



# Hull Climate Adaptation Roadmap: Alternatives Analysis for the Hampton Circle Area (HCA)

Public Workshop #1 | December 7, 2022

# Funded by:

**Municipal Vulnerability Preparedness (MVP)  
Program and Town of Hull Sewer Department**

**Executive Office of Energy and  
Environmental Affairs**



**MVP**

Municipal Vulnerability  
Preparedness

Weston & Sampson<sup>SM</sup>



# TEAM INTRODUCTIONS



## Town of Hull Team

---



**Chris Krahforst**  
Director of Climate Adaptation and Conservation



**John Struzziery**  
Director of Wastewater Operations  
Deputy Director of Public Works

## EEA MVP Coordinator

---



**Courtney Rocha**  
Southeast Regional Coordinator

## Weston & Sampson Team

---

Resilient Planning, Design, Assessment,  
and Engagement Support



**Bella Purdy Tisel**  
Project Manager



**Joanna Nadeau**  
Community Engagement Lead



**Robin Seidel**  
Technical Lead



**Emily Judson**  
Climate Resilient Designer

# WHY ARE WE HERE TONIGHT



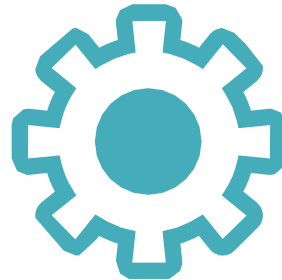
To Present Flood Data



To Ask and Answer Questions



Better Understand Feasibility of Adaptation Options



Community Connection



Collect Feedback



**A Climate Adaptation Roadmap for the Future of Hampton Circle Area**

# AGENDA



- 1** Project Introduction
- 2** Overview of Potential Flood Impacts
- 3** Break-out Session: *Your Flood Experiences*
- 4** What Can the Future Be Like? *Adaptation Options*
- 5** Break-out Session: *Adaptation Options*
- 6** Reflections and Next Steps

# DISCOVERY EXERCISE

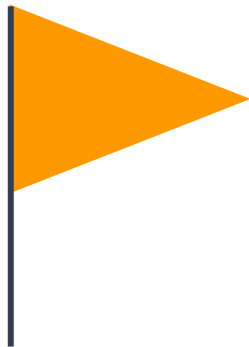


You received three paper “flags” when you came in. Use these flags to indicate your answer to the following questions.

