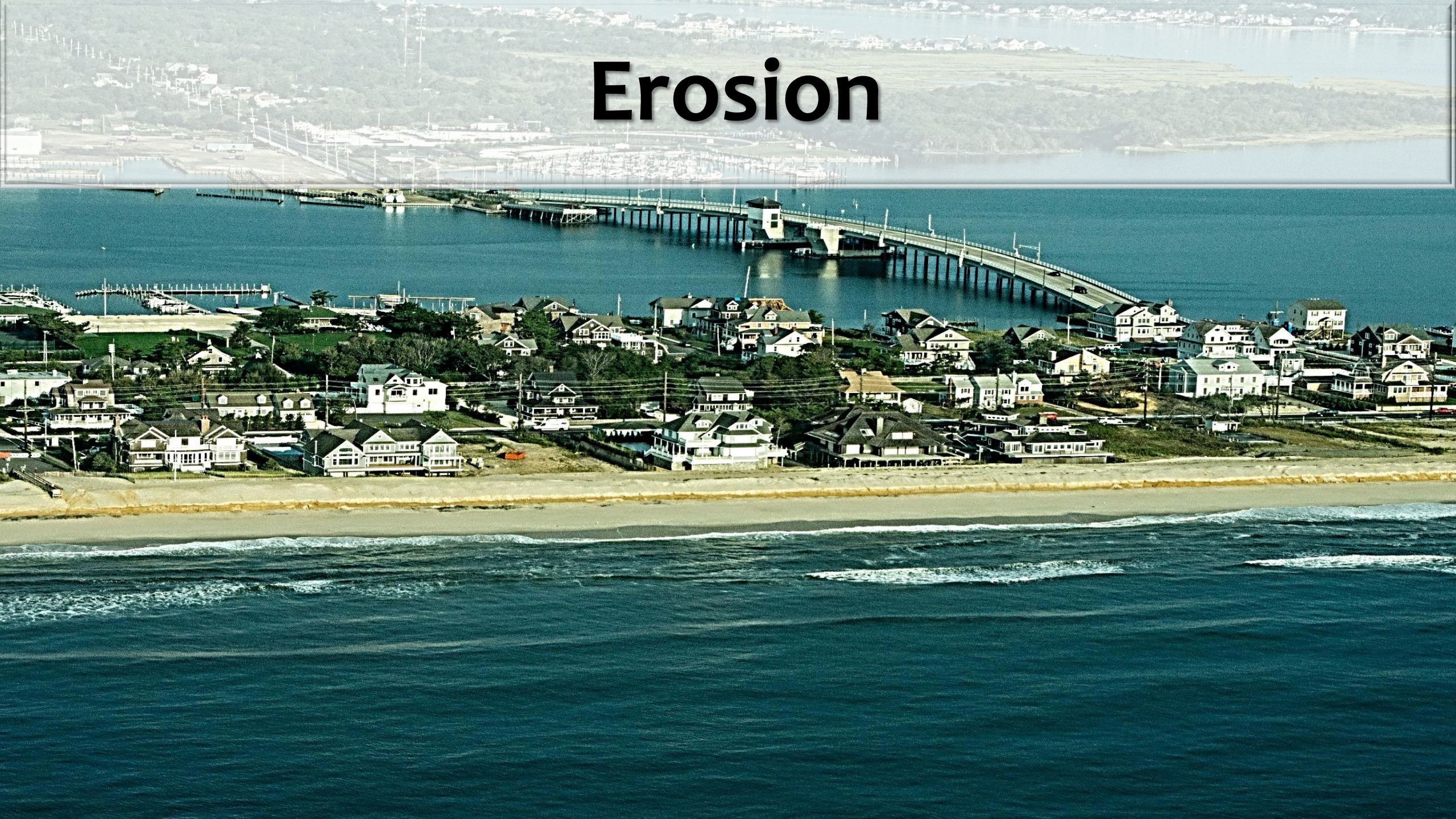


# Erosion





# Implications for New Jersey

Chronic flooding issues

- + Increased development pressure
- + More frequent, higher intensity storm events
- + Sea level rise
- + Erosion

---

**== Vulnerable Coastal Communities**

# How Does a Community Become Resilient to Coastal Hazards?

- **Create and Maintain Healthy Ecosystems**
  - Healthy beaches and dunes
  - Stable shorelines
  - Healthy wetlands



[http://www.nj.gov/dep/cmp/czm\\_hazards.html](http://www.nj.gov/dep/cmp/czm_hazards.html)

# Stable Shorelines



- **Nature-Based Solutions**

- Alternatives to gray or hard armoring our coastlines (e.g., sea walls or bulkheads) (N.J.A.C. 7:7-6.24)

- **Examples:**

- Living Shorelines
- Thin Layer Placement
- Dredge Islands

- **Advantages:**

- Can break down wave energy during storms
- May grow or adapt over time, which may enable these systems to keep up with rising sea levels (as opposed to walls and bulkheads, which weaken over time)
- Provide co-benefits, such as habitat for wildlife and improvements to water quality

# Healthy Wetlands

## Protect against flooding and storm damage

- Wetland plants absorb the energy from storms
  - Every three miles of wetlands absorbs approximately one foot of storm surge

## Protect against erosion

- The roots of wetland plants hold soil and sand in place so that the water does not take the soil or sand away with it

