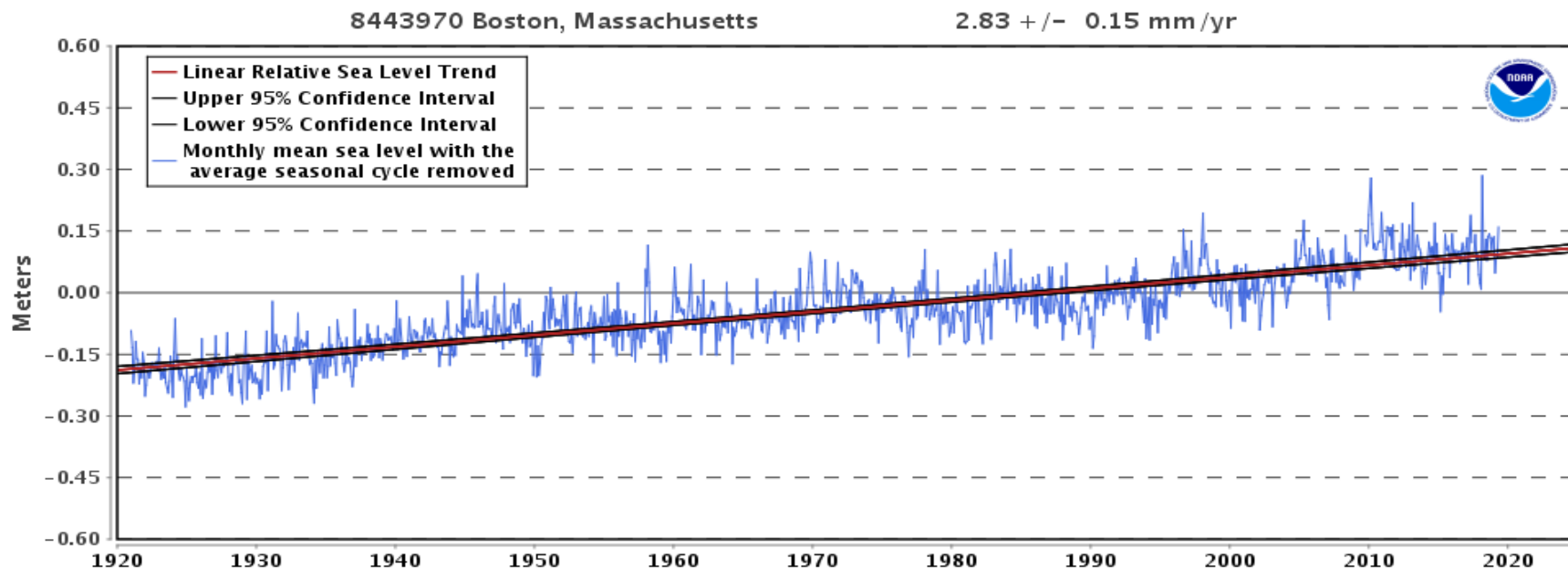


# Agenda

- Background on CAC
- Purpose of Forum
- Before we get started....
  - why care about our coastline and what are the facts on sea level rise?
- A look back: why have we done so many studies? Any results?
- How studies drive priorities, grant proposals and \$\$ to spend
- Show me the Money! Town \$\$, Grant \$\$, FEMA
- A look at specific projects: funding and work accomplished
- Current projects in the pipeline and timing
- How to get involved and participate in the feedback loop
- Q & A
- Next Steps and YOUR priorities- what didn't you hear tonight that you are interested in? Future forums? What do you think the coastal priorities should be?



