

Vinalhaven Sea Level Rise

from understanding to action

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The Beaches Conference 2019



Motivation for Change



Coastal Flooding

How often is too often?

Vulnerable areas show increased frequency of flooding

Presents EM challenges



Capital Improvements

How do we adapt to meet our needs 20-30 years from now?

Raising sidewalks

Improving drainage, sewer & water



FEMA Flood Maps

Should we consider map changes?

Flood insurance premiums for VE zones spell trouble for property owners

Understanding & Assessing the Problem

Select Board appoints SLR Committee to understand, assess, educate inform

DART Design & Resiliency envisioning a resilient downtown



Downtown Master Plan adaptation & mitigation through zoning, capital improvements land use ordinances

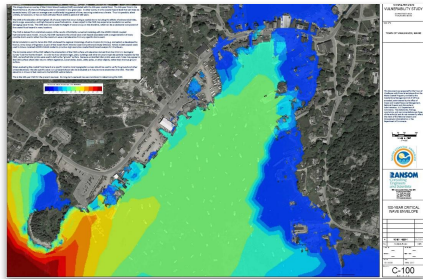
Next Steps investigate options educate, inform engage prioritize & plan fund, act implement

2017

2017–2018

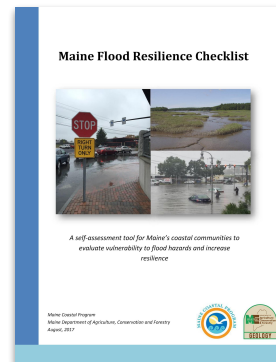
2018–2019

2020+



Ransom Engineering Study recommending: assessing adaptation feasibility

Sewer Climate Adaptation Plan protecting critical infrastructure from inundation



Maine Flood Resilience Checklist flood risk preparedness assessing vulnerabilities strategies for increasing resilience

