

# HISTORY AND HAZARDS



## MULTIDISCIPLINARY PLANNING IN THE FACE OF RISING SEAS AND DISAPPEARING LANDS

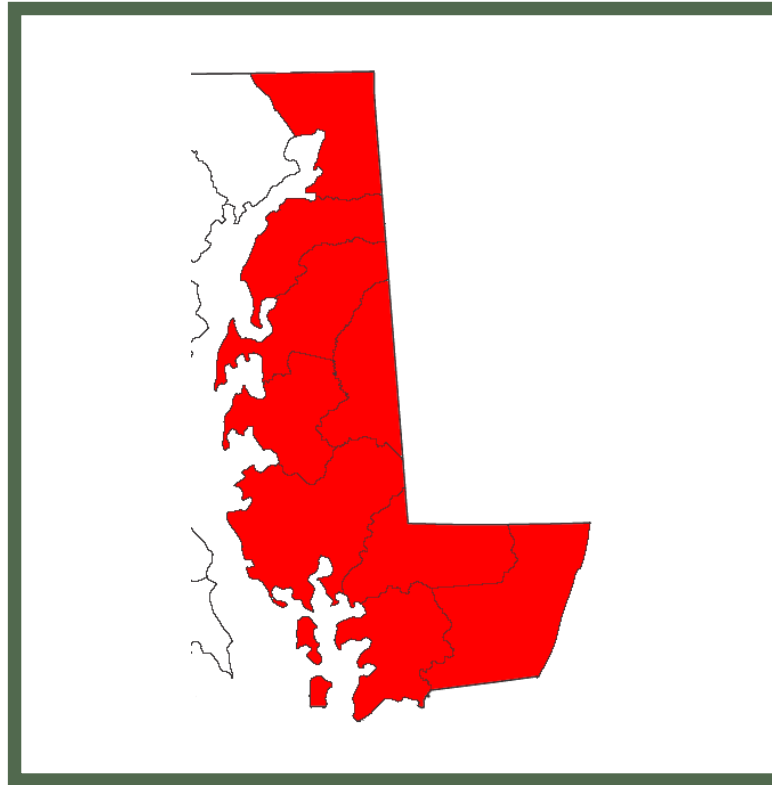
Anna Sierra, Caroline Dept of Emergency Services  
Brian Soper, Dorchester Dept of Planning and Zoning

# Objectives

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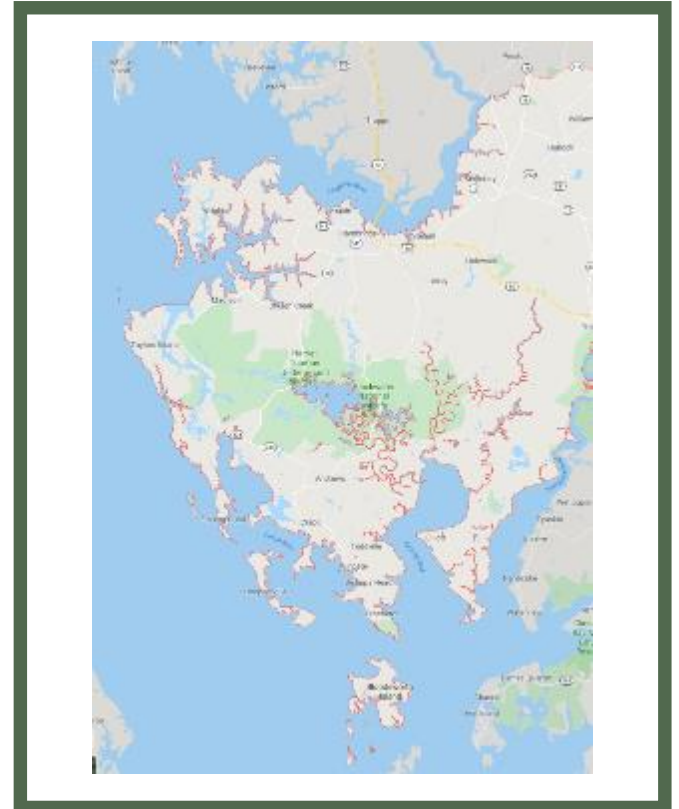
- Demonstrate the benefits of multi-disciplinary coordination and planning.
- Discuss the political and social challenges of flood plain management in historic areas.
- Identify strategies and best practices for community engagement for long-term planning.