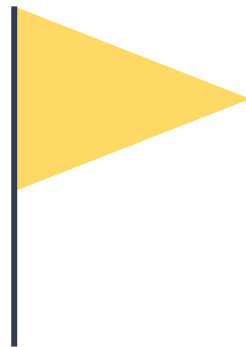
1

**I am worried about flooding or storm events that may be experienced in the future.**

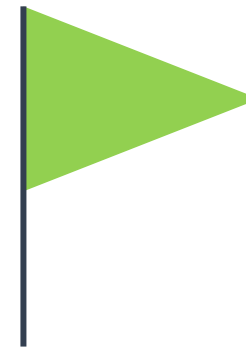
Very Concerned



A Little Concerned



Not Concerned



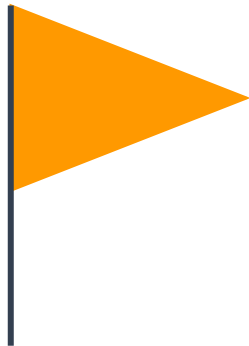
# DISCOVERY EXERCISE



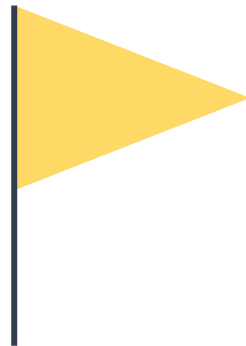
2

**I have experienced flood impacts on my property or home.**

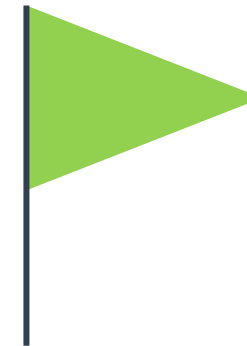
Yes, Significant Impacts



Some Impacts



No Impacts



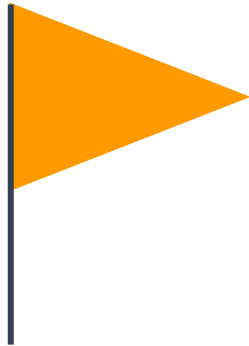
# DISCOVERY EXERCISE



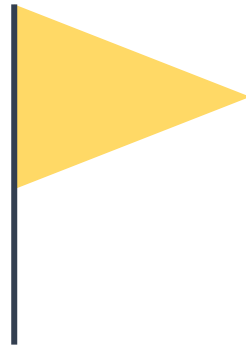
3

**I am hopeful that this effort can help us prepare for flooding by mitigating flood impacts or adapting to them.**

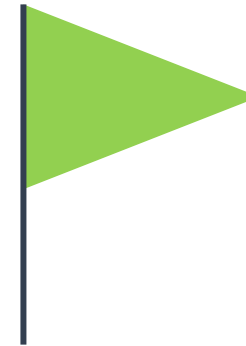
Not Hopeful



Neutral



Hopeful





# WHY A CLIMATE ADAPTATION ROADMAP?



- Past flood events have impacted the neighborhood
- Future flood projections indicate high vulnerability for this area
- “Everyday flooding” due to tides is likely

## What

A roadmap that is not a single option but a set of adaptation alternatives for the community to explore together



January 28, 2022 Event





# Project Area

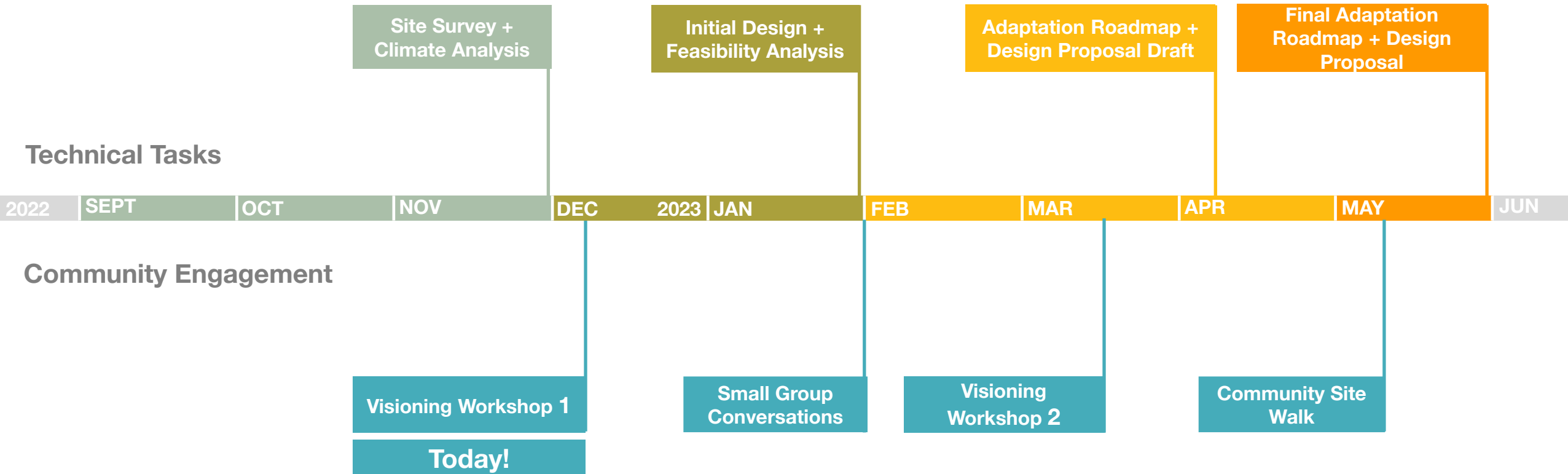
Design Area

Study Area





# PROJECT SCOPE AND TIMELINE



# **Overview of Potential Flood Impacts and Probability**

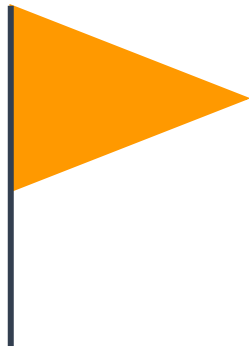
# WHAT CAUSES FLOODING?