Maine Flood Resilience Checklist

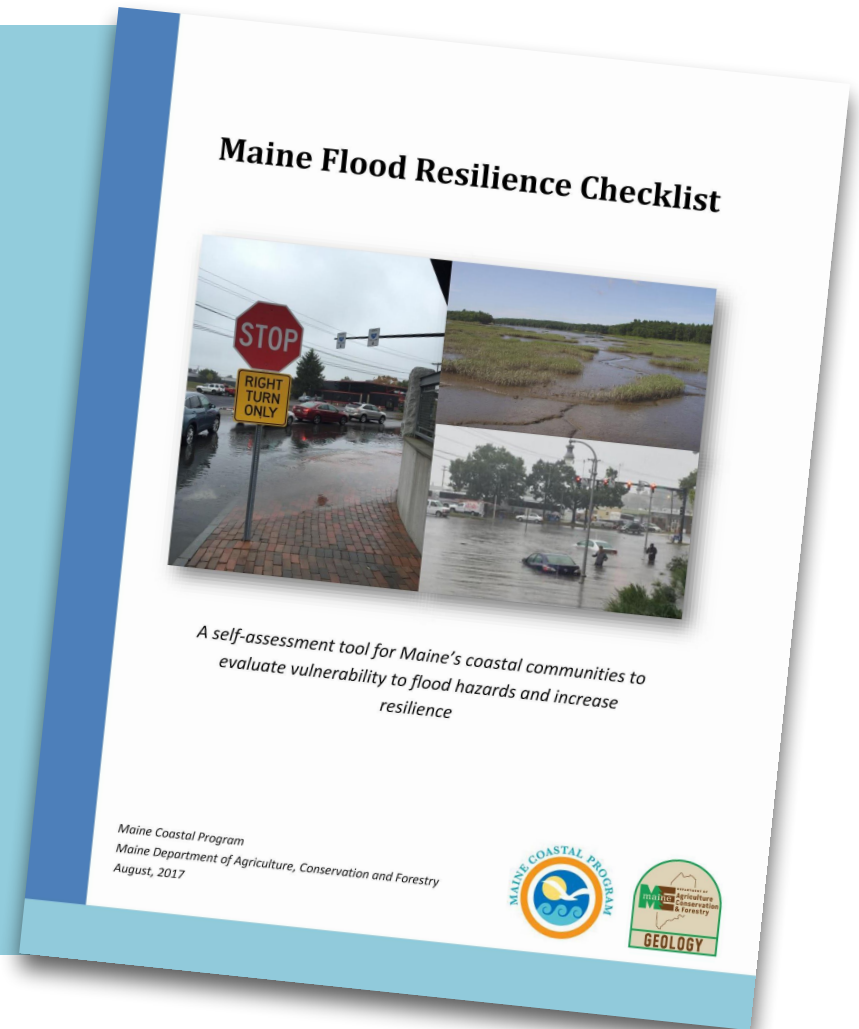


What is the MFRC?

- Self-assessment tool for Maine communities
- Helps towns prepare for, respond to, and recover from flooding events

How are Checklist results used?

- Helps communities incorporate coastal flooding considerations into
 - Ordinances
 - Comprehensive plans
 - Capital improvement plans
 - Other town plans



Maine Flood Resilience Checklist



How does it work?

Series of yes/no questions organized into five main sections



Risk and Vulnerability



Critical Infrastructure and Facilities



Community Planning



Social and Economic Vulnerability



Natural Environment

Community Planning				Yes	No	N/A	Notes
1	Does your community have a shared vision of 'community resilience'?						
2	Does your community have plans that address the following?						
	• Coastal and nuisance flooding						
	• Storm surge						
	• Sea level rise						
	• Coastal erosion and/or shoreline change						
	• Adaptation and mitigation strategies and actions addressing coastal hazards						
	• Community resilience and specific strategies and actions to increase resilience						
	• Open space preservation and management						
	• Beach management						
	• Floodplain management						
3	Does your community have the following personnel on staff or on retainer?						
	• Professional planner						
	• Code enforcement officer						
	• Certified Floodplain Manager (CFM®)						
	• Building Inspector						
	• Engineer						
	• Planner						
Critical Infrastructure and Facilities				Yes	No	N/A	Notes
4	Does your community have a detailed inventory, including elevations, of the following critical facilities and infrastructure that includes information about the location of assets in relation to (a) existing and (b) potential future flood hazard areas?	a	b	a	b		
	• Wastewater treatment and transport system (plant, pipes, and pump stations)						
	• Stormwater system						
	• Water treatment and transport system (plant, pipes, and pump stations) and drinking water wells						
	• Power grid (substations)						
	• Energy network (oil, natural gas, etc.)						
	• Public roads						
	• Evacuation routes						
	• Culverts						
	• Bridges						
	• Dams						
	• Piers or wharves						
	• Railway infrastructure						
	• Town/City Hall						
	• Critical record storage building(s)						
	• Police station(s)						
	• Fire station(s)						
	• Public works facilities						
Risk and Vulnerability				Yes	No	N/A	Notes
	• Critical infrastructure						
	• Coastal properties (public and private)						
	• Society and the economy (local population, historical and cultural resources, downtown areas, business districts, tourism areas, etc.)						
	• Natural Environment						
8	Does your community (a) conduct assessments and evaluations of local flood hazards and associated risks and, if so, (b) is that information shared with the following relevant individuals, groups, and programs?	a	b	a	b		
	• Planning staff						
	• Code enforcement						
	• Public works						
	• Emergency managers and first responders						
	• Elected officials						
	• Municipal budget personnel						
	• Chamber of Commerce / business community						
	• Municipal commissions						
	• Community members						
	• Regional Planning Organization						
	• State programs and agencies (MPAP, MFMP, MGS, MEMA)						
9	(a) Are coastal storm and flood hazard frequencies and durations established for your community? and (b) has your community determined what an acceptable level of risk is with respect to those hazards?	a	b	a	b		
10	Does your community have working relationships with technical resources such as government programs, universities, or professionals that provide assistance with flood hazards, risk, vulnerability, and resiliency?						

Is Vinalhaven Prepared
for Coastal Flooding?