# Sea Level Rise: What Do We Know

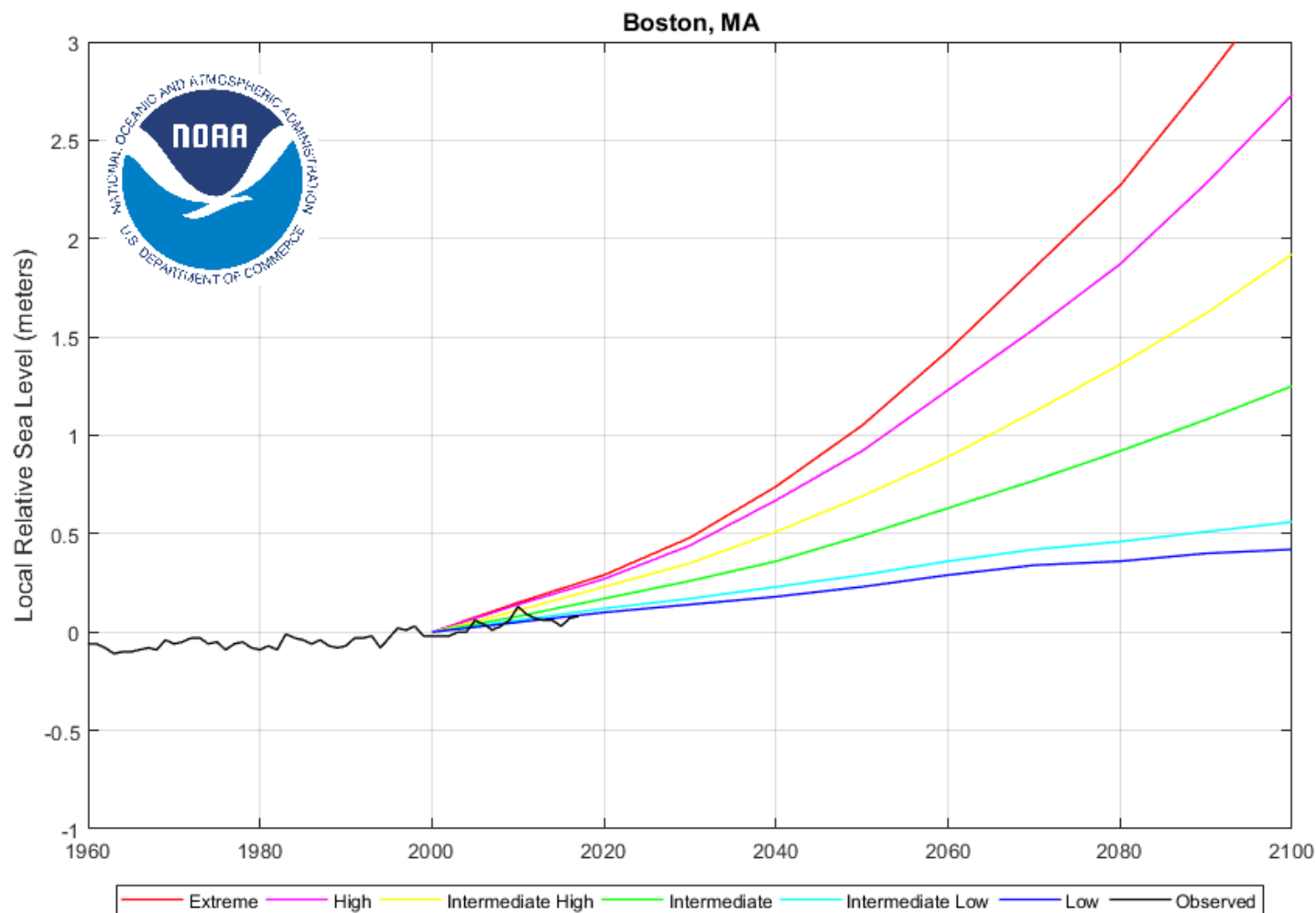


- Global sea levels were over 100 meters lower than the present day level only 18,000 years ago
- Our sea level has risen 11 inches in the last 100 years
- Factors affecting sea level include: glacial ice melt; thermal expansion of ocean waters as they warm; and land subsidence





# Sea Level Rise: The Future

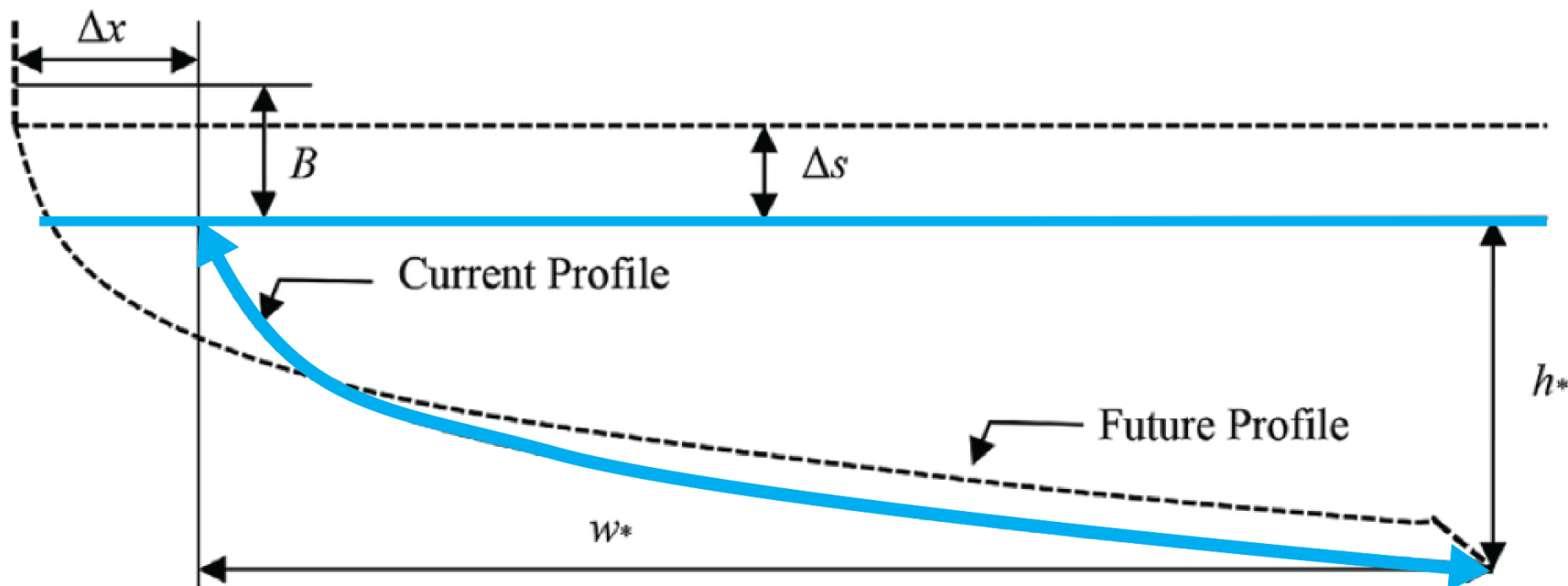


The sea level is rising and the rates are increasing.