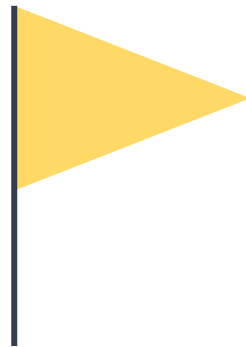
1

**Flooding can be caused due to many reasons including tides, sea level rise, storm surge, or rain events.**

False



Not Sure



True





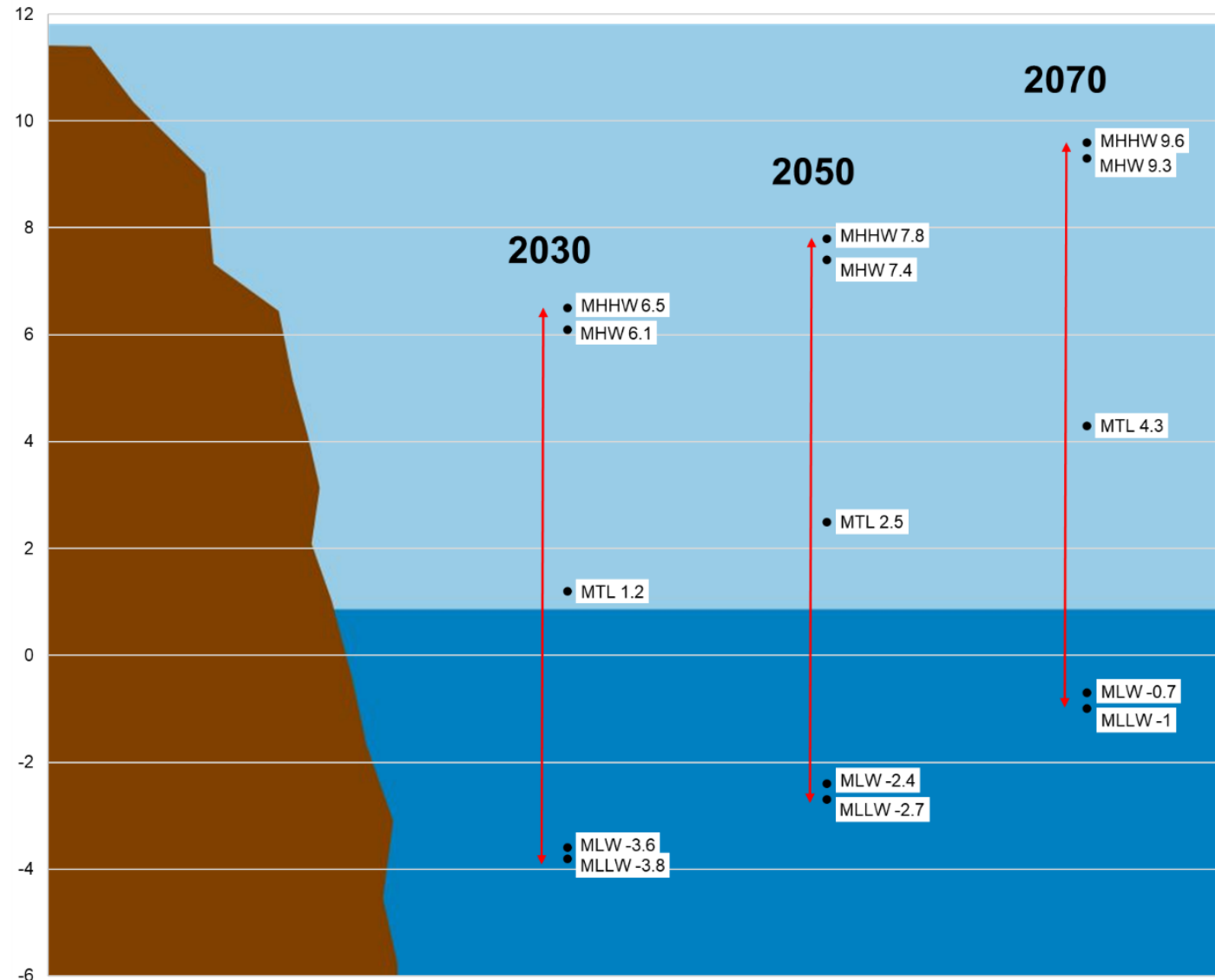
# TIDES CHANGE THROUGHOUT THE DAY



Tides will continue to increase in height due to sea level rise and potentially cause everyday flooding.