Maine Flood Resilience Checklist

helps determine: our local flood risk; how vulnerable our natural, built, and social environments are to flooding; and opportunities to enhance flood resilience



What is the Maine Flood Resilience Checklist?
The Checklist is a self-assessment tool for Maine communities designed to help towns prepare for, respond to, and recover from flooding events

How does it work?

The Checklist is comprised of a series of yes/no questions organized into five main sections: Risk and Vulnerability; Critical Infrastructure and Facilities; Community Planning; Social and Economic Vulnerability; and Natural Environment

Participants come together in a workshop setting to answer Checklist questions and discuss local flood vulnerability, how well existing plans, policies, and actions address flood hazards, and ways to enhance resilience.

Who is involved?

Select Board, Town Manager, CEO, Fire and EMS Directors, Public Works Director, Public Utility Reps, Town Planning Staff, Harbormaster, Public Safety Officer, VLT Rep, Chamber of Commerce Rep, and Key Residents

How are the results of the Checklist used?

The Checklist can help communities incorporate coastal flooding considerations into ordinances, comprehensive plans, capital improvement plans, and other town plans.



A Maine Flood Resilience Checklist Workshop on Vinalhaven is being organized by the Vinalhaven Sea Level Rise Committee (SLRC)

What does the SLRC do?

The Vinalhaven Sea Level Rise Committee is a town-appointed and directed group of Vinalhaven residents working to assess, understand the threats posed by the combination of sea level rise, storm surge, and other flooding events, and inform the Vinalhaven community about actions necessary to become more resilient.

Who are SLRC members?

Andy Dorr, Emily Cohn, Phil Crossman, Marian Grogan, Geno Lazaro, Linnell Mather, Margaret Qualey, Yvonne Thomas

WE NEED YOU!

Your Input is critical! What you know can help create a flood-ready Vinalhaven. Please join us for a Vinalhaven Flood Resilience Checklist Workshop, Saturday, October 20, Union Church Meals, Snacks, and Coffee provided

Maine Flood Resilience Checklist WORKSHOP

Saturday, October 20, 9-4pm

Answer Checklist questions

Discuss...

- local flood vulnerability
- how well existing plans, policies, and actions address flood hazards
- ways to enhance resilience