# Maryland's Eastern Shore



- 9 Counties
- <450,000 people
- First peoples were the Nanticoke
- First English settlers in 1631

- Heart of the Chesapeake
- Formation of County in 1669
- Harriet Tubman was born and lived until self-emancipation



# Dorchester Demographics At A Glance

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## THE PEOPLE

- 32k people
- 20% over 65
- 63% white, 29% black or African American, 5% Hispanic or Latino, 1% Asian, 0.5% American Indian
- Average of 2.4 people per household
- 85% high school graduate
- 21% BA or higher
- Median income \$47,907
- 17% poverty rate

## THE LAND

- 540.77 sq miles
- 636 miles of road
- Highest elevation: 57' above sea level
  - 50% lay below 4.9'
  - 60% in tidal floodplain
- 60.3 pop density
  - Drops to 33 when City of Cambridge is taken out; 19 without Hurlock
- Largest City: Cambridge (13k)

**Dorchester County Hazard Mitigation Planning Committee Risk Analysis, 2016**

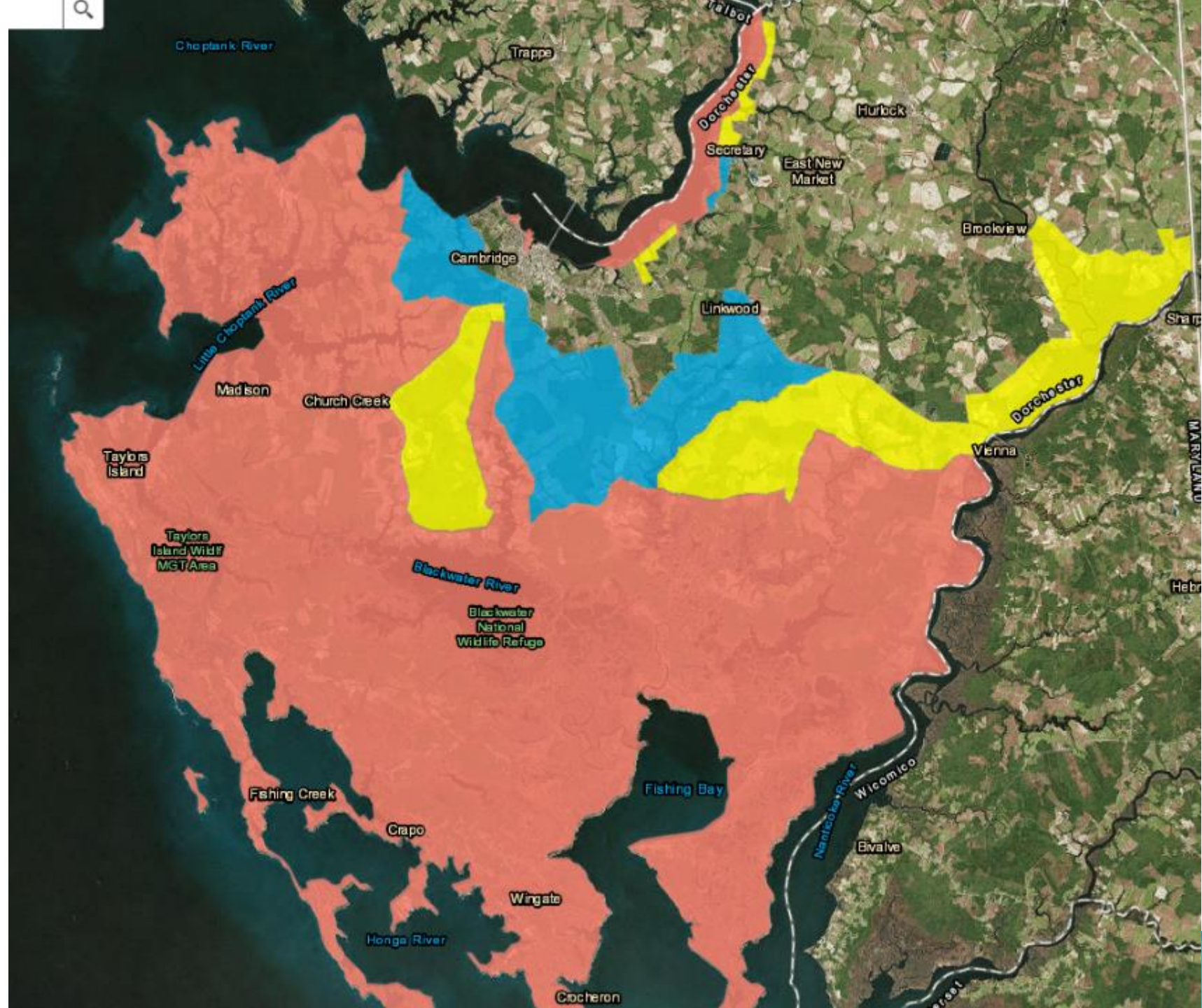
<u>HAZARD</u>	<u>High</u>	<u>Medium High</u>	<u>Medium</u>	<u>Medium Low</u>	<u>Low</u>
Hurricane	X				
Nor'easter	X				
Coastal Flooding	X				
Shoreline & Sea Level Rise	X				
Riverine Flooding		X			
Winter Weather		X			
Wind		X			
Drought			X		
Tornado			X		
Radiological			X		
Thunderstorm/Hail		X			
Epidemics				X	
Wildfires			X		
Hazardous Material Incident Transportation & On-site				X	
Extreme Heat		X			
Rail Accident Hazmat					X
Fire/Explosion			X		
Dam Failure					X
Earthquake					X