Scituate sea level forecast (VIMS 2018 and NOAA 2017)

- 2030: +9 inches
- 2050: +18 inches

# Sea Level Rise and Our Shoreline



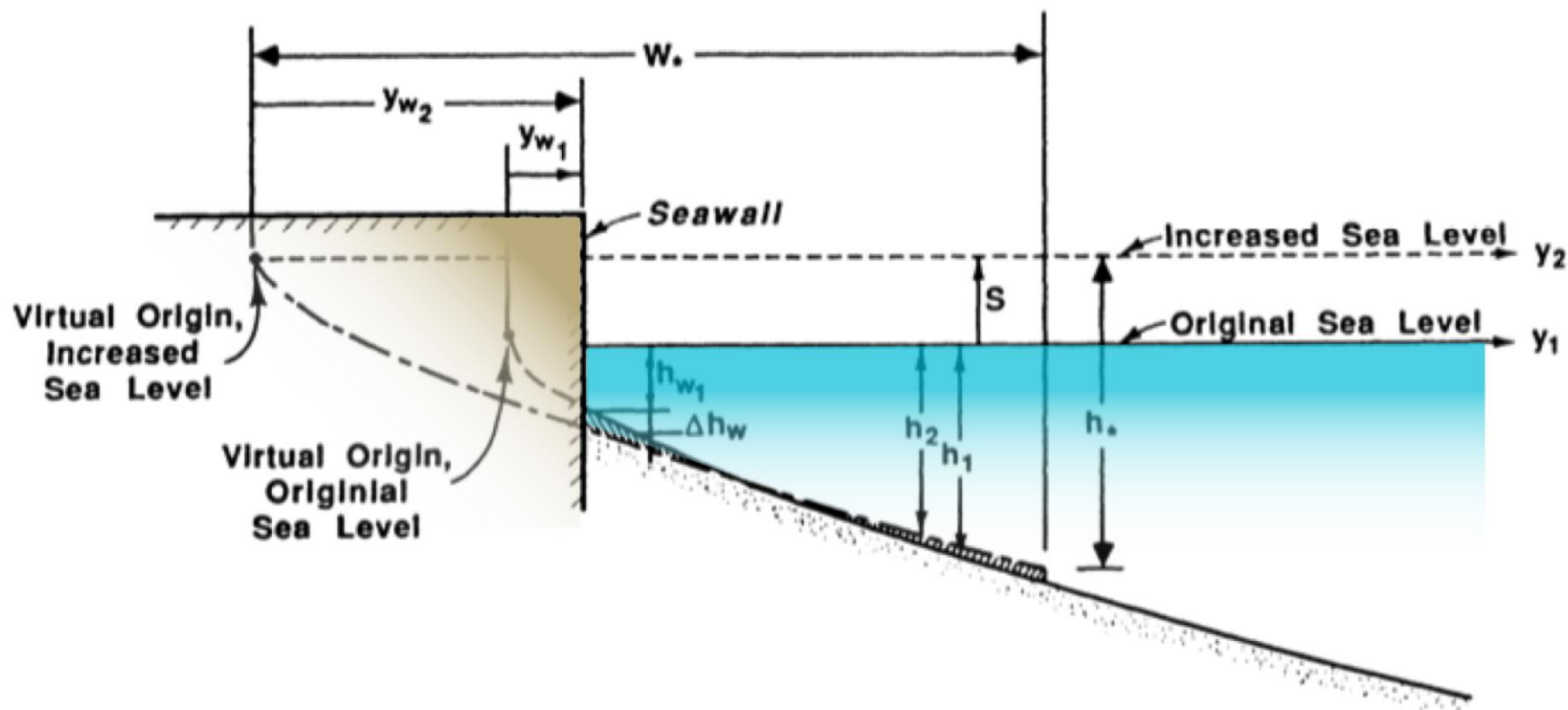
Coastal Resiliency: Not all shorelines are created equal:

- Natural resistance to erosion (eg. headlands, bedrock, cobble)
- Artificially armored (eg. seawalls, breakwaters, rip-rap)
- Sedimentary shorelines (eg. beaches, sand spits)

Nature is stubborn and will resist change



# Sea Level Rise and Seawalls



- Seawalls provide added protection from storms and waves at the expense of increased shoreline erosion, beach lowering, and storm surge.
- Sea level rise adds complexity to the trade offs we face in protecting our shorelines





MANY SAY....

TOO MANY STUDIES and NOT ENOUGH ACTION...

*WE HEAR YOU!*



STUDIES + REPORTS +  
COMMUNITY  
ASSESSMENTS + FILING  
REPORTS  
for Funding =

1

- Setting Priorities

2

- Grant Proposals

3

- Budgeted Projects

4

- Permits

5

- Real Work





# Real Work

# ...and real dollars...\$22,800,000!

\$22,800,000 for Foreshore Protection\*

- \$8 Million from Grant Monies + \$3.8 from FEMA for repair designs
  - Coastal Zone Management (CZM), the Executive Office of Energy and Environmental Affairs (EOEEA), FEMA, Army Corps of Engineers
- \$11 Million from Town Funds
  - Annual Town Meeting appropriations

AND...

Estimated FEMA OBLIGATED CLAIMS of \$14,000,000

- (we receive 75% of total in reimbursement)

\* 2010-2020 Town of Scituate spent/or committed to



# Let's Talk about FEMA...

- According to 2015 stats, since 1978 Scituate was #1 in MA claims (residential) and had more than towns 2, 3, and 4 combined
- For town claims, hard work from Emergency Management, DPW, FIRE and other town departments have resulted in \$18M in estimated obligated claims
- Due to the complexities of the evaluation and reimbursement process, the town has secured a 3<sup>rd</sup> party contractor to work with/for the town and coordinate with MEMA to process these claims for seawalls and revetments and work them through the system to FEMA
- Let's take a look at these claims...