A tidal datum is determined from the arithmetic mean of the high-water heights observed each tidal day.

In the future, high tides can cause regular flooding.



# WHAT DOES TIDAL FLOODING LOOK LIKE TODAY - 2030?



Photos are of Marginal Road by the Pump Station and by seawall.






# Extent of Flooding from Daily Tides

Year 2050



Source: Massachusetts Coastal Flood Risk Model (MC-FRM)

**Legend**  
2050 MHW  
 Extent of Flooding

**FIGURE**  
**TOWN OF HULL, MASSACHUSETTS**  
**FY23 MVP Action Grant - Hampton Circle Area**  
  
2050, DEPTH OF FLOODING  
OCTOBER, 2022 SCALE: NOTED



# WHAT COULD 1 FT OF TIDAL FLOODING LOOK LIKE IN 2050?

Photo is of Moreland Avenue



1 FT







# Extent of Flooding from Daily Tides

Year 2070



Source: Massachusetts Coastal Flood Risk Model (MC-FRM)

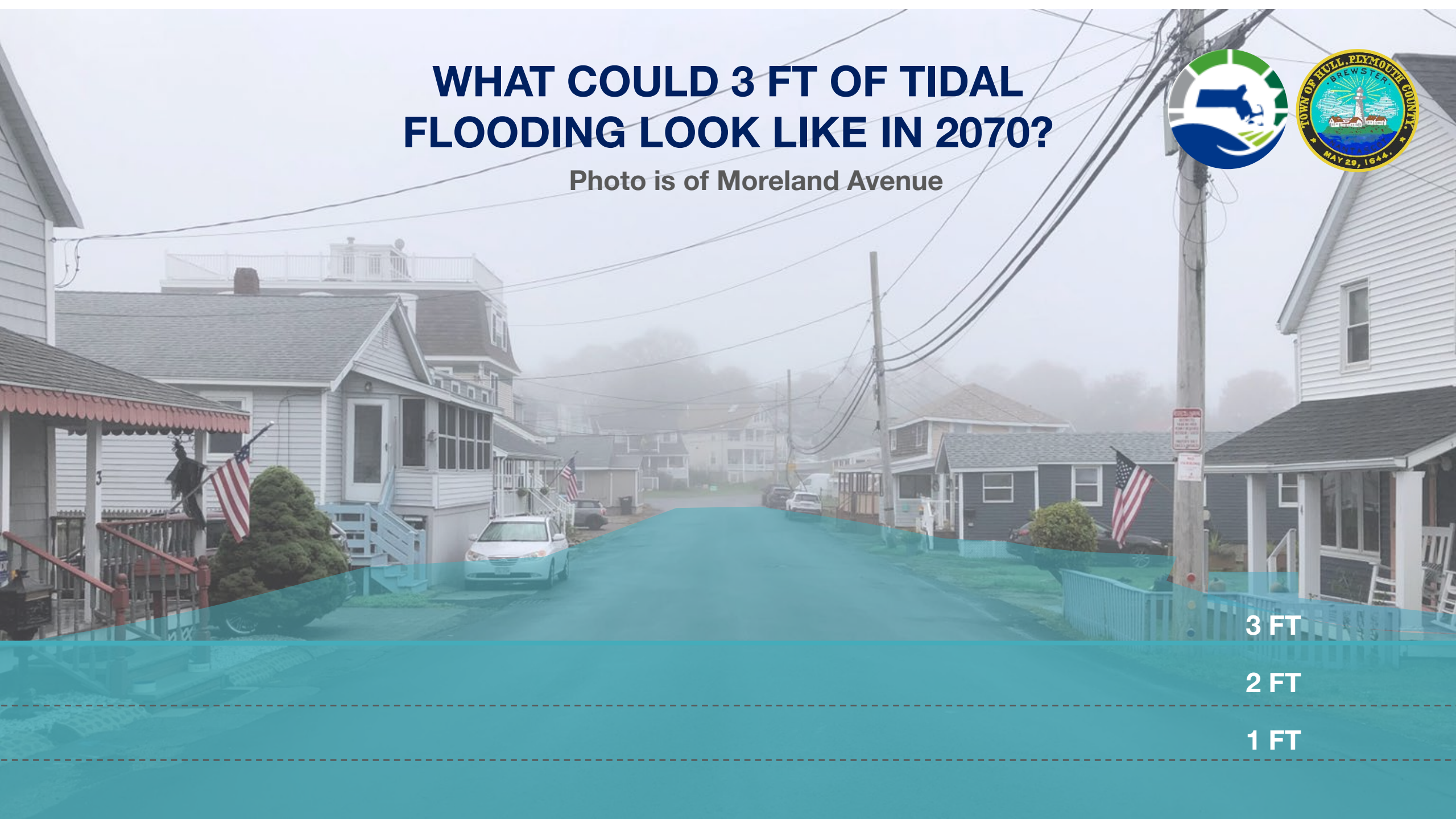
**Legend**  
2070 MHW  
 Extent of Flooding