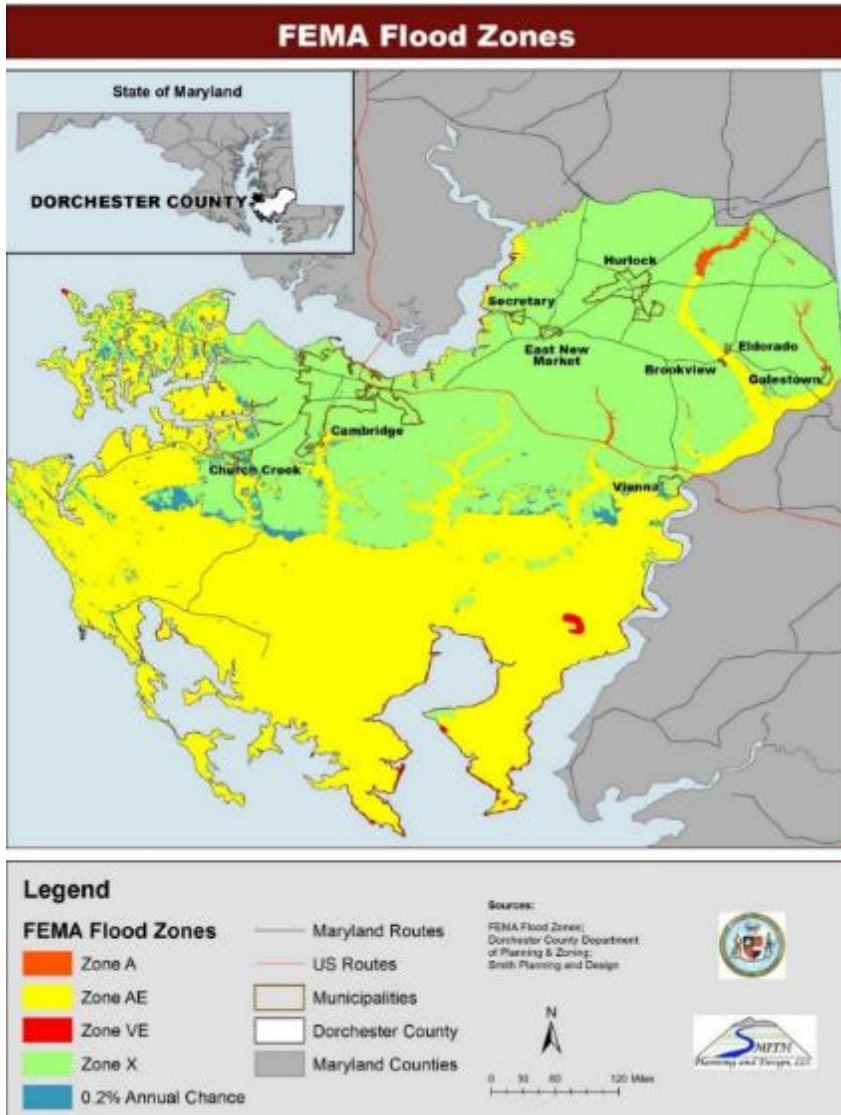
# The Hazards

# Hurricanes, Nor' Easters, and Tides – Oh MY!

- Vulnerable to most storm directions
- Fran ('96): \$1M property damage. 4-6' of storm surge
- Isabel ('03): \$2.5M property damages
- Hurricane Irene ('11): \$100k property; \$500k crop

Source:  
Dorchester County 2017 Hazard Mitigation Plan





# Flood Zones

1,270 flood insurance policies for a total of \$311M in coverage as of 7/10/2019

\$16M in claims paid since 1978 (2017)

