



**CITY OF ISLE OF PALMS  
SEA LEVEL RISE ADAPTATION PLAN  
ENVIRONMENTAL ADVISORY  
WORKSHOP**



Hurricane Joaquin (2015) flooding on Isle of Palms

1. Project Background
2. Process
3. Sea Level Rise & Vulnerability Analysis
4. Strategies
  - Projects
  - Programs
  - Policies
5. Next Steps



## Project Goals:

1. Develop SLR projections through 2050.
2. Assess risk and vulnerable assets.
3. Develop a series of Projects, Programs & Policies.
4. Identify funding sources.
5. Create roadmap for implementation.

# PROJECT BACKGROUND



Location map depicting study area and surrounding waterways.



- 1. Project kick off**
  - Sep. 2023
- 2. Technical Review Committee**
  - Feb. 2024
- 3. Planning Commission Workshop & Environmental Advisory Committee**  
May 2024
- 4. Public survey**
  - Draft set to launch May 2024
- 5. City Council Meeting**



## 1. Water Levels

## 2. GIS Data

- Parcels, facilities, buildings, streets, canals, outfalls, lift stations, septic systems, census data

## 3. Completed & Ongoing Studies/Projects

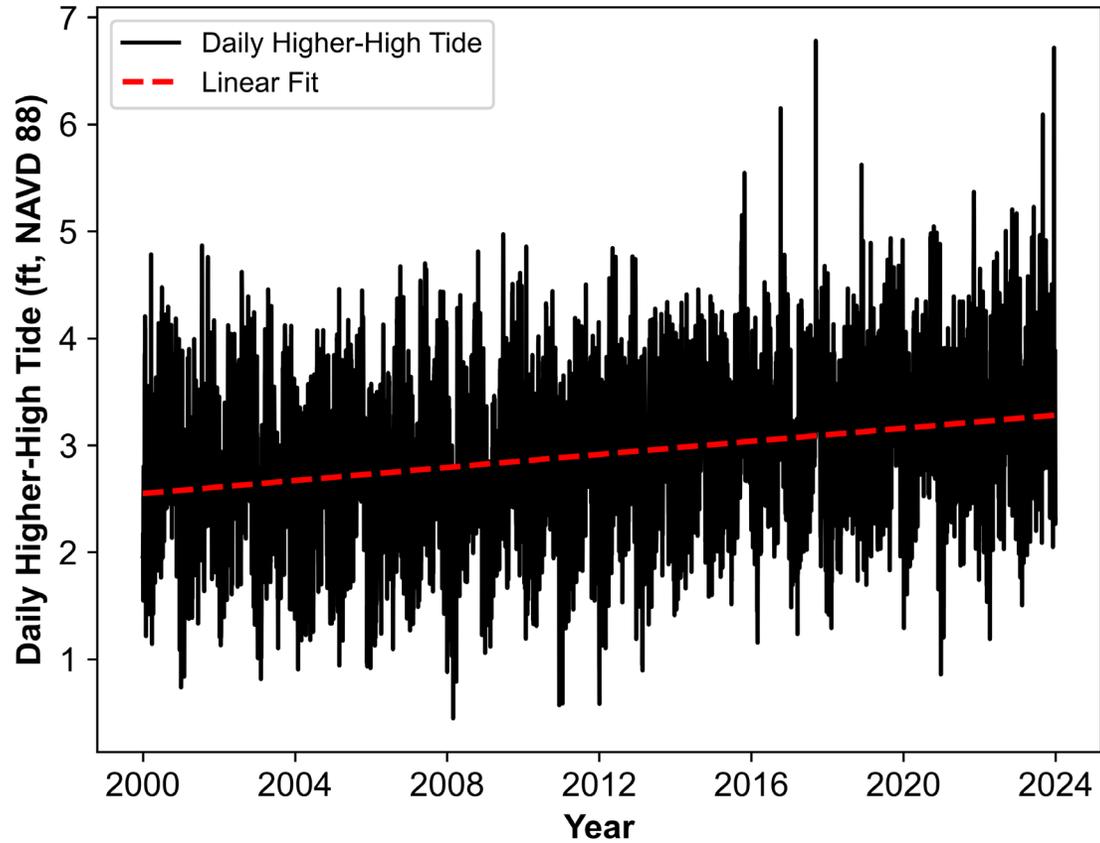
- Phase III and Phase IV drainage master plans
- IOP Comprehensive Plan (2015)
- Beach Management Plan (Updated 2023)