# FEMA Supported Declared Disasters

## FEMA SUPPORTED DECLARED DISASTERS - FILED AND OBLIGATED CLAIMS

Disaster Date (Storm)	Location	Total Claim	Total FEMA Potential Reimbursement
2012 (Sandy)	Third Cliff	\$2,241,135	\$1,680,851
2013 (Nemo)	Minot Beach Revetment	\$254,540	\$190,905
2013 (Nemo)	Glades Beach Revetment	\$274,980	\$206,236
2013 (Nemo)	Second Cliff Revetment	\$305,910	\$229,433
2013 (Nemo)	Third Cliff Revetment	\$1,025,165	\$768,874
2013 (Nemo)	First Cliff Revetment	\$262,360	\$196,770
2013 (Nemo)	Egypt Beach Berm	\$724,144	\$336,723
2015 (Juno)	Seawall & Revetment Damages	\$5,830,894	\$4,428,812
2018 (Riley) - NOT FINAL	Seawall & Revetment Damages	\$7,521,178	\$5,640,884
<b>Total</b>		<b>\$18,440,308</b>	<b>\$13,679,488</b>

Claims are estimates and subject to change





# So let's get into some examples of how these studies and assessments have been put to work....

THIS forum is a direct result of the “Community Assessment” study of 2018, recommendation #2:

- “Review, summarize, and present in a simple format, the key actions that have been taken in recent years to improve coastal resilience in Scituate, and the relevant recommendations that have been made in previous studies and plans. Currently, there is no easy way to find out what Scituate already knows about its own coastal vulnerabilities and strengths, what solutions have already been implemented or considered, and what remains unknown. An effort to compile and summarize that information would be tremendously helpful to many people for various reasons, and would be critical for the effort described in Recommendation #1. “



# Community Assessment...cont.

The Community Assessment report also defined three other recommendations.

ALL are in the works!!

- ☑ Develop a long range coastal resilience vision and strategy
- ☑ Convene community conversations on managed retreat
- ☑ Review, update and document emergency management protocols for coastal storms

MORE on all this later.



# Compliance with reports and filings for mitigation strategies result in grants and cost savings!

Fulfilling the Community Rating System (CRS) requirements of NFIP each year results in a 15% discount to residents on their flood insurance policies

Completion of the State Climate “Municipal Vulnerability Preparedness” (MVP) Program (July 2018) and having an approved Hazard Mitigation plan means we:

- Qualify for MVP Planning Grants, MVP Action Grants, Coastal Resiliency Grants through CZM, and FEMA hazard mitigation grants

This status has resulted in ...



## Town of Scituate Coastal Grants 2015 - 2019

Coastal Grants	Project	Amount Requested	Status
Executive Office of Energy and Environmental Affairs (EOEEA) & Coastal Zone Management (CZM) Resiliency Grant	Engineer and study for beach nourishment on N. Scituate Beach	\$118,000.00	Completed
Executive Office of Energy and Environmental Affairs (EOEEA) & Coastal Zone Management (CZM) Resiliency Grant	Engineer , design and permit for beach nourishment on N. Scituate Beach	\$241,163.00	Completed
Executive Office of Energy and Environmental Affairs (EOEEA) & Coastal Zone Management (CZM) Resiliency Grant	Assessing Coastal Erosion, Sediment Transport & Prioritization Management Strategy for Shoreline Protection	\$270,000.00	Completed
Executive Office of Energy and Environmental Affairs Dam, Levee and Seawall Grant	Repair and Replacement to 525+/- feet of seawall along Oceanside Drive on Town owned property	\$3,000,000.00	Completed
MAPC Planning Assistance Grant	Scituate Municipal Vulnerability Plan	\$60,000.00	Completed
Executive Office of Energy and Environmental Affairs (EOEEA) & Coastal Zone Management (CZM) Resiliency Grant	Humarock Roadway Elevation, Beach and Dune Nourishment Conceptual Designs	\$140,000.00	Completed
Executive Office of Energy and Environmental Affairs (EOEEA) & Coastal Zone Management (CZM) Resiliency Grant	Humarock Roadway Elevation, Beach and Dune Nourishment Engineer Design and Preliminary Permitting	\$240,000.00	Completed
Executive Office of Energy and Environmental Affairs	Scituate Harbor Resiliency Plan	\$37,500	Underway
MAPC	Scituate Harbor Resiliency Plan	\$25,000	Underway
MAPC	Managed Retreat Feasability Study	\$35,000	Underway



# More on why submitting documentation = Grants and Money!

- Creating a Hazard Mitigation Plan is...Extremely Important!
  - It is prepared by a cross-functional team: Planning, DPW, Fire, Finance
  - It has allowed us to qualify for over \$3.7 million dollars from FEMA for 25 home elevations
  - 16 homes have been elevated, 8 are in process and 1 is pending approval!
- It provides cash reimbursement up to 100% for severe/repetitive loss structures
- We are also qualified to pursue other foreshore protection strategies such as
  - Structural retrofitting of existing structures to make more resistant to flooding
  - Wind retrofitting – enhancements roofs, walls, doors, windows of homes
  - Mitigation tactics for flood and drought conditions: aquifer storage and recovery, floodplain and stream restoration, flood diversion and storage, and more



# \$3.7 million in elevation grants = 25 home elevations

Town of Scituate Elevation Grants 2015 - 2019			
Coastal Grants	Project	Amount Requested	Status
FEMA FMA 13-01 Elevation Grant	Elevation of 14 Properties in the floodplain	\$2,100,000.00	Completed
Massachusetts Emergency Management Agency HMGP Grant	Elevation of 5 properties in the floodplain	\$616,252.00	Underway
FEMA FMA 15-01 Elevation Grant	Elevation of 2 properties in the floodplain	\$303,386.00	Completed
FMA 16-01	Elevation of 2 properties in the floodplain	\$328,516	Underway
FMA 17-01	Elevation of 1 property in the flood plain	\$168,478	Underway
FMA 18-01	Elevation of 1 property in the flood plain	\$170,380	Pending