Large landmass, relatively small population in most vulnerable area

- Socioeconomically depressed area
- Generational homes/land

# Flood Risk Reduction

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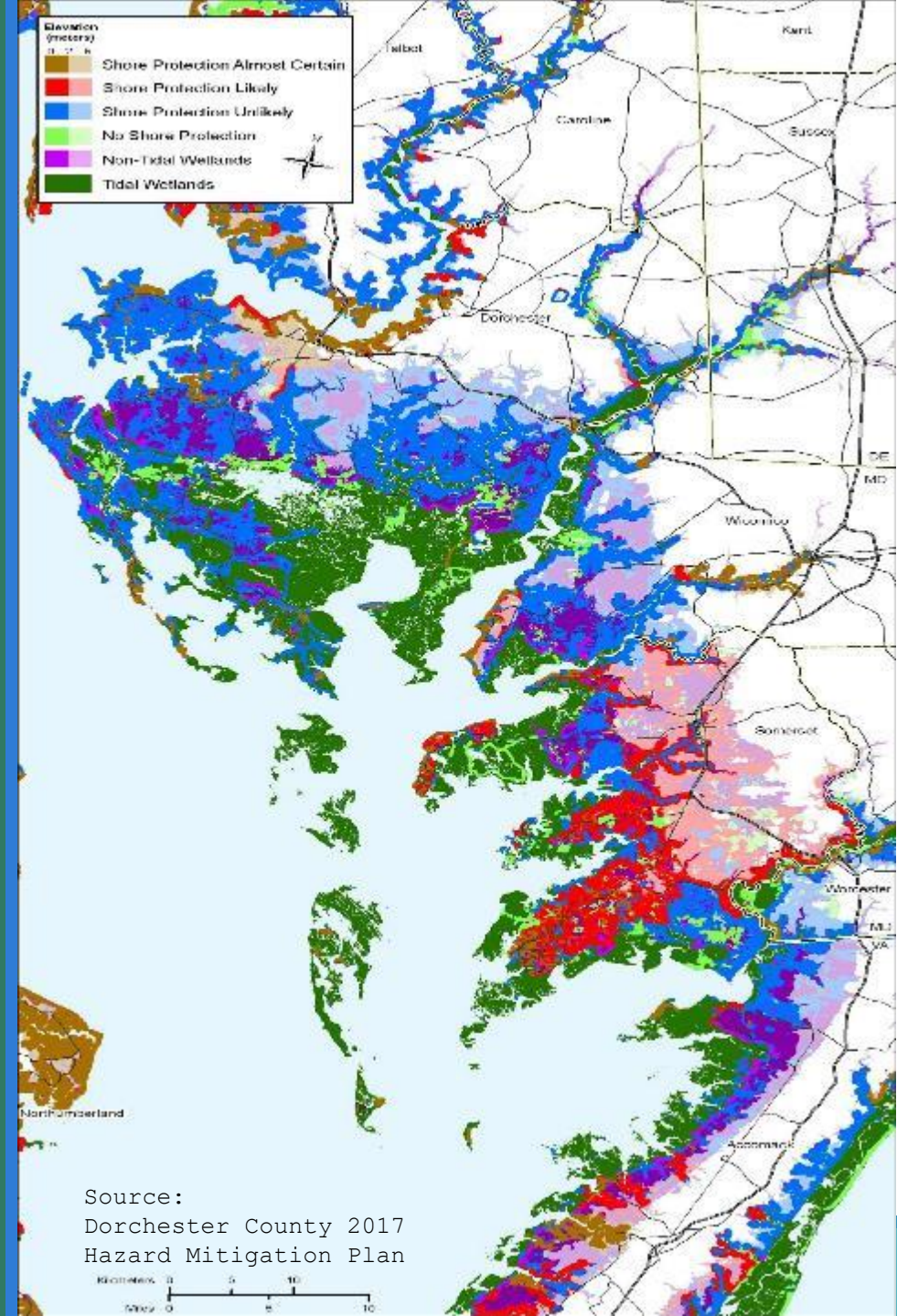


- Tidal flooding will increase as sea level changes
- Flooding is not limited to tidal, extreme rain events can cause localized flooding
  - Improve drainage around structures
- Homeowner education on risks