|   |              |
|---|--------------|
| <b>FIGURE</b>   |              |
| TOWN OF HULL, MASSACHUSETTS<br>FY23 MVP Action Grant - Hampton Circle Area            |              |
| 2070, EXTENT OF FLOODING  |              |
| NOVEMBER 2022   | SCALE: NOTED |
|  |              |



# WHAT COULD 3 FT OF TIDAL FLOODING LOOK LIKE IN 2070?

Photo is of Moreland Avenue



3 FT

2 FT

1 FT





# Hampton Circle Flood Probability

Year 2030

**Legend**

Annual Percent Probability of Flooding

- Dry
- 0.1%
- 0.2%
- 0.5%
- 1%
- 2%
- 5%
- 10%
- 20%
- 25%
- 30%
- 50%
- 100%



**FIGURE**

TOWN OF HULL, MASSACHUSETTS  
FY23 MVP Action Grant - Hampton Circle Area

**2030**  
**ANNUAL PERCENT PROBABILITY**  
**OF FLOODING**

OCTOBER, 2022 SCALE: NOTED

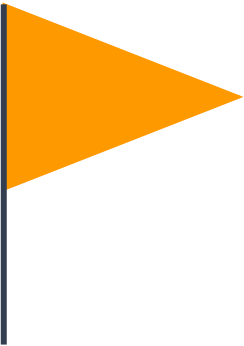
# HOW DO YOU FEEL ABOUT WHAT YOU HEARD?



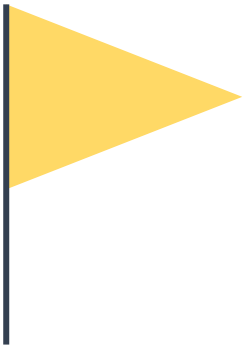
2

How do you feel about the flood vulnerability information shared?

Overwhelmed



Okay, some concerns



Good



# **Breakout Session: Your Flood Experiences**

*Use the map at your table to note  
flood or weather impacts you have  
experienced at your home or property*

# **Exploring Potential Adaptation Options for the Future**



# OPTIONS FOR FLOOD ADAPTATION

## Considerations



*Implementation of Options is dependent on:*

1. Interest from the community.
2. Ability of the Town to secure funding to implement the adaptation option.
3. Feasibility of successfully implementing the adaptation strategy.
4. The effect of the strategy on reducing flood impacts.

# OPTIONS FOR FLOOD ADAPTATION

## Home Elevations



# OPTIONS FOR FLOOD ADAPTATION

## Home Elevations



### Town Role

The 2022 Home Elevation Grant Program is administered by the Town of Hull through a multi-department committee of Town staff. Its purpose is to assist eligible residents raise their homes in the 100-year floodplain so the risk for flooding is reduced. Funding is from FEMA Pre-Disaster Mitigation Program.

### Resident Role

- Residents must apply for Town support.

### Potential Benefits

- Home elevation will potentially reduce damages to structure due to tidal or storm surge flooding.

### Potential Trade-offs

- Stairs or ramping required for vertical accessibility
- Temporary housing most likely needed during construction
- Older structures may need some retrofits to handle elevation
- Some cost required from property owner upfront
- Takes 1-2 years for application process



# OPTIONS FOR FLOOD ADAPTATION

## Extend and Raise Seawall



# OPTIONS FOR FLOOD ADAPTATION

## Extend and Raise Seawall



### Town Role

- Town would consider funding sources to support design and construction of the seawall extension.

### Resident Role

- Abutters of sea wall would continue to provide access via easements.
- Extension of the sea wall to tie in further down the shore may require additional easements.