## Protect against global warming and sea level rise

- Carbon dioxide traps heat close to the Earth
  - Too much carbon dioxide causes the Earth's temperature to rise, which melts the polar ice caps and pushes more water into our oceans
- Salt marshes take a lot of carbon dioxide out of the air.
  - Plants need carbon dioxide to grow
  - The types of plants found in coastal wetlands take in carbon dioxide very quickly and hold it for a long time

# How Are We Ensuring NJ's Coastal Communities Are More Resilient?

- **Work with Municipalities**
  - **Assess Community Vulnerability**
  - **Review and Assess Gaps in Local Regulations, Zoning, and Hazard Mitigation Planning**
  - **Provide Technical Assistance and Grants**
- **Develop and Refine Data, Tools, and Guidance**

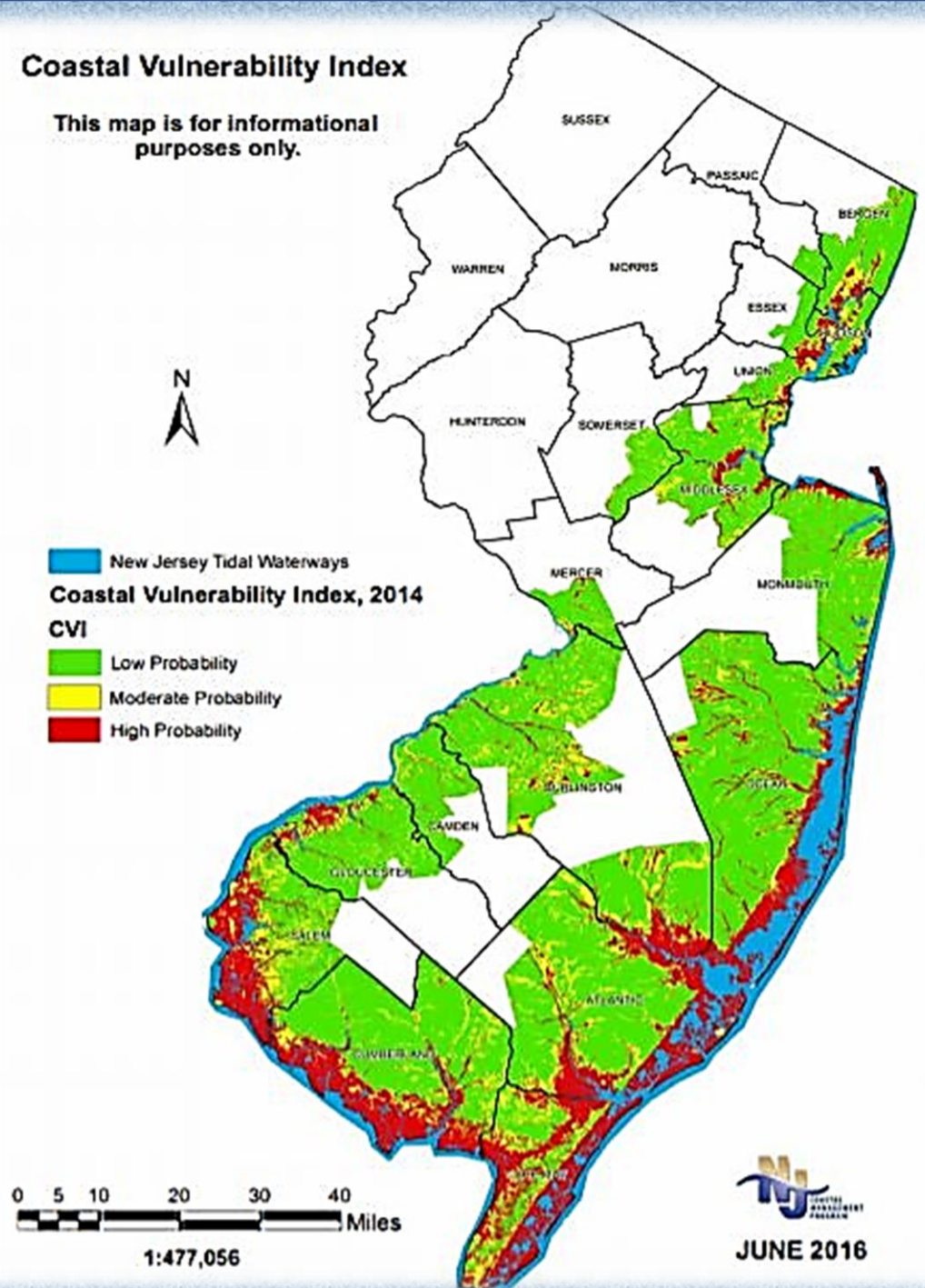
# Coastal Vulnerability Index

- CVI mapping has been prepared for the entire coastal area in New Jersey covering 239 municipalities over four sea level rise scenarios:
  - 2014
  - 2030
  - 2050
  - 2100

[http://www.nj.gov/dep/cmp/czm\\_cvi.html](http://www.nj.gov/dep/cmp/czm_cvi.html)