Maine Flood Resilience Checklist **WORKSHOP**



22 Participants

3 Facilitators

MDRPC

SMPDC

Knox Co. EMA

Island Institute

MCHT

Select Board

Town Manager

CEO

Fire and EMS Directors

Public Works Director

Public Utility Reps

Town Planning Staff

Harbormaster

Public Safety Officer

VL

VHCC

Key Residents

Maine Flood Resilience Checklist

WORKSHOP PROCESS

Reviewed
Maps

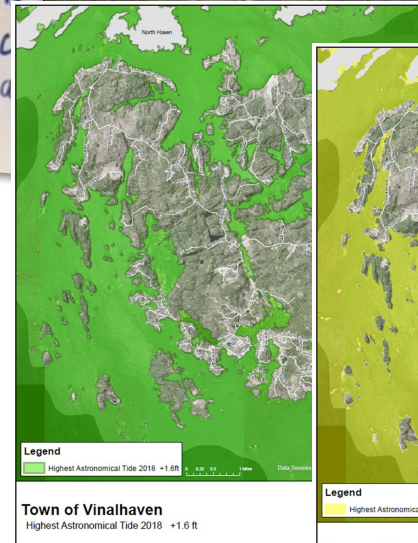
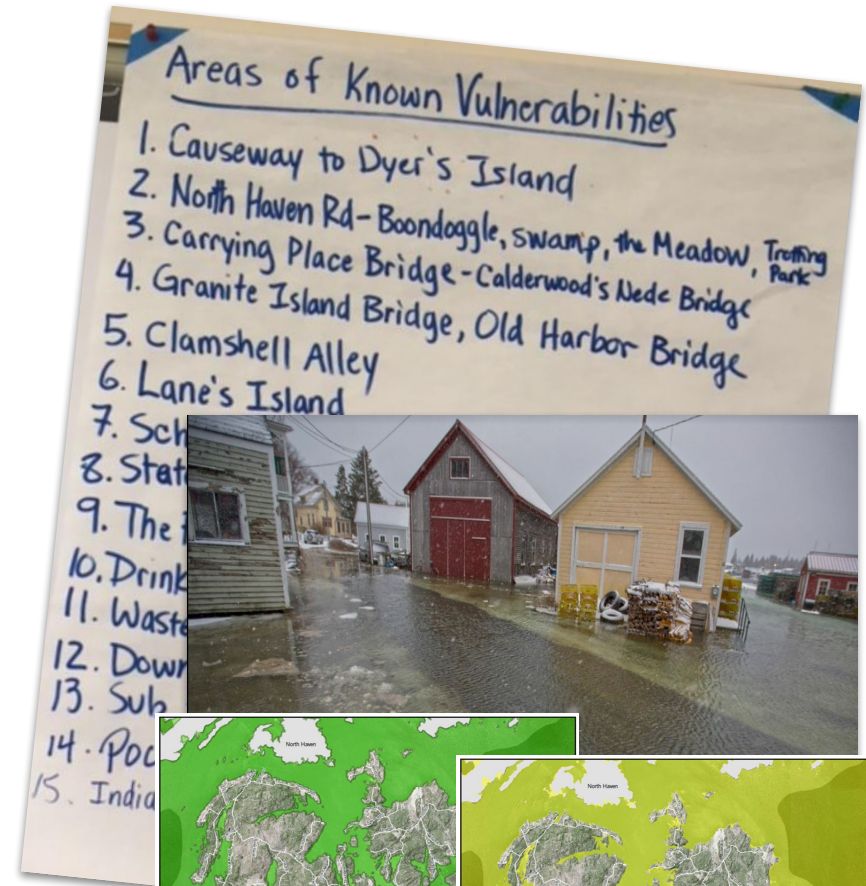
100-yr storm
SLR: 1, 3.3, & 6 ft
Storm surge – Cat. 2

Facilitated
Discussion

Vulnerabilities
Checklist questions

Action Items

Participants' and
facilitators'
recommendations



Checklist RECOMMENDATIONS

Maine Flood Resilience Checklist

August, 2017

* Ferry service is extreme concern, but no local control b/c MEDOT is in charge & doesn't talk w/ Vinalhaven re. risk or plans for future.

Critical Infrastructure and Facilities		Yes	No	N/A	Notes
	marina, commercial dock, etc.)				
	• Gas and diesel tanks at marinas/working waterfronts	✓	✓		
2	Do the following critical infrastructure and facilities experience problems associated with flooding?				
	• Wastewater treatment and transport system (plant, pipes, and pump stations)		✓		
	• Stormwater system	✓			
	• Water treatment and transport system (plant, pipes, and pump stations) and drinking water wells		✓		
	• Power grid (substations)	✓			one exp. w/ Vaultran North Haven frozen buses, pipe problem in town & would caught fire
	• Energy network (oil, natural gas, etc.)				
	• Public roads	✓			
	• Evacuation routes	✓			
	• Culverts	✓			
	• Bridges	✓			approaches to bridges
	• Dams		✓		
	• Piers or wharves	✓			
	• Railway infrastructure			✓	
	• Facility of regional or local significance (e.g., harbor, marina, commercial dock, etc.)	✓			parking lot, Ferry
	• Gas and diesel tanks at marinas/working waterfronts	✓	✓		at working waterfront, but no problems yet
3	(a) Are maps or GIS used to show the location and accessibility of critical infrastructure and facilities in relation to flood hazard areas ⁴ and (b) is that information publicly available?	a	b	a	b
		✓	✓	✓	✓
4	Are there plans and backup systems in place for critical infrastructure and facilities to ensure continuation of function and services during and after flood hazard events?				
			~		Some "if-then" plans (eg. backup comm center, staging of ambulances), but need improved plans
5	Has your community assessed or considered the amount of time that would be needed to return damaged infrastructure and facilities to a functional condition post-hazard event?			✓	
					but more MORE (Emgr has done just a lot for preparation, just not all formally documented)
6	(a) Do critical infrastructure and facilities' maintenance plans and budgets account for adaptation/mitigation actions and (b) post-	a	b	a	b
		✓	✓	✓	✓
					- moving DW building further out of downtown fixed with a part of that decision