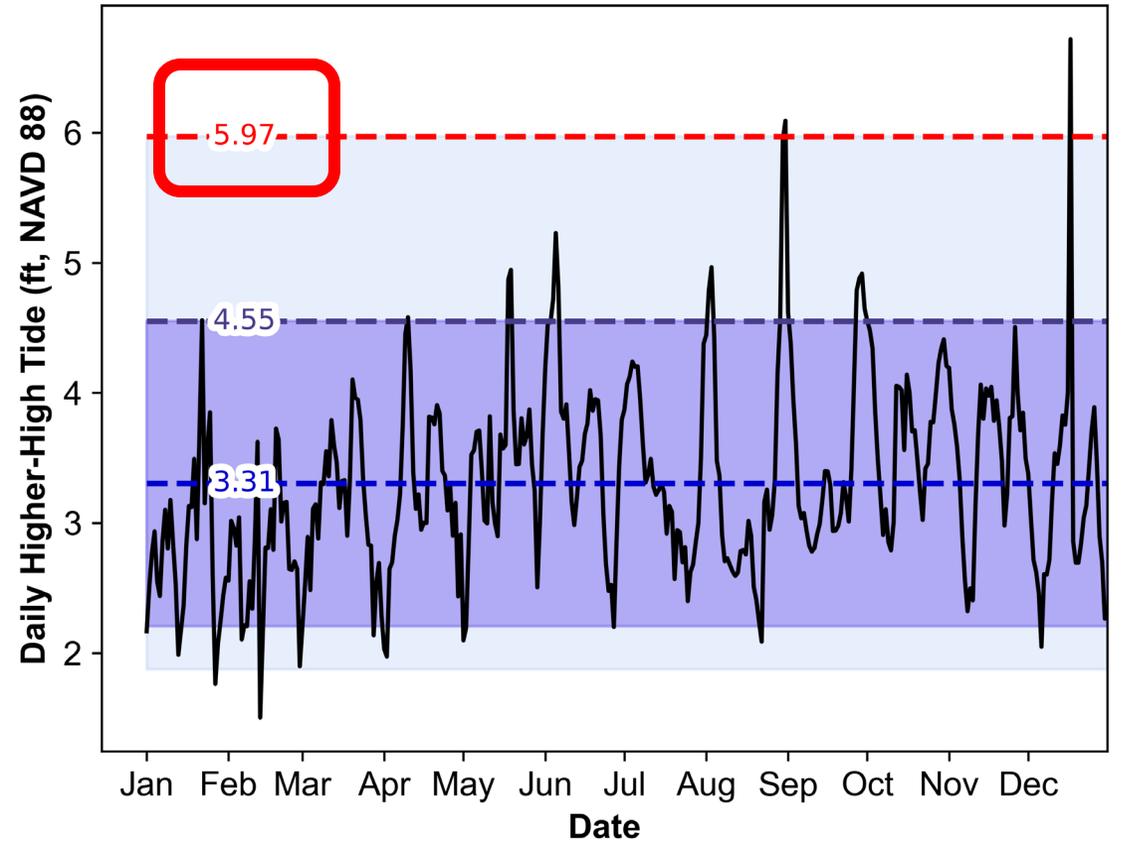
a) Monitoring Locations

# SEA LEVEL RISE - TIDAL BENCHMARK

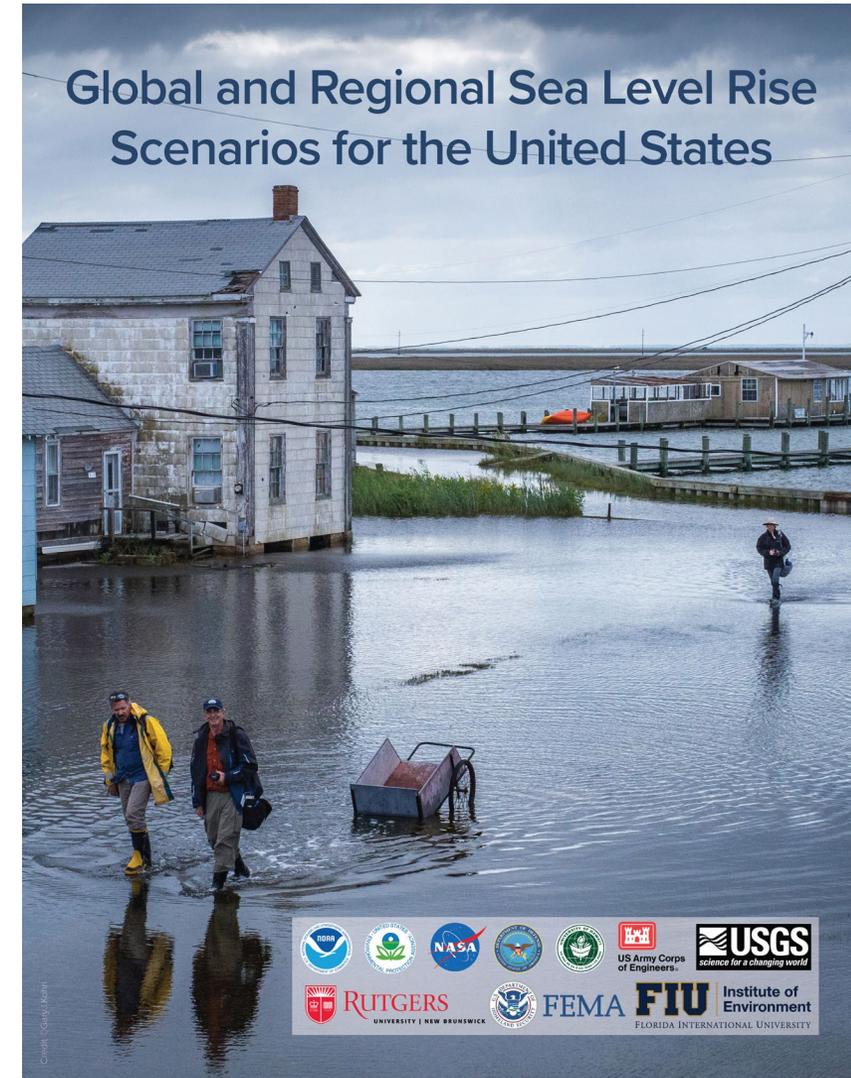
## 2020 - 2023



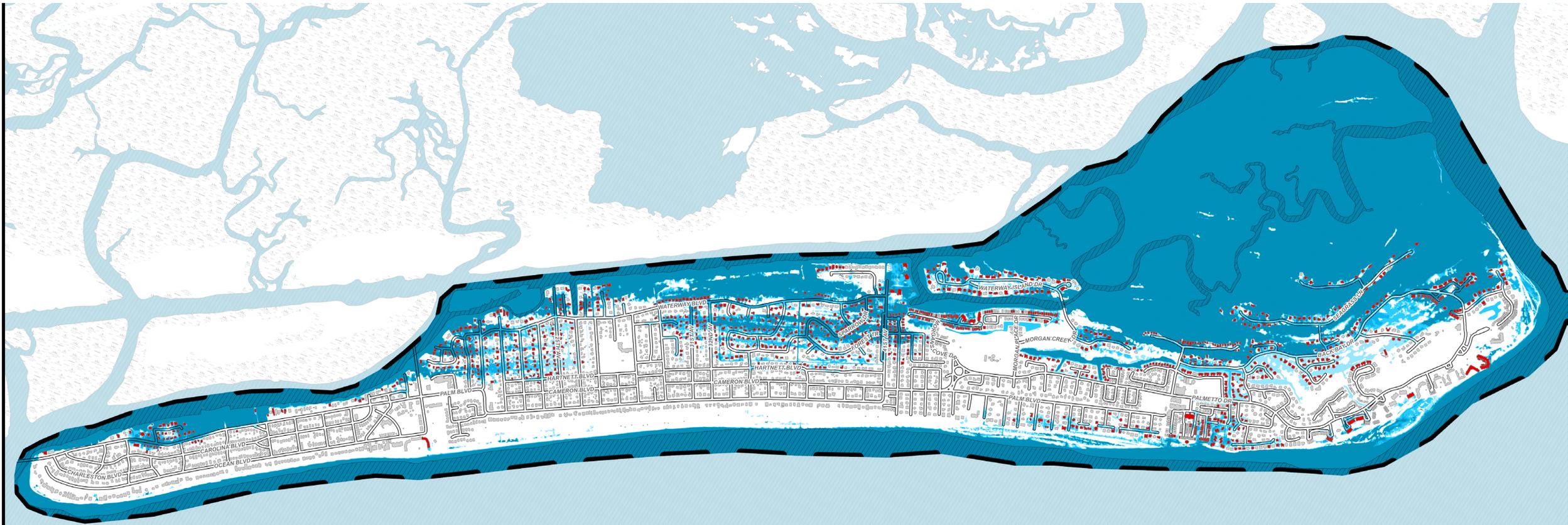
## 2023



- **Targeting 1' of Sea Level Rise for the year 2050**