# Other examples of how these studies and assessments have been put to work...the Harbor

## Project: “Scituate Harbor Sustainability Resiliency Master Plan”

The Community Assessment and the MVP studies (both 2018) identified Investing in the Harbor as a priority

- Important to promote commerce, events and strategies that draw people to the harbor
- Address flooding, parking, zoning and more

## Overview of Project

- Create a 25 year conceptual plan along with a strategic resiliency action plan that will include:
  - potential zoning amendments, design guidelines to guide future growth, conservation and infrastructure enhancements

## Funding: \$75,000

- \$37,500 Executive Officer of Energy and Environmental Affairs Planning Assistance Grant
- \$12,500 Economic Development Commission
- \$25,000 MAPC District Local Technical Assistance Grant and Source

## Timing: Launched in March of 2019 - Completion Date: June 2020

- Taskforce created with representatives from harbor business owners, Chamber of Commerce, Scituate Harbor Business Association, DPW, Conservation Commission, CAC and more



# AND an initiative on....Managed Retreat

- Project: “Peggotty Beach Managed Retreat Feasibility Study”
- The Coastal Erosion Study as well as the Coastal Community Assessment identified Peggotty as having the highest shoreline erosion of any developed section of Scituate
  - Retreat rates of 2-4 feet per year
  - Without a dramatic intervention, it is estimated that homes on Peggotty will be lost in the next 50 years
- Beach nourishment, dune enhancement and managed retreat were all reviewed for best possible mitigation and resiliency strategies
  - Managed Retreat was deemed the best option (town owns land for potential retreat)
  - On parallel path, several residents of the area approached the town to discuss the potential of managed retreat
- Overview of Project
  - MAPC to conduct a feasibility study to include:
    - Input from residents, town officials and other stakeholders
    - Land use analysis, environmental and projected climate impacts, permitting requirements or limitations, analysis of utilities and infrastructure needs and more
- Funding : Scituate received a MAPC \$35,000 grant for the study
- Timing: Launched in April 2019 – Report Completion date: December 2019



# North Scituate

- Project: Beach Nourishment
- North Scituate was identified as a priority in the “Coastal Erosion” study
  - Seawalls do not provide total protection
  - Beach nourishment provides the benefit of improved storm protection, provides a sediment source for adjacent shoreline and a better recreational footprint
- Overview of Project
  - Engineering plans and permits were obtained to design a beach nourishment plan to accept dredged material from the Piscataqua River in NH/Maine
  - The Army Corp of Engineers offered this opportunity as a pilot program to deliver the dredged material and build the berm (free of charge) to No. Scituate and several other towns but unfortunately, Scituate was not selected
- Funding for design and permitting: \$504,000
- \$404 from CZM grants and \$100 from Town CPA
- Current status: silver lining is, with design and permitting complete, we are “shovel ready”
  - Other grants and funding sources are aggressively being pursued to execute a beach nourishment program



# And then we have...Humarock

- Project: “Humarock Roadway Elevation, Beach and Dune Nourishment” (2018)
- The Coastal Erosion and Sediment Study identified Humarock (North) as the second top priority for action on protecting the coast
  - Coastal flooding severely impacts roads and homes
  - Many town and private resources required for “digging out”
- Overview of Project
  - Engineers were tasked to design a man-made solution to mitigate the effects of frequent flooding of Central Ave. Central Ave can experience flooding not only from the ocean, but also from the river that surrounds the east side of the avenue
  - Permits were granted to execute a plan where Central Ave would be raised, dunes constructed along Humarock North and beach nourishment would be added along the entire North and South Humarock coastline. Intent would be to better protect homeowners so that splash over and rocks would be kept from reaching Central Avenue
- Funding: \$ 380,000 (75% from Grants/25% town)
  - MA Coastal Zone Management (CZM) Grants
  - Money used for engineer designs and permitting
- Results
  - Despite many community forums and discussions (over a 3 year period ) and an active presence of supporting stakeholders from Humarock, the plan was rejected due to insufficient number of easements obtained



# Perhaps the biggest success story is the Oceanside Seawall project...

- A major study commissioned by the Town in 2015 (“Coastal Erosion and Sediment Transport”) cited OCEANSIDE as the #1 Priority in the area of foreshore protection
- Meanwhile, the town *had already begun* the development of a 4 phase Seawall Rehabilitation plan for Oceanside
- \$10,000,000 was invested in building/rehabbing the new seawall
- Let’s look at that plan and how it has unfolded...





# Project Total: \$10 Million

## PHASE 1:

4th–7th Avenue

+/- 785 LF

*\* Funded through EEA Dam,  
Levee & Seawall Repair Programs*

## PHASE 2:

7th Avenue

+/- 640 LF

11th Avenue to  
Kenneth Road

+/- 525 LF

## PHASE 3:

10th to 11th Avenue

+/- 650 LF

## PHASE 4:

Kenneth to Turner Road

+/- 660 LF

### \*NOTE:

Estimated construction costs are based upon \$6,500/LF which is consistent with the as-bid replacement cost for Phase 1 and reflects full wall replacement and increasing the top of wall to Elevation +/- 23.5 feet above Mean Low Water.