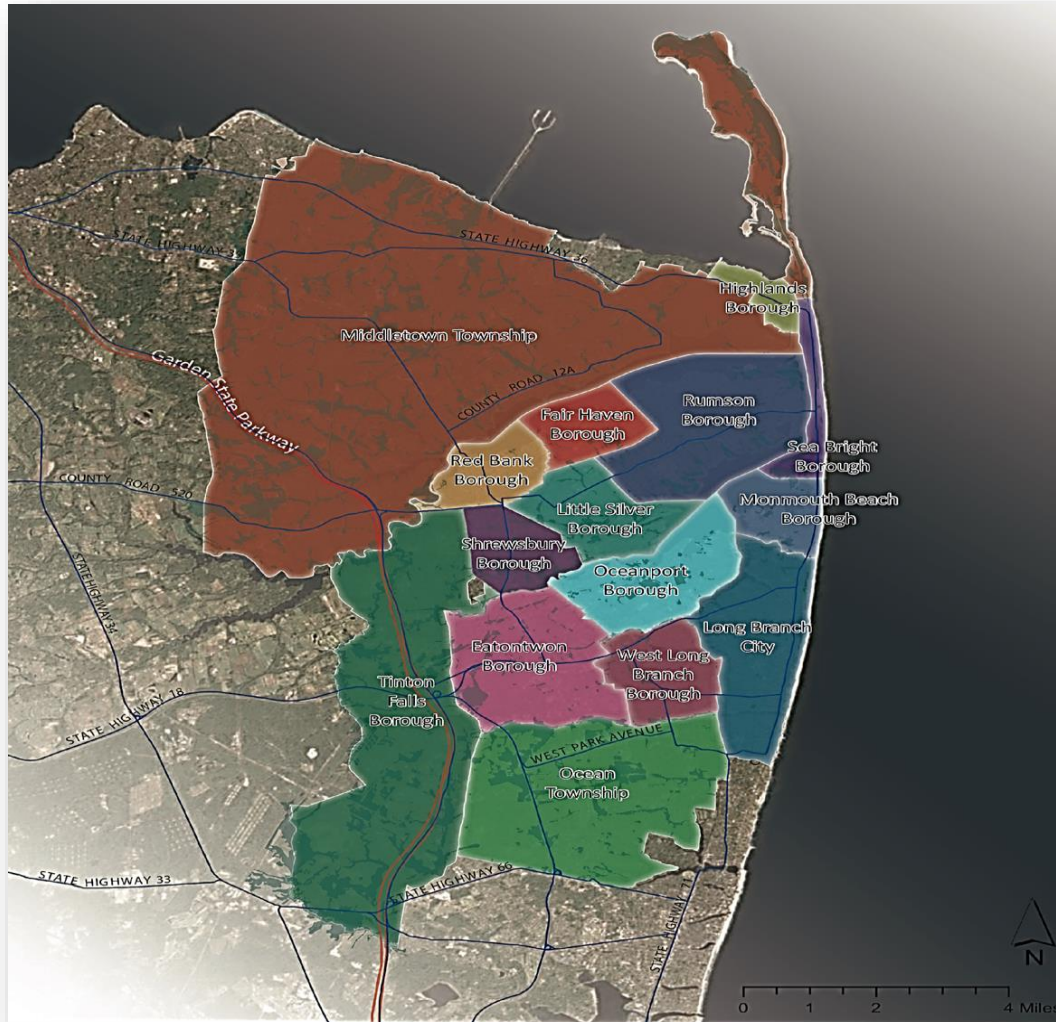
## Coastal Vulnerability Index

This map is for informational purposes only.