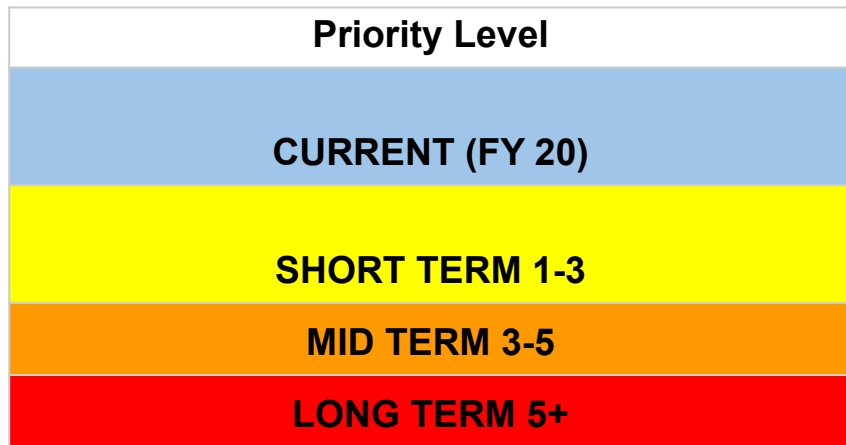
⁴ Flood hazard areas include those designated as the 100-year floodplain depicted on your community's Flood Insurance Rate Map (FIRM) and those mapped as subject to inundation from storm surge and sea level rise.

50 Recommendations 8 Categories

1. Education, Outreach, Document Local Knowledge
2. Conduct Studies
3. Gather Data
4. Voluntary Adaptation
5. Municipal Funding
6. Policies/Protocols
7. Resiliency Planning
8. Partnerships

Post-Workshop ACTIONS

- Categorized and prioritized recommendations
- Begin Site Specific Data for Vulnerable Locations
- Prepare Plan of Work for FY 20
- Present Plan to Select Board for approval



Some EXAMPLES...

CURRENT (FY 20)

1. Education, Outreach, Document Local Knowledge

Document local and departmental knowledge about flood hazard information including vulnerabilities, impacts, and response.

SHORT TERM 1-3

2. Conduct Studies

Conduct a study to better understand how increased stormwater from more intense and frequent precipitation events will interact with storm surge and sea level rise and the resulting flooding impacts.

MID TERM 3-5

6. Policies/Protocols

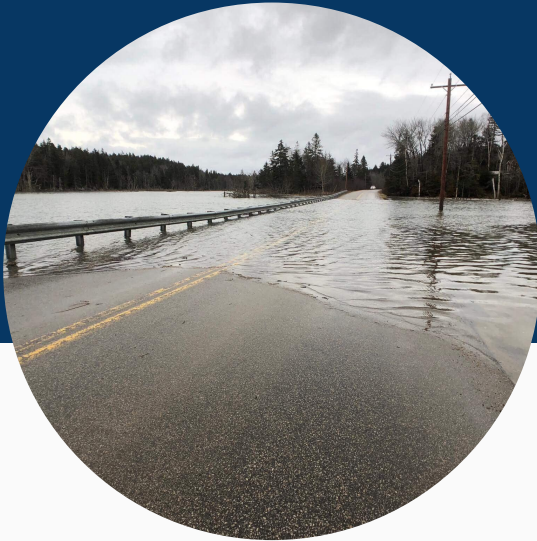
Develop recommendations for adaptation/protection, relocation, and/or abandonment of Town-owned critical infrastructure and facilities located in flood hazard areas and investigate funding options.

SHORT TERM 1-3

7. Resiliency Planning

Incorporate sea level rise and other coastal hazards into the Town's Comprehensive Plan.