# Other Projects in the Pipeline!

- Glades and Minot Beach revetments
  - FEMA committed claims to Sandy, Juno, Nemo; currently working on Riley
  - Current design and permitting project underway for cement and revetment repairs
- Turner Road and Cedar Point
  - Turner Road – RFP to go out for design and permitting
  - Cedar Point – Feasibility study funded, waiting for Army Corps of Engineers to act
  - DPW/Engineering Dept. has been supplying Corps with Existing Conditions and As Built records, funding via DPW budget

## The Cliffs 1, 2, 3

- Damages to all the Cliffs have been documented; currently being designed for Permitting and Construction
  - Size of project based on estimated construction cost
  - Consultant has been hired to create cost estimates and proposed remedies for repairs and reconstruction
  - An environmental assessment is required before moving forward; cost estimate being prepared for EA and is underway
  - FEMA funding committed
- Fourth Cliff
    - A proposal has been developed for stabilization by the Air Force
    - Air Force responsible for plan and execution
    - Draft EA prepared; no time frame yet for construction



# New News!...“Cobble Berm Reconstruction”

- Project: “Egypt –Mann Hill Beach Cobble Berm Reconstruction”
- Background on project
  - Due to extensive storm damage from NEMO (Feb 2013) and RILEY (March 2018), homes, septic systems and a critical municipal pump station were either at risk, compromised or damaged along the Egypt Beach-Mann Hill coastline
  - This area is a barrier beach and is critical to maintain
  - Based on documented loss in cobble berm volume, the town applied for and received FEMA grant funding for design and construction improvements to pre-disaster conditions
- Overview of Project
  - Restore the cobble berm to the 1979 as-built condition
  - An NOI has been filed and permitting is underway to begin project in Fall of 2019
  - Coastline scope is 91 Surfside Road to 79 Seaside Road
- Funding: FEMA Projected cost: \$1.3 MM
  - permits, engineering and construction
- Timing: Initiated 2018 – BIDS to be advertised August 2019 – Project completion, Dec. 2021



# New News! Storm Tide Pathways

- Project: Mapping Storm Tide Pathways in Scituate and Cohasset: Assessing Coastal Vulnerability to Storms and Sea Level Rise Nourishment
- Overview of Project
  - Project based on successful models done in Truro, Nantucket and Provincetown.
  - Will Identify storm tide pathways and develop associated maps and GIS data
  - Detailed analysis, high-resolution, three-dimensional spatial datasets will be created to map storm tide pathways for current and future storm surge events and sea level rise scenarios
  - Real-time, internet-based maps will be integrated with the National Weather Station “Coastal Flood Threat and Inundation” mapping website.
- Desired Outcomes
  - website to be used to forecast storm events to prepare and implement flood prevention strategies
  - NWS’s storm surge predictions married with the accurate locations of storm tide pathways will facilitate both short term emergency planning efforts and long term planning for infrastructure improvements.
  - the STP information will provide direct access/ real time information for town officials, emergency managers, and the public about approaching storms and potential future storms
- Funding for project: \$152,699
  - Funding source: \$112,668.28 (EOEEA) and Municipal Match: \$40,031 26,220 for Scituate, in kind? etc
- Current status: Grant recently approved!
- Timing: July 2019 – June 2020 complete





# New News! Community-Led 50-year Coastal Vision and Near-Term Adaptive Strategy (Applied)

- The Community Assessment report led by CBI as well as the Coastal Erosion study identified the need to develop a long-term, cohesive vision for the coast
- Project Overview
  - This project aims to create a 50-year, community-led vision for the town of Scituate and a near-term, 10-year action strategy
  - This proposal was born out of the Town's commitment to leading a comprehensive plan for coastal resilience with partners from both the technical and analytic side (Applied Coastal) and the community engagement and collaborative side (CBI)
    - Planning Director, Coastal Management officer, other town officials, business and civic leaders, coastal and non-coastal citizens, and an attorney with coastal legal and regulatory expertise will round out the team
  - The plan will include community workshops for communicating goals and gaining input, an on-line portal to keep people informed and other social media and engagement applications
- Funding status : Grant proposal is PENDING approval
  - Grant application filed on June 3, 2019 (to CZM)
  - Request: \$203,820 with town match of \$67,976
- Timing: September 2019 – May 2020



# Emergency Management – A Critical Foundation for any Coastal Community

- All the studies, reports and filings agree that continuous updates to emergency management protocols is essential and mandatory!
- Scituate has been in the forefront of providing safety and emergency procedures
- Building strong, cooperative relationships with MEMA and utility companies is a key part of the process
  - Power grid shut-offs installed by zones and moved to safer areas away from potential flooding
  - Gas flow limiters installed to reduce potential damage from escaped gas, improved safety for responders and improved recovery and restoration time
- Continuous improvements include:
  - Evacuation protocols
  - Website improvements to provide emergency information to citizens
  - New electronic signboard for updates
  - New sandbag machine
  - New 1600 GPM de-watering pump
- Now, let's look at some of these...