### Potential Benefits

- Heightening the sea wall could provide additional protection against tidal flooding and storm surge.
- Extending the sea wall to tie-in to a hard structure would limit back-flow events.

### Potential Trade-offs

- Heightening the sea wall could impact views.
- Extending the sea wall may require additional easements on waterfront properties.



# OPTIONS FOR FLOOD ADAPTATION

## Elevate Roadway



Photo above shows example of raised road.

# OPTIONS FOR FLOOD ADAPTATION

## Elevate Roadway



### Town Role

- Town would consider funding options to pay for design and construction of roadway elevation.

### Resident Role

- Property owners abutting road would need to raise their homes to maintain tie-in.

### Potential Benefits

- Raised road would act as berm to protect properties
- Long-term adaptation option

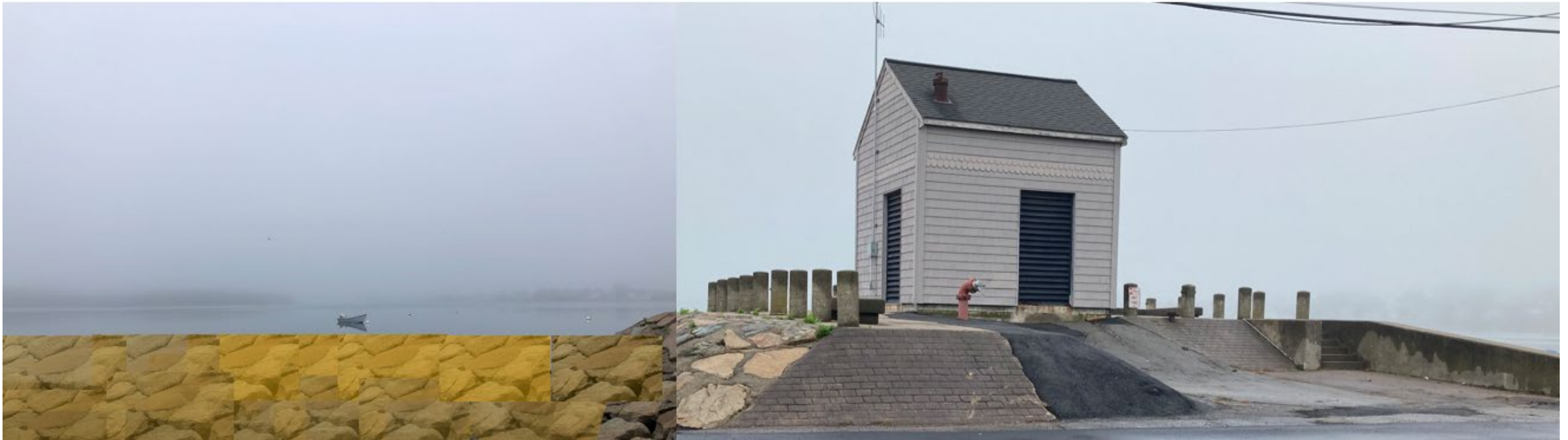
### Potential Trade-offs

- Challenges of raising utilities and abutting properties
- Creates “bowl” at central park
- Creates stormwater flood issues that need to be managed with other systems
- Technically complex



# OPTIONS FOR FLOOD ADAPTATION

## Revetment Addition (at pump station)



The Town plans on redesigning and potentially relocating the pump station to address flood vulnerabilities. The updated station will have submersible pumps and an elevated generator and control building.

# OPTIONS FOR FLOOD ADAPTATION

## Revetment Addition (at pump station)



### Town Role

- Town would consider funding options to pay to design and construct revetment extension and pump station redesign.

### Resident Role

- Several coastal property owners could be impacted if revetment tied in/ended at property line.
- Resident buy-in needed

### Potential Benefits

- Extending the revetment could provide additional protection against tidal flooding and storm surge.

### Potential Trade-offs

- Heightening the revetment could impact views.
- Limit boat access
- Creates stormwater flood issues that need to be managed with other systems (water can convey through stones, but may get backed-up)





# OPTIONS FOR FLOOD ADAPTATION

## Nature-Based Solutions



### Town Role

- Town is currently working on design and construction of playground

### Resident Role

- Input into playground design

### Potential Benefits

- The addition of vegetation to the park space can help absorb precipitation

### Potential Trade-offs

- Additional vegetation in the park space can help with rainfall flood events but will not help with tidal or storm surge flooding

# OPTIONS FOR FLOOD ADAPTATION

## Assisted Relocation



1

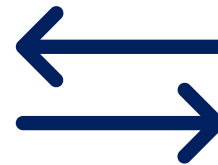


Town could apply for federal funding on behalf of residents to acquire flood prone or damaged property.