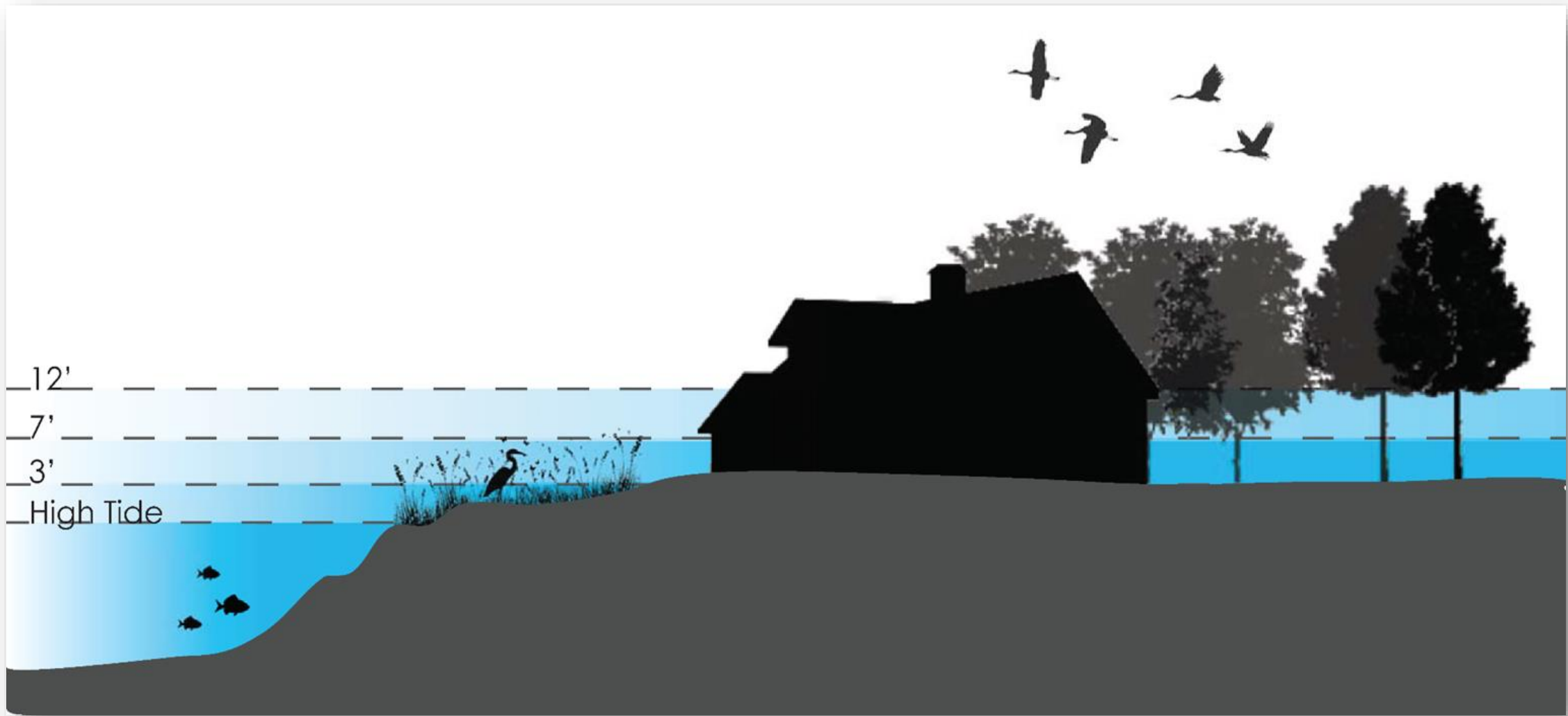
# NJFRAMES







# NJFRAMES – What Are We Planning For?





# NJFRAMES – Who is Involved?

## Municipalities

	Municipal Meeting <u>OR</u> Getting-to-Resilience	Public Event(s)	Steering Committee Participation (today)
Eatontown			
Fair Haven	✓	✓	✓
Highlands	✓	✓	✓
Little Silver	✓	✓	✓
Long Branch		✓	
Middletown	✓		✓
Monmouth Beach	✓	✓	✓
Oceanport	✓		
Ocean Township	✓		✓
Red Bank		✓	
Rumson	✓		✓
Sea Bright	✓	✓	
Shrewsbury	✓		✓
Tinton Falls			
West Long Branch			



# NJFRAMES – Constituents

## Society and Health

- Hackensack Meridian Health - Riverview Medical Center
- Monmouth County Regional Health Commission
- Monmouth Arts

## Hazard Response

- Monmouth County Volunteer Organizations Active in Disaster (VOAD))
- SBP, Inc.

## Infrastructure

- Monmouth University
- Naval Weapons Station Earle
- NJAFM

## Ecology and Habitat

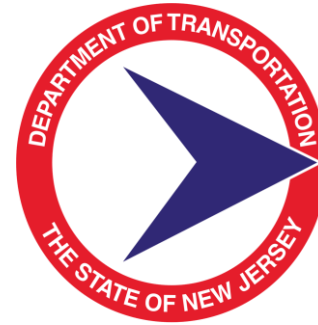
- American Littoral Society
- Clean Ocean Action
- Monmouth Conservation Foundation
- NY/NJ Baykeeper

## Economic Development

- EMACC - Eastern Monmouth Chamber of Commerce
- Fair Haven Yacht Works / Marine Trades Association NJ



# NJFRAMES – Involved Agencies



FEMA





# NJFRAMES – Municipal Meetings



## Two Rivers, One Future

New Jersey Fostering Regional Adaptation through Municipal Economic Scenarios (FRAMES)