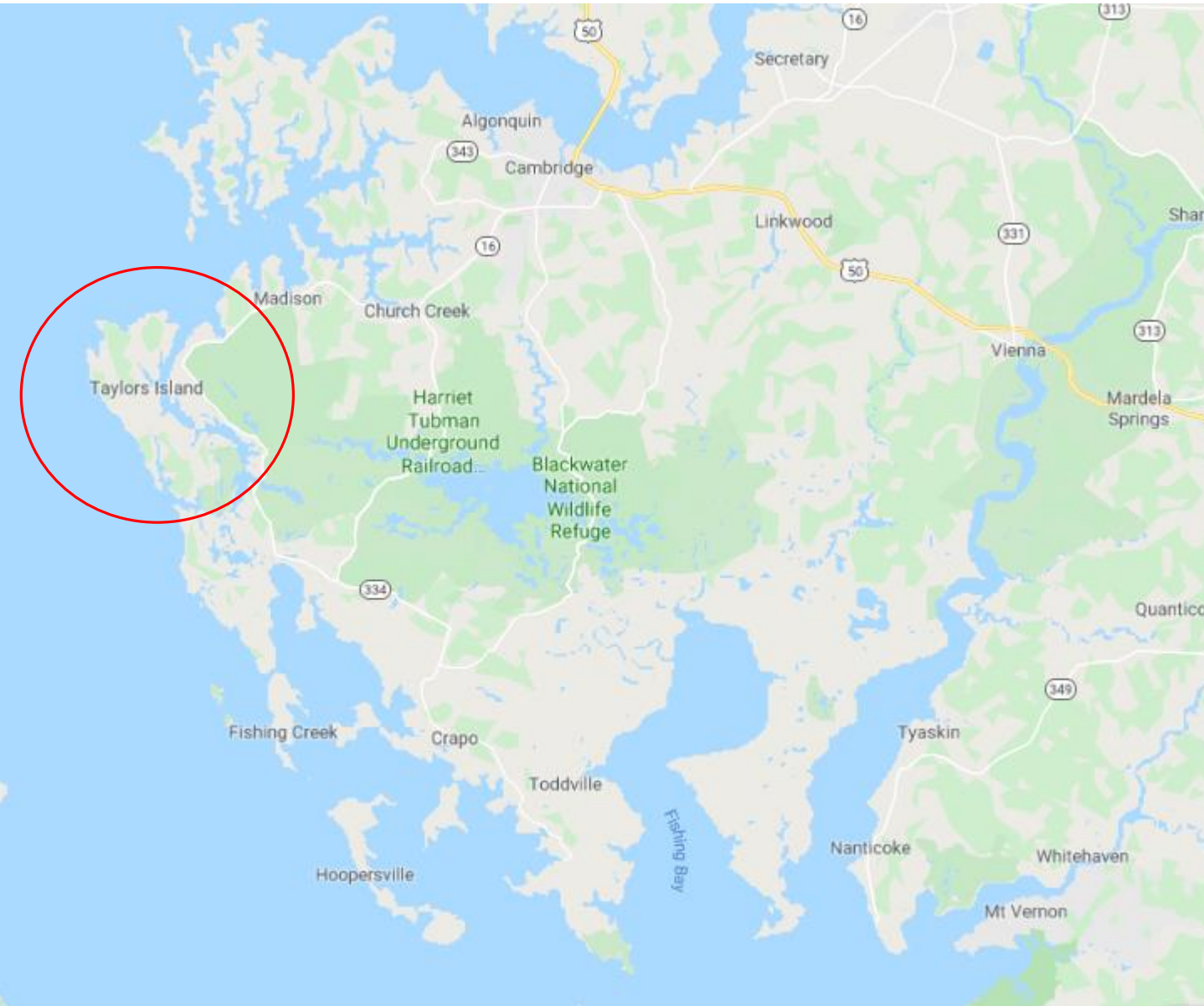
# Sea Level Change: The Third Rail

- National discussion versus local observations
- Multiple factors create significant vulnerability:
  - Global sea level rise
  - Land Subsidence (thanks for nothing, glaciers!)
  - Erosion
  - Warming oceans



Source:  
Dorchester County 2017  
Hazard Mitigation Plan

# Shoreline Change



- All the Data!
- ESCAP Discussions
- Critical Area Commission funded

# Nuisance Flooding

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- Sandy ('12): \$750k damages, 3-4' above normal tide
- Not always associated with storms
  - "King Tides"
  - "Tuesday"
- Difficult to track and quantify