# Our State of the Art Sandbag Machine...



Fills the Sandbags



Transports the Sandbags



Securely closes the Sandbags



Places the Sandbags



# Our Dewatering Pump

- Can pump 1600 GPM
- Used for pumping
- Low lying neighborhoods that don't properly drain





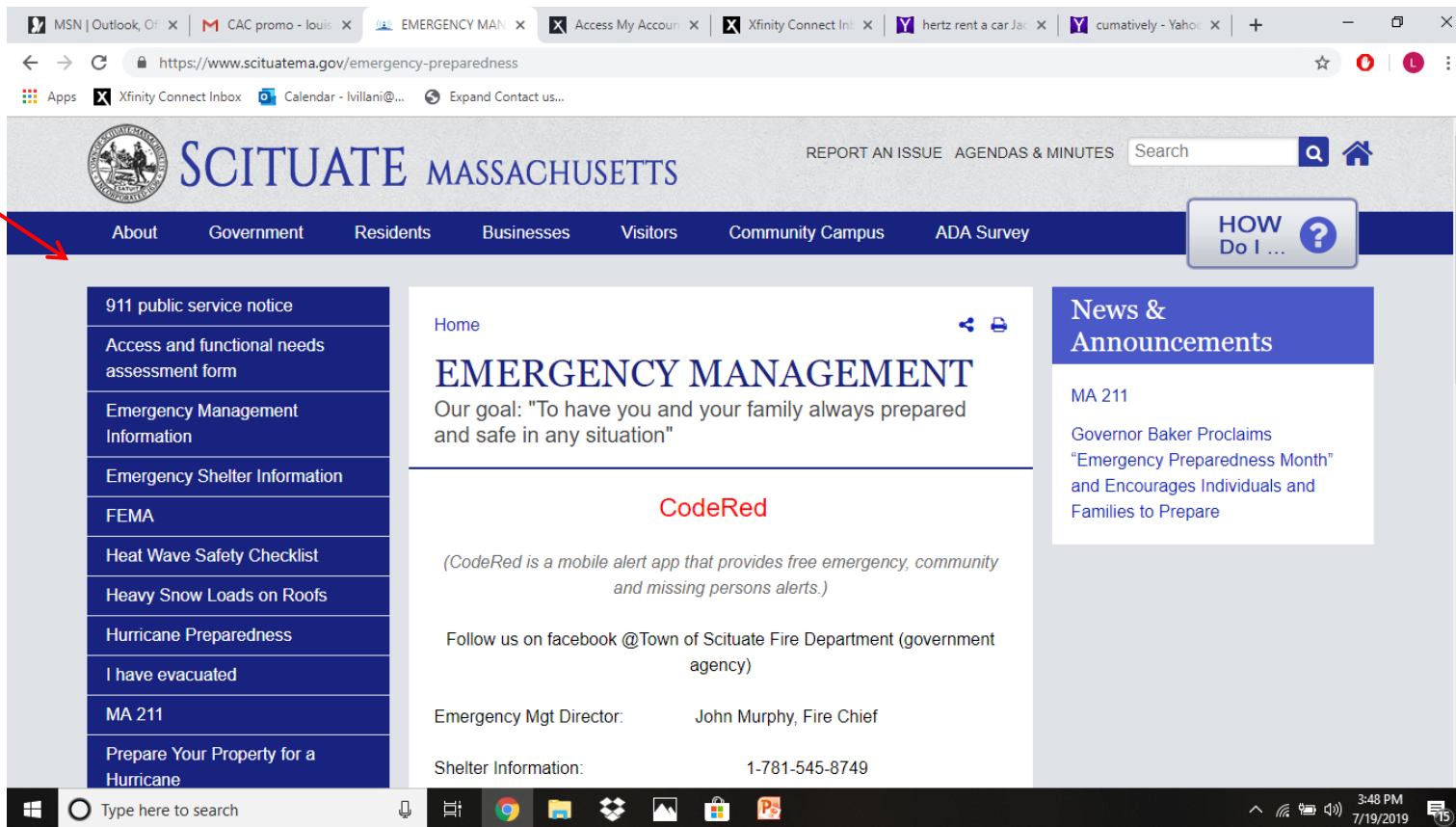
# Our Webpage: [www.scituatema.gov](http://www.scituatema.gov)

## Emergency Preparedness

The screenshot shows the Scituate Massachusetts website. The header includes the town seal, the name "SCITUATE MASSACHUSETTS", and links for "REPORT AN ISSUE" and "AGENDAS & MINUTES". A search bar is also present. The main navigation bar lists: About, Government, Residents, Businesses, Visitors, Community Campus, ADA Survey, and a "HOW Do I ... ?" button. A red arrow points to this button. Below the navigation bar is a large aerial photograph of the town. At the bottom of the page, there are several quick tabs: "Public Records Request", "Calendar", "Social Media", and "Most Requested Pages". Below these are sections for "Town News", "July", and "Upcoming Events". The footer shows the URL "https://www.scituatema.gov/#tabs-custom\_home\_page\_quicktabs-content-1" and a Windows taskbar with the time "7:58 PM 7/19/2019".



# Our webpage has a wealth of information to “Be Prepared”



MSN | Outlook, C... | CAC promo - lous... | EMERGENCY MAN... | Access My Account... | Xfinity Connect In... | hertz rent a car Ja... | cumulatively - Yahoo... | + - [Icons]

https://www.scituatema.gov/emergency-preparedness

Apps Xfinity Connect Inbox Calendar - Ivillani@... Expand Contact us...

**SCITUATE MASSACHUSETTS** REPORT AN ISSUE AGENDAS & MINUTES Search [Icon] [Icon]

About Government Residents Businesses Visitors Community Campus ADA Survey **HOW Do I ... ?**

911 public service notice  
Access and functional needs assessment form  
Emergency Management Information  
Emergency Shelter Information  
FEMA  
Heat Wave Safety Checklist  
Heavy Snow Loads on Roofs  
Hurricane Preparedness  
I have evacuated  
MA 211  
Prepare Your Property for a Hurricane

Home

## EMERGENCY MANAGEMENT

Our goal: "To have you and your family always prepared and safe in any situation"

### CodeRed

(CodeRed is a mobile alert app that provides free emergency, community and missing persons alerts.)