### Two Rivers Regional Getting to Resilience Recommendations

#### Getting to Resilience: The Two Rivers Region

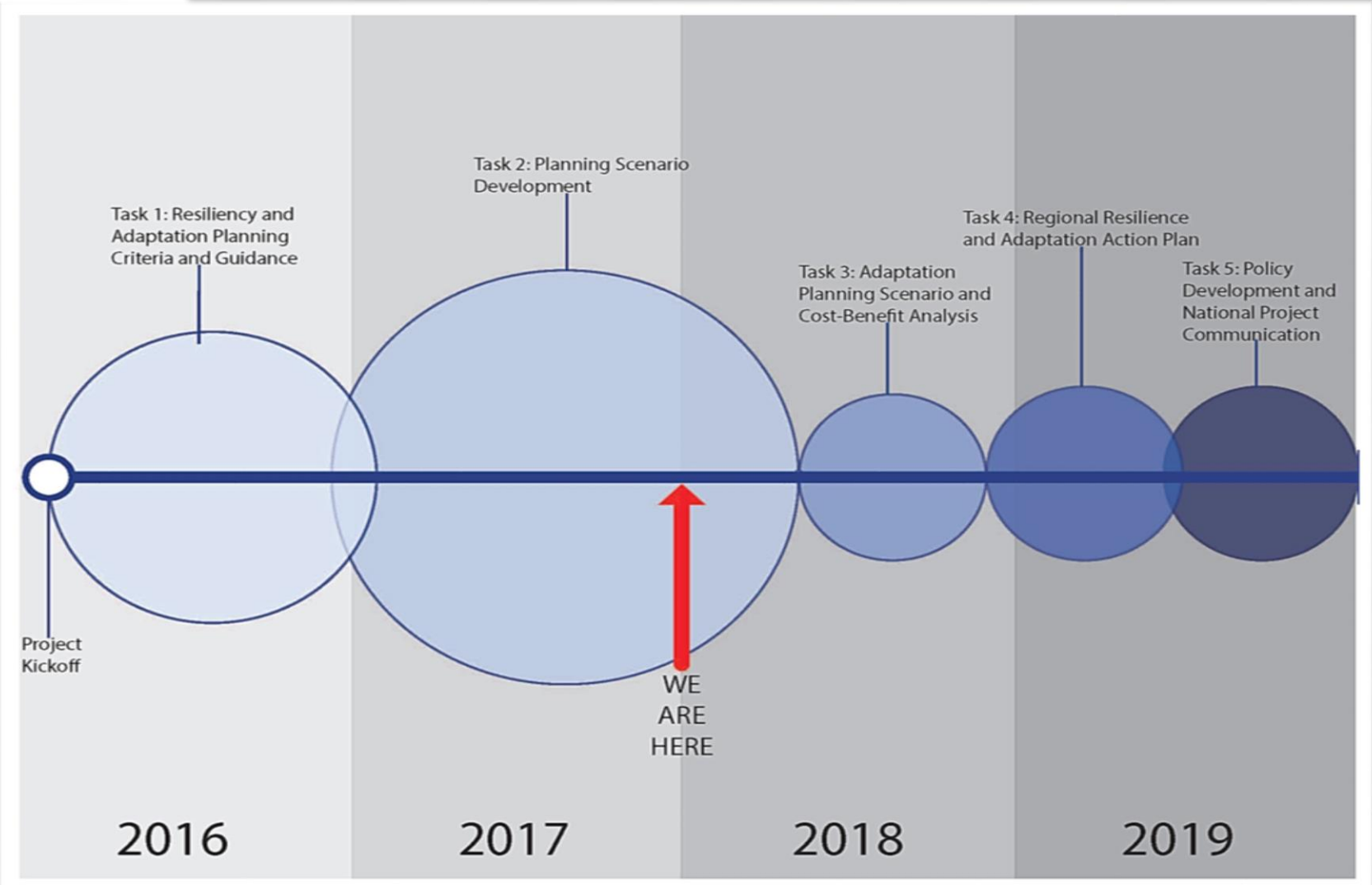
The New Jersey Fostering Regional Adaptation through Municipal Economic Scenarios (NJ FRAMES) project is a regional and collaborative effort in coastal Monmouth County, NJ that seeks to understand and begin to address future flood vulnerability. The end result will be a long-term Regional Resilience and Adaptation Action Plan that will identify ways communities can reduce risks and impacts together. As part of the NJ FRAMES project, the 15 participating municipalities agreed to go through the Getting to Resilience process to better understand local planning efforts, identify locally significant assets, and opportunities to improve hazard mitigation. Facilitation of the questionnaire encourages a wide range of municipal officials to share their knowledge and experiences over the course of several meetings.

The Getting to Resilience (GTR) questionnaire was originally developed and piloted by the New Jersey Department of Environmental Protection's Office of Coastal Management in an effort to foster municipal resiliency in the face of flooding, coastal storms, and sea level rise. The questionnaire was designed to be used by municipalities to assist reduce vulnerability and increase preparedness by linking planning, mitigation, and adaptation. Originally developed by the State of New Jersey's Coastal Management Program, the Getting to Resilience process was later adapted by the Coastal Training Program of the Jacques Cousteau National Estuarine Research Reserve (JC NERR), converted into a digital format, and placed on an interactive website. Further improving the questionnaire, the JC NERR added linkages to evaluation questions including the National Flood Insurance Program's (NFIP) Community Rating System (CRS), Hazard Mitigation Planning, and Sustainable Jersey. While this website is publicly available, through the facilitated Getting to Resilience process, JC NERR Coastal Community Resilience Specialists enhance the outcomes of the evaluation by providing community-specific recommendations, guided discussions with municipal representatives, a vulnerability analysis, and municipal plan reviews.

GTR meetings were held with 8 of the 15 Two Rivers communities. This includes Fair Haven, Highlands, Middletown, Monmouth Beach, Oceanport, Ocean Township, Rumson, and Sea Bright. For these municipalities, the information conveyed during GTR discussions and the answers recorded in the questionnaire were used to create a matrix of NJ FRAMES regionally specific GTR recommendations. Additionally, 2-4 page individualized reports were created to record the facilitated resilience strengths and challenges discussions that took place prior to the



# NJFRAMES – Next Steps





# NJFRAMES – Project Website

Governor Chris Christie • Lt. Governor Kim Guadagno  
NJ Home | Services A to Z | Departments/Agencies | FAQs  
Search

STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF COASTAL AND LAND USE PLANNING

DEP Home | About DEP | Index by Topic | Programs/Units | DEP Online

## NJ FRAMES


### New Jersey Fostering Regional Adaptation through Municipal Economic Scenarios

**NJ FRAMES:** [Home](#) | [Project Area](#) | [Community Engagement](#) | [Project Documents](#)


New Jersey Fostering Regional Adaptation through Municipal Economic Scenarios (NJ FRAMES) is a science-based, stakeholder-driven, regional planning project that will further advance resiliency planning in New Jersey.

The multi-partner planning initiative within the Two Rivers region of Monmouth County will work with 15 communities surrounding the Navesink and Shrewsbury rivers to develop a regional plan to address the impacts of increasing coastal hazards and storm surge.


The project partners the New Jersey Department of Environmental Protection (NJDEP)'s Coastal Management Program (CMP) with the Louis Berger Group, the Jacques Cousteau National Estuarine Research Reserve, the Rutgers Climate Institute, and Oceanport Borough representing the Two Rivers Council of Mayors. NJ FRAMES is one of 12 National Oceanic and Atmospheric Administration (NOAA) Regional Coastal Resilience Grants awarded nationally.