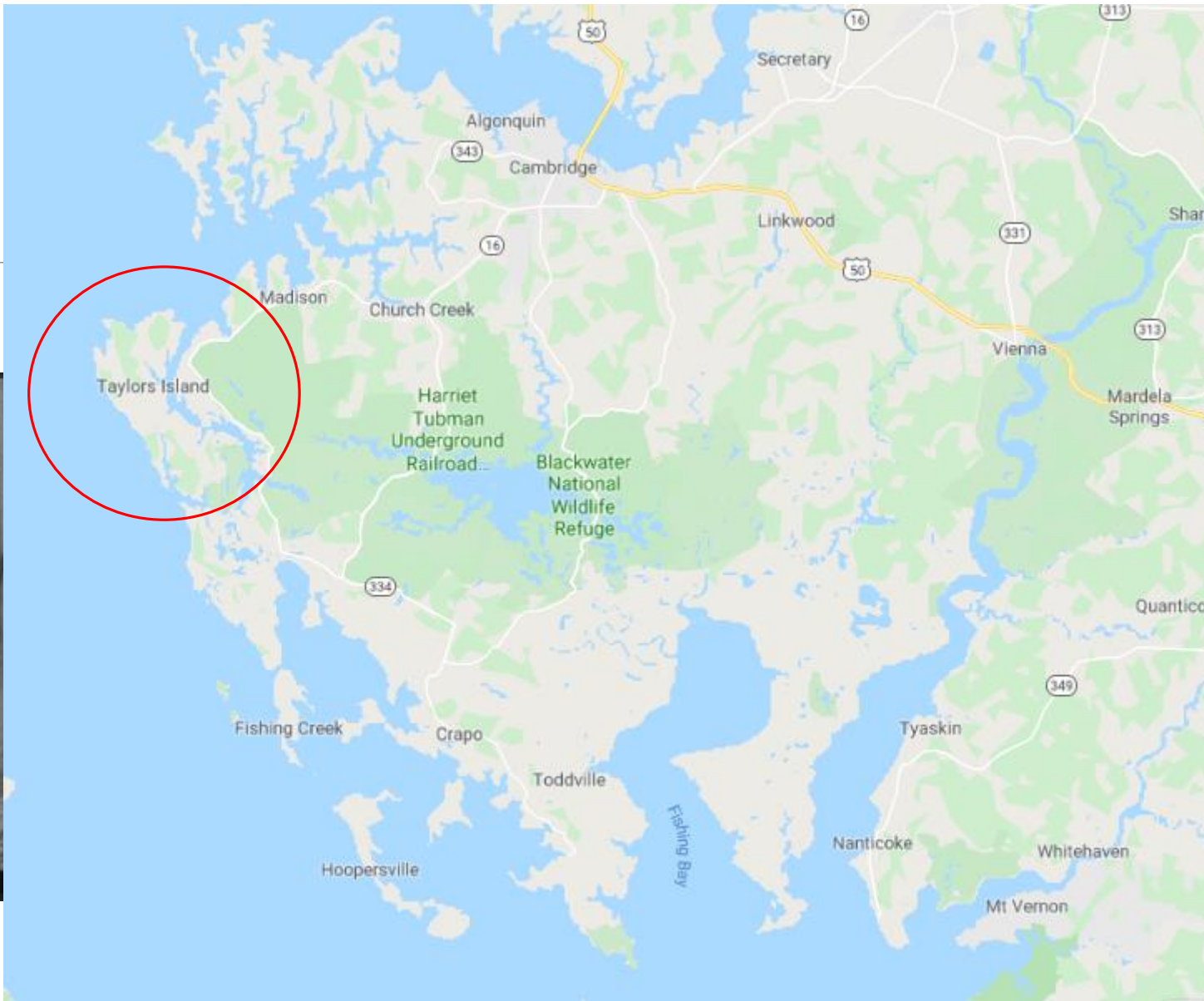
Source:  
Dorchester County 2017 Hazard Mitigation Plan

Photo Credit: Anna Sierra



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Source: Roger Short, Taylor's Island



# CHRONIC INUNDATION

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Defined by UCS  
as flooded  
once every two  
weeks.



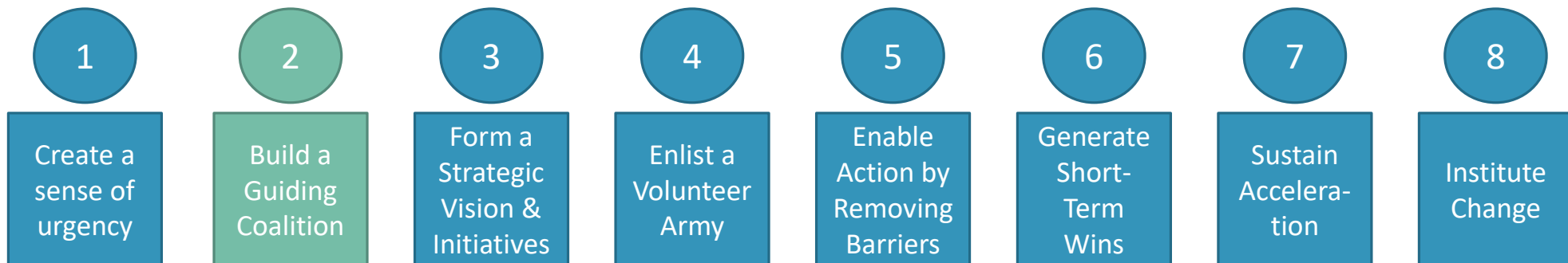
# How Do You Eat An Elephant?