  - Intermediate projection + Subsidence factor
  - $5.97 + \text{SLR} + \text{subsidence factor} = 7'$
- **Based on:**
  - Federal Interagency Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Task Force
    - Most up-to-date SLR projections
    - Key input for 5<sup>th</sup> National Climate Assessment
- **Data informs SLR adaptation plans at all scales**



# VULNERABILITY ANALYSIS

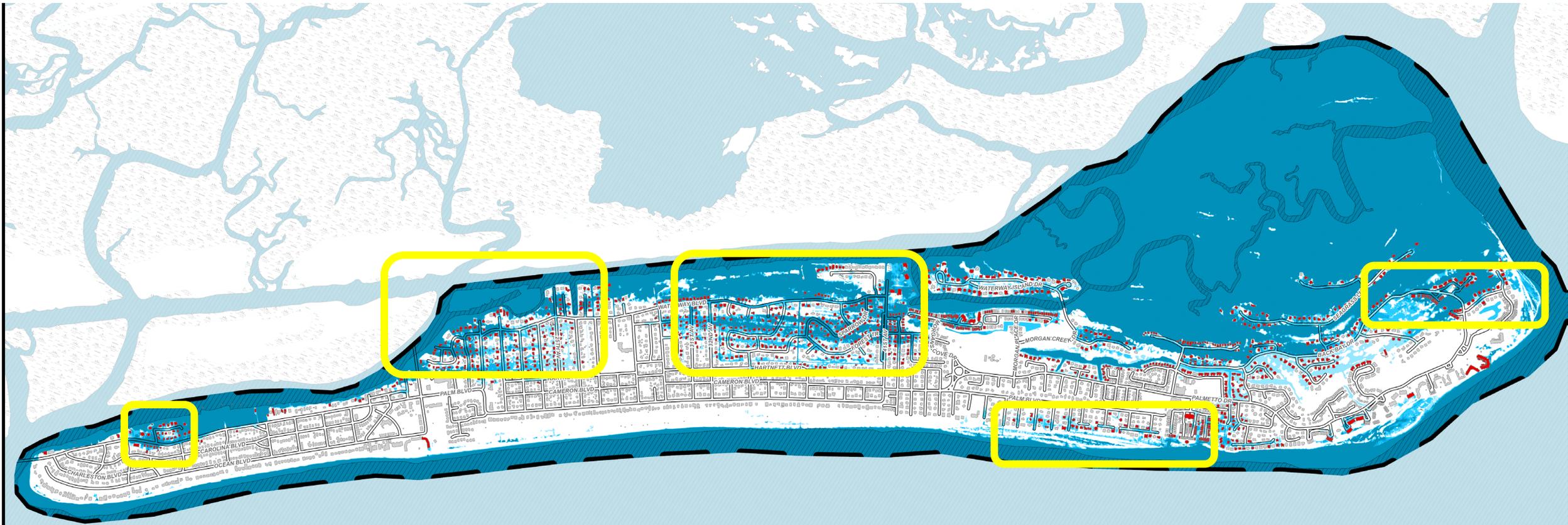


**Legend**

- Study Boundary
- Existing Structure
- At-Risk Structure
- Roadway
- Waterway
- Marsh
- Maximum Inundation Boundary**
- 2023
- 2030
- 2040
- 2050