[Project Area](#)



[Stakeholders and  
Community Engagement](#)



[Project Documents](#)

### What's New

- ▶ [2/23/17 – Media Advisory: Two Rivers, One Future: Resiliency Planning Open House \(pdf\)](#)
- ▶ [2/23/17 – Two Rivers, One Future: Resiliency Planning Open House \(pdf\)](#)
- ▶ [11/21/16 – NJ FRAMES Kick-off Meeting Presentation \(pdf\)](#)

<http://www.tworiversonefuture.nj.gov>



#TwoRiversOneFuture

# Regional Resilience Planning Grant Program



## National Disaster Resilience Competition

<http://www.nj.gov/dep/oclu/resilientnj/index.html>

- \$15 million award to New Jersey
  - \$10 million Regional Resilience Planning Grant Program
  - \$5 million Toolkit
- 5-year program (September 2022)



# Regional Resilience Planning Grant Program

The Program will fund the *development and implementation* of up to 5 regional resilience and adaptation action plans.

## Planning

- Regional scale
- Risk/Vulnerability
- Scenario-based planning
- Cost benefit analysis
- Plan development



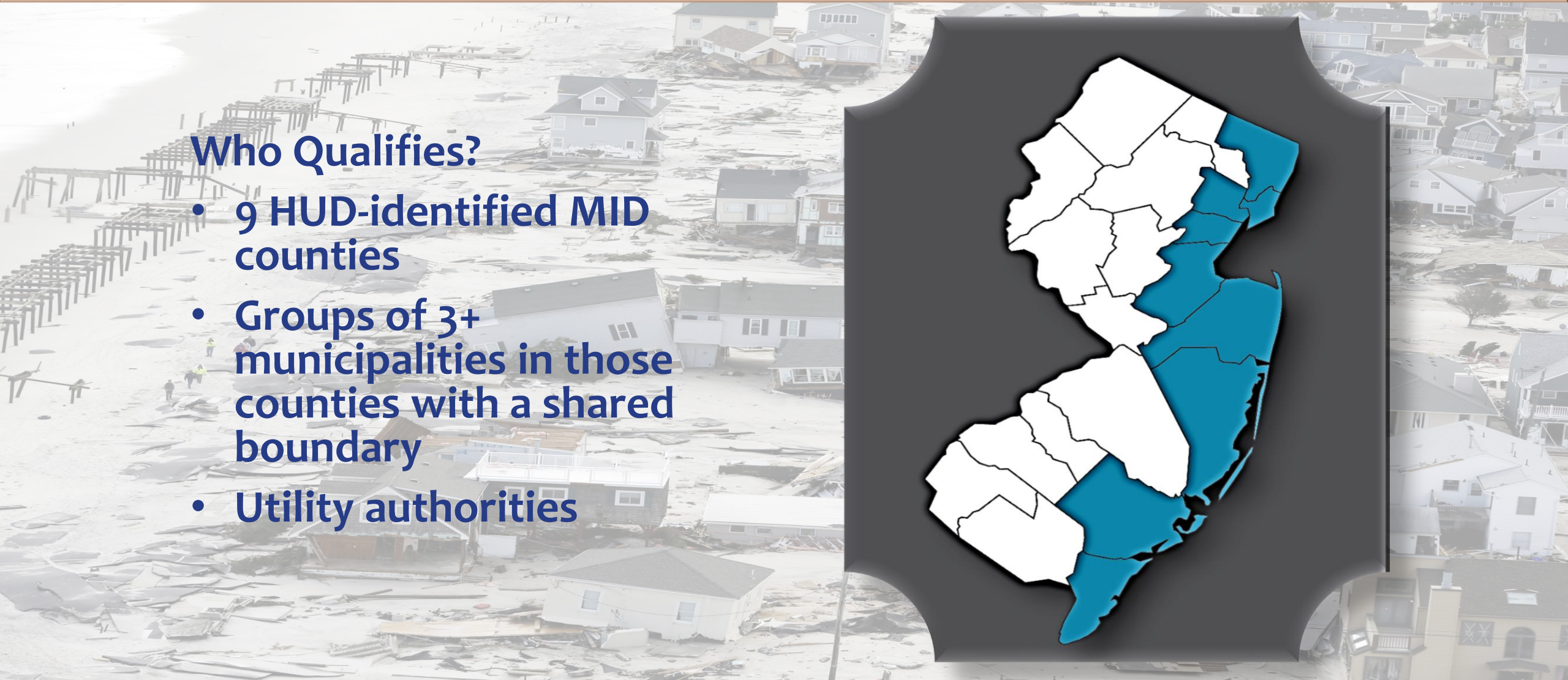
## Implementation

- Outreach & education
- Master plan amendments
- Ordinances
- Project design
- Bid documents
- And more...