A Sense of Urgency –  
*High Tide in Dorchester*



# Build a Coalition

- New eyes & veterans
- Non-traditional partnerships
- Passion, skillsets, connections
- Get to know your audience!
  - Religious and political views
  - Local traditions and culture
  - Community values





# Form Strategic Initiatives

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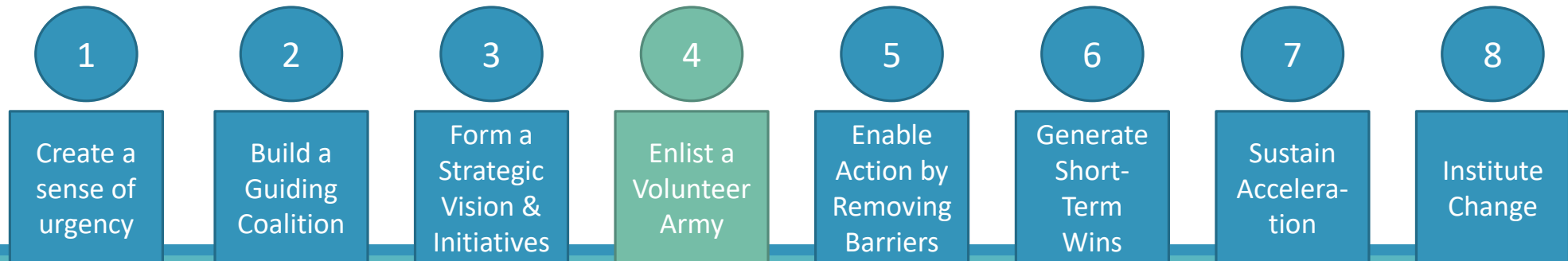
- Where a diverse coalition can make the difference!
- Our vision:
  - Ensure a **resilient** community through planning, code development, and hazard mitigation projects
  - Provide **education** and **technical assistance** to affected communities
  - Support **historical** and **cultural** mitigation projects
  - Identify and implement **economic strategies** to enhance resiliency



# Enlist a Volunteer Army

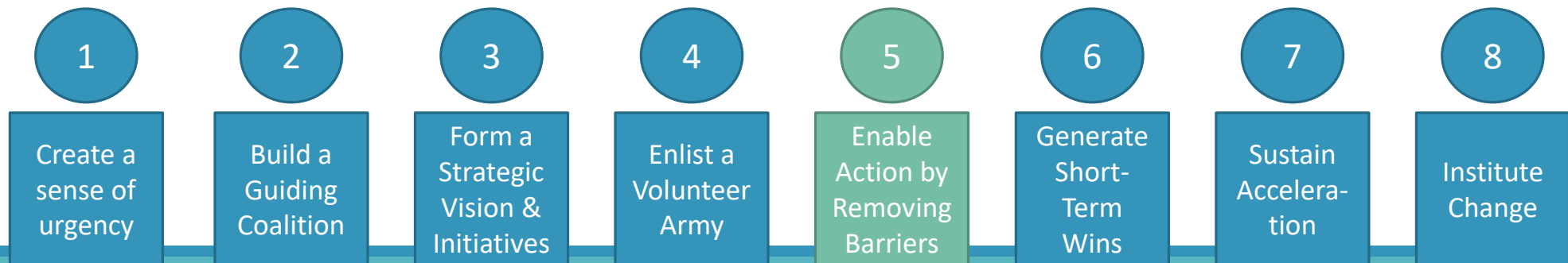
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- They came to us! (All we had to do was listen.)
  - Broad, diverse coalition!
- Education/research/academic institutions, state agencies, non-profits with technical expertise
  - Maryland Extension/Sea Grant
  - MDE, MDP
  - Georgetown Climate Center
  - Eastern Shore Climate Adaption Partnership
  - Local municipalities, Dorchester Citizens for Planned Growth



# Removing Barriers

- Streamlined government
  - Hazard mitigation planning committee
- Take the meetings to your community
  - New Revived Methodist Church meetings
- Making time
- Gathering Data (Shoreline Change, ESCAP Initiatives, 911 Center)