2



Residents are paid pre-storm market value for property, *and in some cases relocation assistance funding.*



3



Residents are assisted with relocating to a new home.

4



Property is converted into floodable open space and cannot be redeveloped.

# OPTIONS FOR FLOOD ADAPTATION

## Assisted Relocation



### Considerations for supported relocation

## Start educational awareness and engagement early.

- Relocation should be community led (if desired) with financial and administrative support from local and state agencies.
- Community should help envision what happens to bought-out parcels. What could this area look like in the future?
- Residents would relocate on their own timeframe and are supported in making a relocation plan.
- It is beneficial if resident has a case manager to help.
- Funding programs that provide relocation monetary assistance for higher costs of housing are desirable.



# OPTIONS FOR FLOOD ADAPTATION

## Assisted Relocation



### Town Role

- Town could apply to federal programs for funding to support relocation of residents.
- Town could provide support to residents in navigating program.
- Town would help manage property as floodable open space.

### Resident Role

- Residents **must voluntarily choose to participate** in program to sell their home.
- Resident chooses location of new home.

### Potential Benefits

- Residents receive pre-storm value for their home (rather than value with damages).
- Residents relocate to a safer area with less flood vulnerability.
- Land is repurposed as natural floodplain.

### Potential Trade-offs

- Emotional and logistical burden of moving from home.
- Loss of community and connection to a special place.

# OPTIONS FOR FLOOD ADAPTATION

## Questions



**Before we go into breakout groups, do you have any questions about the adaptation options that were just presented?**

Please raise your hand and a facilitator will call on you!

**Breakout Session**  
**Discussing Options for the**  
**Future**

*We need your ideas and  
feedback!*



# BREAKOUT DISCUSSION

## Questions to consider



1. What types of strategies **would make a difference** for you during a flood event?
2. What **other ideas** do you have for addressing future flooding and sea level rise impacts?
3. Which adaptation options are you most **interested** in?
4. Are there any options you think won't work? Why? What **concerns** you about these?
5. What **resources** does the community already have to deal with this situation? What resources will we need to move forward?
6. Other questions or comments

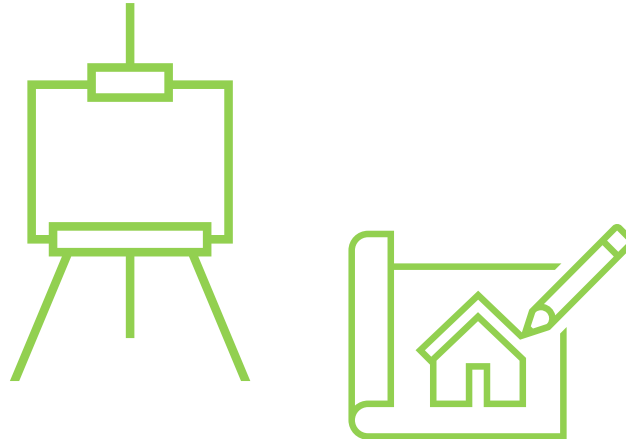
**Report Out**

# NEXT STEPS

We want you to be involved



**Participate in a small-group discussion with the Town!**  
Invite to come



**Attend the next visioning workshop!**  
Invite to come



**Come to a site walk in the Spring!**  
Here more about the adaptation roadmap

# BECOME A NEIGHBORHOOD CAPTAIN

We want you to be involved



Activities a neighborhood captain can participate in may include

- 1. attending a site walk**
- 2. surveying residents**
- 3. leading or participating in small group discussions**

This first phase of the project concludes in June of 2023. You will have the opportunity to let the Town know if you would like to continue to be involved in subsequent phases, but are not committed to the role, and can opt out of participation at any time.



If you are interested, please contact Chris Krahforst at [ckrahforst@town.hull.ma.us](mailto:ckrahforst@town.hull.ma.us) or flag a facilitator down during this workshop!



# Thank You



**MVP**

Municipal Vulnerability  
Preparedness