Follow us on facebook @Town of Scituate Fire Department (government agency)

Emergency Mgt Director: John Murphy, Fire Chief

Shelter Information: 1-781-545-8749

### News & Announcements

MA 211

Governor Baker Proclaims "Emergency Preparedness Month" and Encourages Individuals and Families to Prepare

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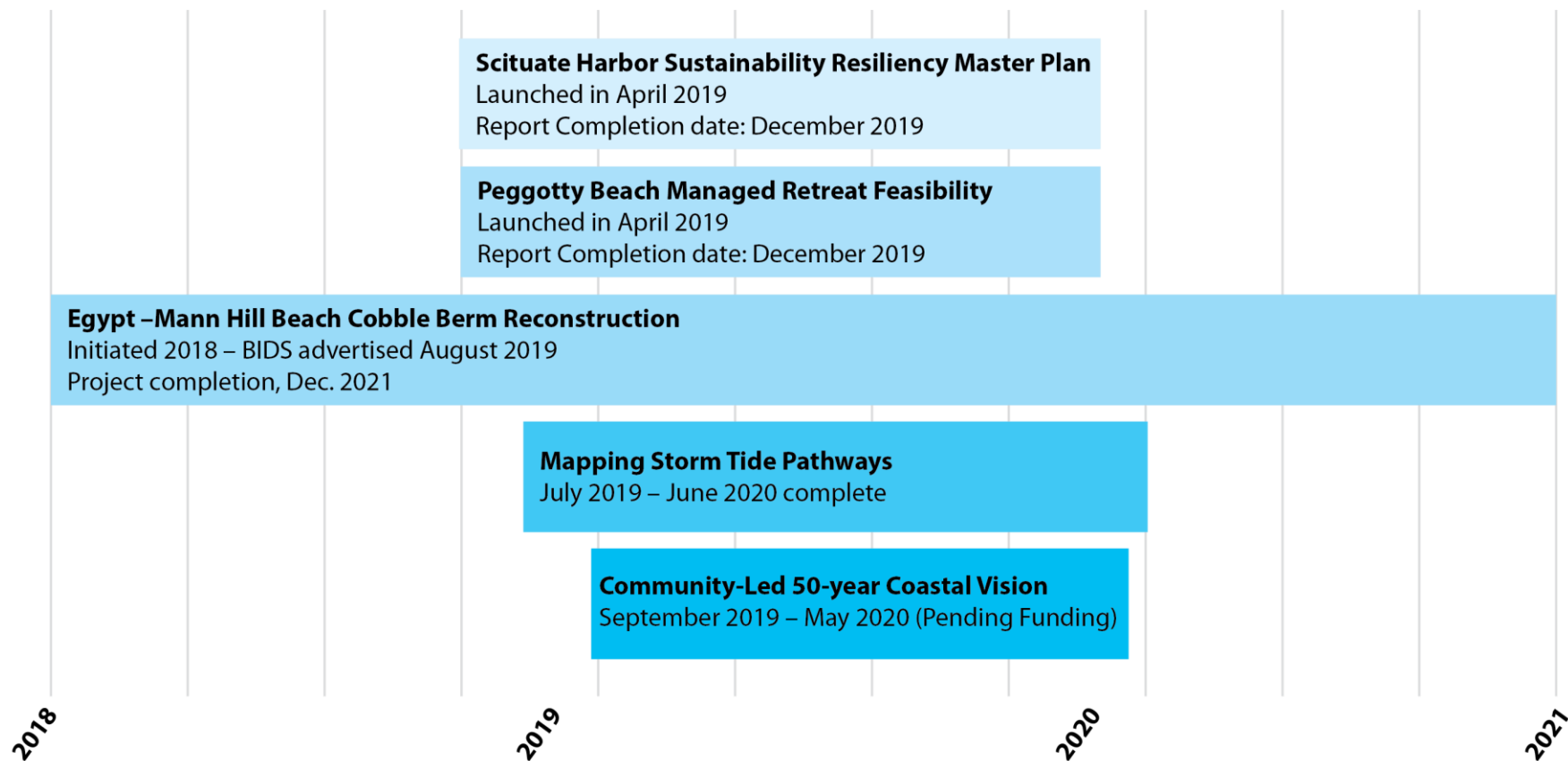


# Emergency Management – Evacuations and Cooperation

- Complacency or fixed responses can lead to trouble
  - “it’s never flooded here before”; “it’s just a tropical storm”; “I’m elevated and out of harms way”; “I’m not on the coast so I am safe”; “the storm’s track looks like I am clear”; “just a category 1” (Cat 1 had 175 fatalities and \$103 billion in damages in this past decade);
  - “it’s only wind” (yet storm surge and rainfall are more deadly)
- There are often indirect casualties based on
  - Loss of electricity
  - Cardiovascular events during attempted evacuation
  - Car accidents in evacuating (waiting too long to go)
- What we recommend and how to get help!
  - Review our protocols on the Emergency Management page
  - Pre-plan for evacuation, use a checklist ... timing is everything!



# Work in Process



*\*Map not to scale.*





# Staying in touch, Next Steps and Q & A

- CAC meetings are posted on <https://www.scituatema.gov/coastal-advisory-commission>
- With the help of the Coastal Coalition, we have reached out to folks from various beach associations and the harbor business sector to review their concerns and priorities with us – this will continue
- We will begin each meeting with an open forum for citizens to identify coastal concerns
- Q & A
- Final act: Tell us what you would like future forums to focus on. What didn't you hear tonight that is of interest? What do you see as the most compelling coastal issues for the town?