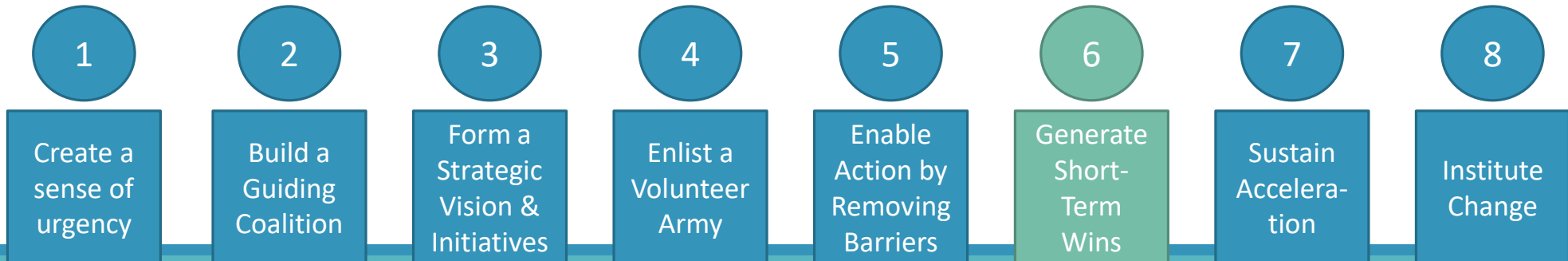


# Short Term Wins

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- County hazard profile review process
- Authorization to address *High Tide*, coordinated messaging
- Including sea level rise/climate change in adopted hazard mitigation plan
- Cultural and Historic Mitigation Plan discussions



# Sustaining Acceleration



- Change in leadership
- Economic sustainability - make a half empty glass half full?
  - FEMA changes in mitigation prioritization
- Interest between crises (welcome to the life of an EM!)

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Create a sense of urgency

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Build a Guiding Coalition

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Form a Strategic Vision & Initiatives

4

Enlist a Volunteer Army

5

Enable Action by Removing Barriers

6

Generate Short-Term Wins

7

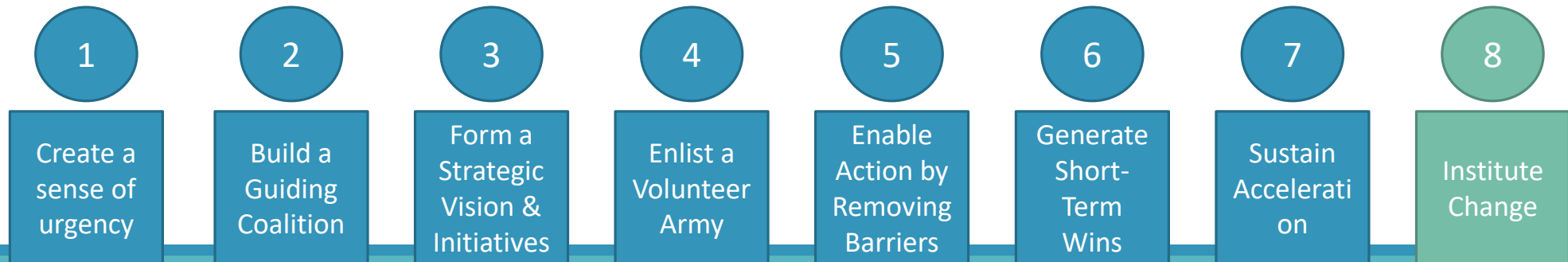
Sustain Acceleration

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Institute Change

# Institute Change

- CRS (grassroots, improved and sustained – CRS 6, 20% discount – only County on the shore!)
- Local awareness & understanding
- Plans: Comp, Cultural & Historic
- Transfer Development Rights Program
- Mitigation Projects (government and self-funded)
- Community engagement



# Example: Critical Area

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- Flood risk reduction is a benefit to the Critical Area
- Modified planting standards based on site conditions to adapt to increased flooding
  - Salt tolerate plants
  - Trees planted on higher ground or further back to allow establishment
  - Vegetative strips behind revetments to reduce the risk of failure



# Flooding and the Critical Area in Dorchester

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Encouraging the planting or growth of existing habitat

- Pollinator gardens
- Reducing mown areas
- Shoreline plantings above mean high water to reduce erosion and capture debris when flooding recedes





# Resources for Flooding

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- [www.mdfloodmaps.net](http://www.mdfloodmaps.net)
- [www.dorchestercountymd.com/planning-zoning/floodplain-information/](http://www.dorchestercountymd.com/planning-zoning/floodplain-information/)
- Local officials (DPW, P&Z, EM, Finance/Tax, Economic Development, Tourism)
- Surveyors/Engineers
- FEMA
- MEMA
- MDE
- SHA
- Academia, Federal programs (Sea Grant, Extension)
- Local non-profits, community organizations/groups

Questions?

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