What's Next? Building Community Resilience



Checklist Actions

- Build resiliency into planning
- Develop hazard mitigation plan
- Formalize EM plans
- Join FEMA's Community Rating System (CRS)



Community Engagement

- Outreach & education
- Inform & consult
- Citizen science engagement
- Strengthen and build partnerships



Funding

- Seek funding opportunities
- Grants & loans
- Community grant / low-interest loan program for adaptation implementation

Our Vision Resilient Vinalhaven

Assess Economic Impact & Feasibility of Options

Economic impact study

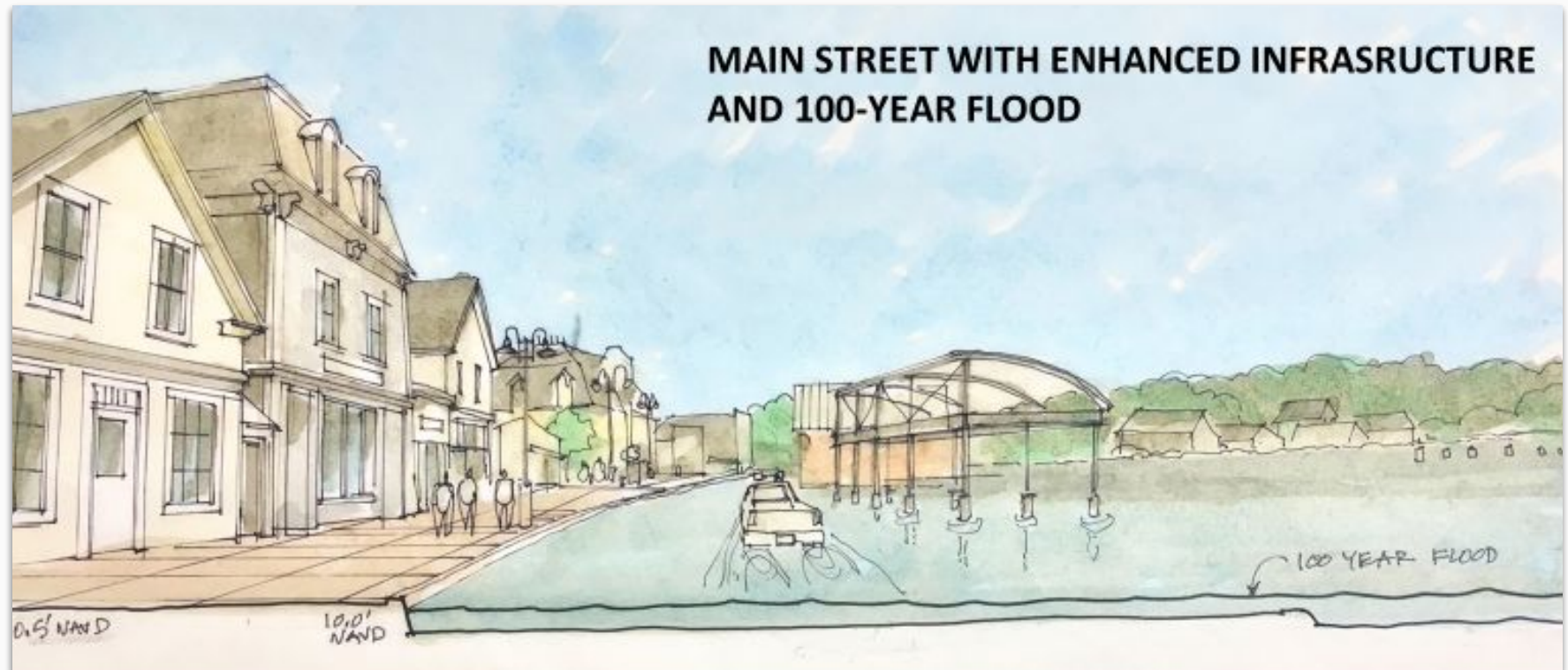
Cost benefit analysis of options



Planning & Implementation

Adaptation?

Relocation?



Thank You

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VH SLR Members and Support Staff
Emily Cohn, Phil Crossman, Marian Grogan, Linnell Mather,
Gabe McPhail, Margaret Qualey, Yvonne Thomas