# Regional Resilience Planning Grant Program

## Who Qualifies?

- 9 HUD-identified MID counties
- Groups of 3+ municipalities in those counties with a shared boundary
- Utility authorities

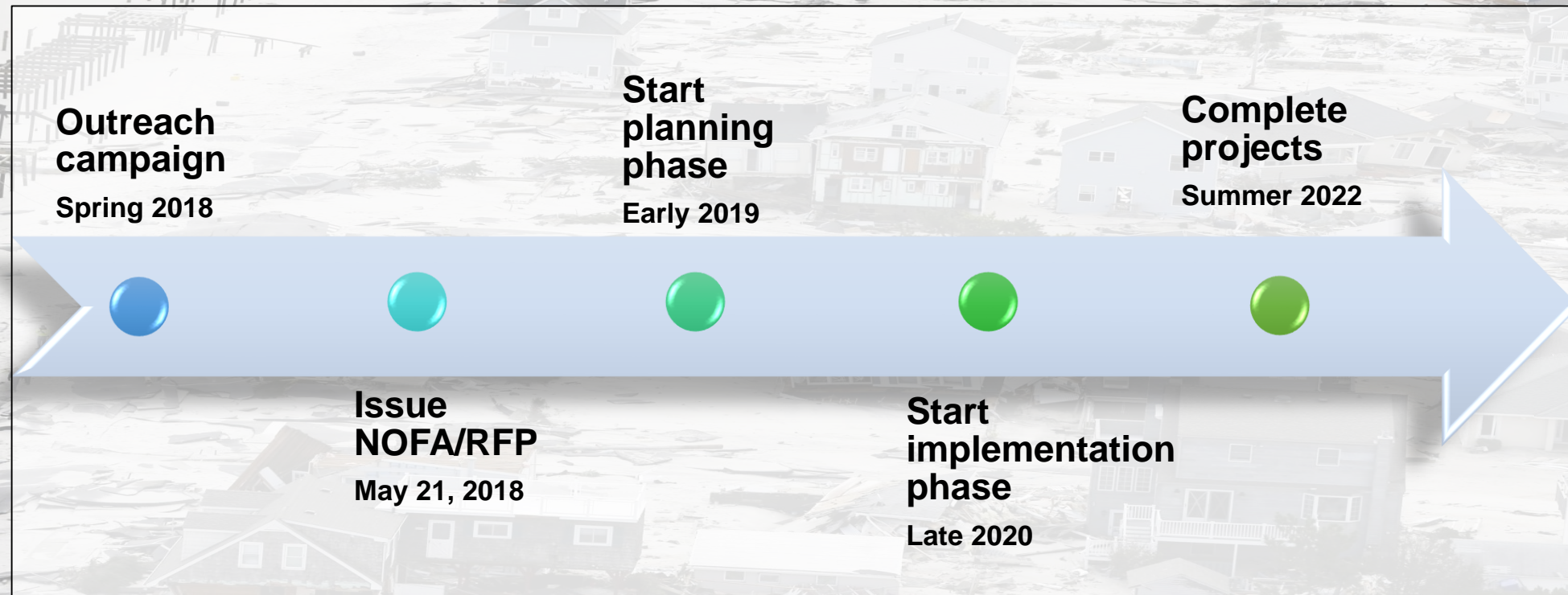


# Regional Resilience Planning Grant Program

## How will you benefit?

- Assess vulnerability to coastal and riverine flooding
- Identify locally and regionally-significant assets
- Strategic and actionable mitigation
- Implementation
- Peer-to-peer sharing
- Head start on future funding opportunities
- Innovation

# Regional Resilience Planning Grant Program



Building  
to  
Ecological Solutions  
Coastal Community  
Hazards

A Guide for New Jersey  
Coastal Communities



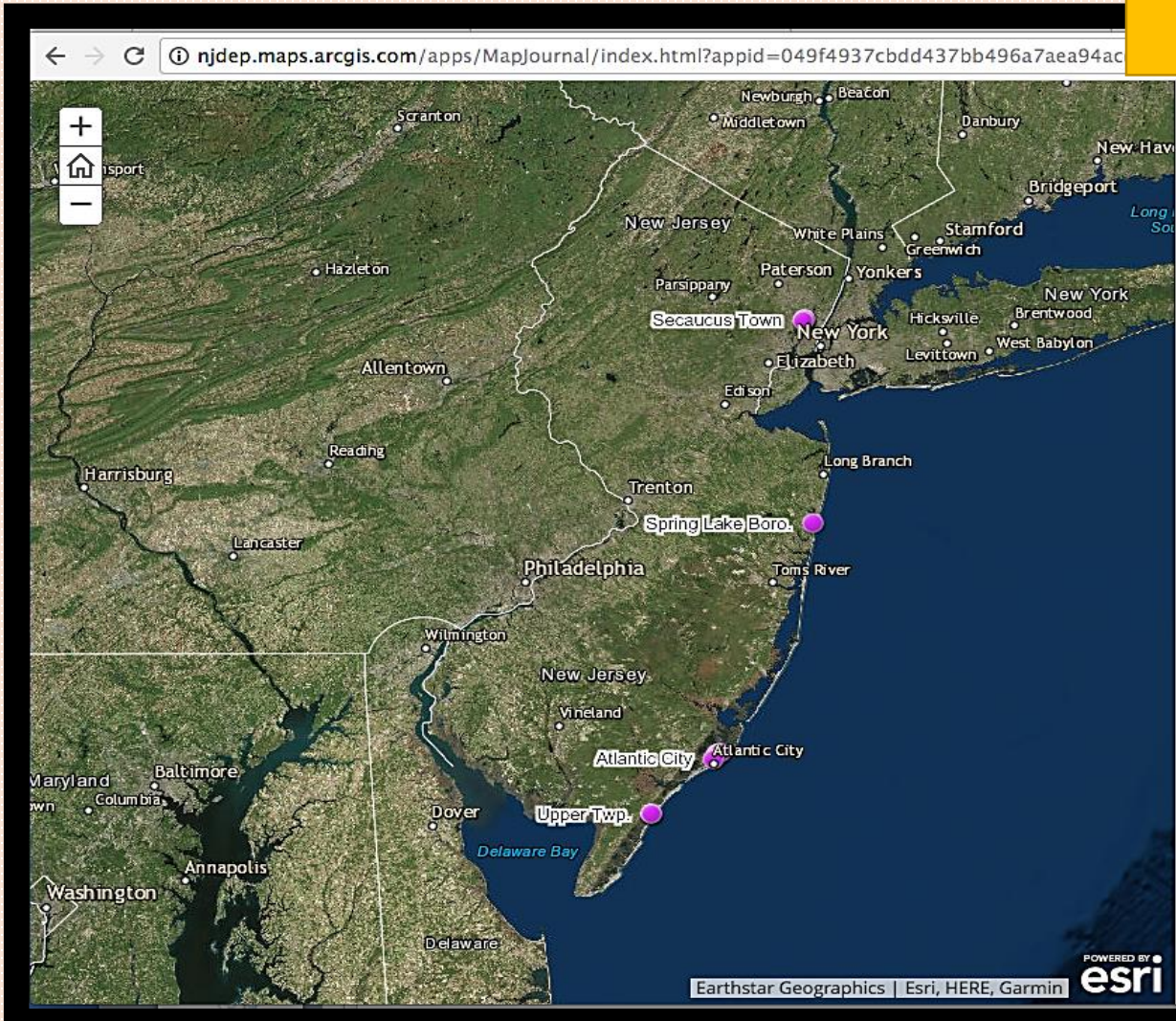
# Promoting Nature- Based Solutions



<http://www.nj.gov/dep/oclupe/docs/bescch-final.pdf>

# Living Shorelines AGO

[http://www.nj.gov/dep/cmp/czm\\_mapindex.html](http://www.nj.gov/dep/cmp/czm_mapindex.html)



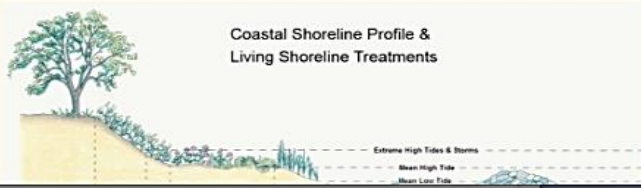
Provide Feedback

## NJ Living Shoreline Projects

Living shorelines are a shoreline management practice that addresses the loss of vegetated shorelines and habitat in the littoral zone by providing for the protection, restoration or enhancement of these habitats.

The goal of the NJ Living Shoreline Program is to create and maintain sustainable shorelines for: 1) Habitat enhancement / creation, 2) Shoreline stabilization, 3) Marsh enhancement / restoration / creation, 4) Tidal flood mitigation and 5) Stormwater management.

Coastal Shoreline Profile & Living Shoreline Treatments



Earthstar Geographics | Esri, HERE, Garmin

POWERED BY **esri**

# Living Shorelines AGO

The screenshot shows a web browser window displaying a map of the Brigantine Living Shoreline Project. The map features an aerial view of a coastal area with a marina and residential buildings. Several pink rectangular callouts are placed along the shoreline. Labels on the map include 'Absecon', 'Golden Hummock', 'Golden Hummock Thoroughfare', and 'Absecon Channel Tributary'. An 'OVERVIEW MAP' inset is visible in the bottom left corner. The browser's address bar shows the URL: [njdep.maps.arcgis.com/apps/MapJournal/index.html?appid=049f4937cbdd437bb496a7aea94acd35&folderid=f4686d3c9a7048efb7a1dd8d877eb3f6](http://njdep.maps.arcgis.com/apps/MapJournal/index.html?appid=049f4937cbdd437bb496a7aea94acd35&folderid=f4686d3c9a7048efb7a1dd8d877eb3f6). The page content includes a 'Provide Feedback' link, social media icons, the title 'NJ Living Shoreline Projects Brigantine Living Shoreline', a 'Project Image' showing a vegetated embankment, and a description: 'Brigantine Living Shoreline Project includes stabilization at waterline, vegetated embankment to deter flooding and create pollinator habitat (Click map feature for additional details)'. Below the description are links for 'Additional Information', 'monitoring data', and the 'Brigantine City, Atlantic County Website'. The Esri logo and 'POWERED BY' text are at the bottom right of the map area.

Provide Feedback

NJ Living Shoreline Projects  
Brigantine Living Shoreline

Project Image

Brigantine Living Shoreline Project includes stabilization at waterline, vegetated embankment to deter flooding and create pollinator habitat (Click map feature for additional details).

[For Additional Information](#)  
[Click for monitoring data](#)  
[Brigantine City, Atlantic County Website](#)

Microsoft | State of New Jersey, Esri, HERE, Garmin, IPC



# Updating FEMA Flood Maps for Sea Level Rise

- There is an opportunity to include a Sea Level Rise Line directly on the FEMA FIRM map.
- LUM and the Division of Dam Safety and Flood Control are supportive of this approach.
  - We have representatives that participate on a steering committee for the study on behalf of NJ.
  - The Division of Dam Safety and Flood Control is in discussions with FEMA on a cost estimate for incorporating SLR into the mapping analysis.
    - It is expected that the state would need to cover a majority of the cost of the modeling related to a separate Sea Level Rise Line.



# Going Forward

- Tough Conversations

- **Should we...**

- Rethink how we build along our coastline?
- Change the type of development along our coast, working waterfronts (e.g., parks, marinas, restaurants, ecotourism, etc.)?
- Multi-residence housing on higher ground?
- Rolling easements?

# Questions?