# VULNERABILITY ANALYSIS



**Legend**

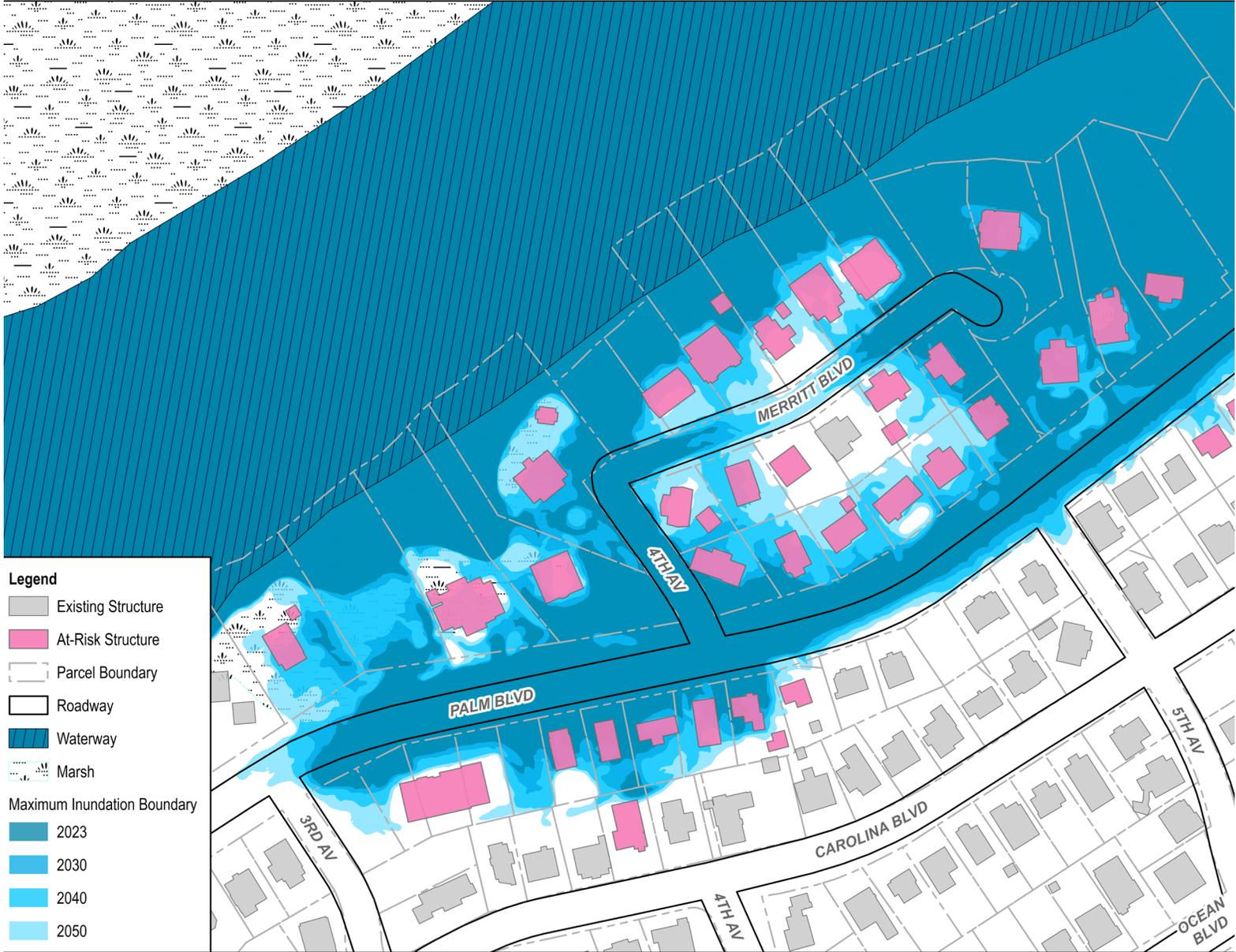
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Maximum Inundation Boundary

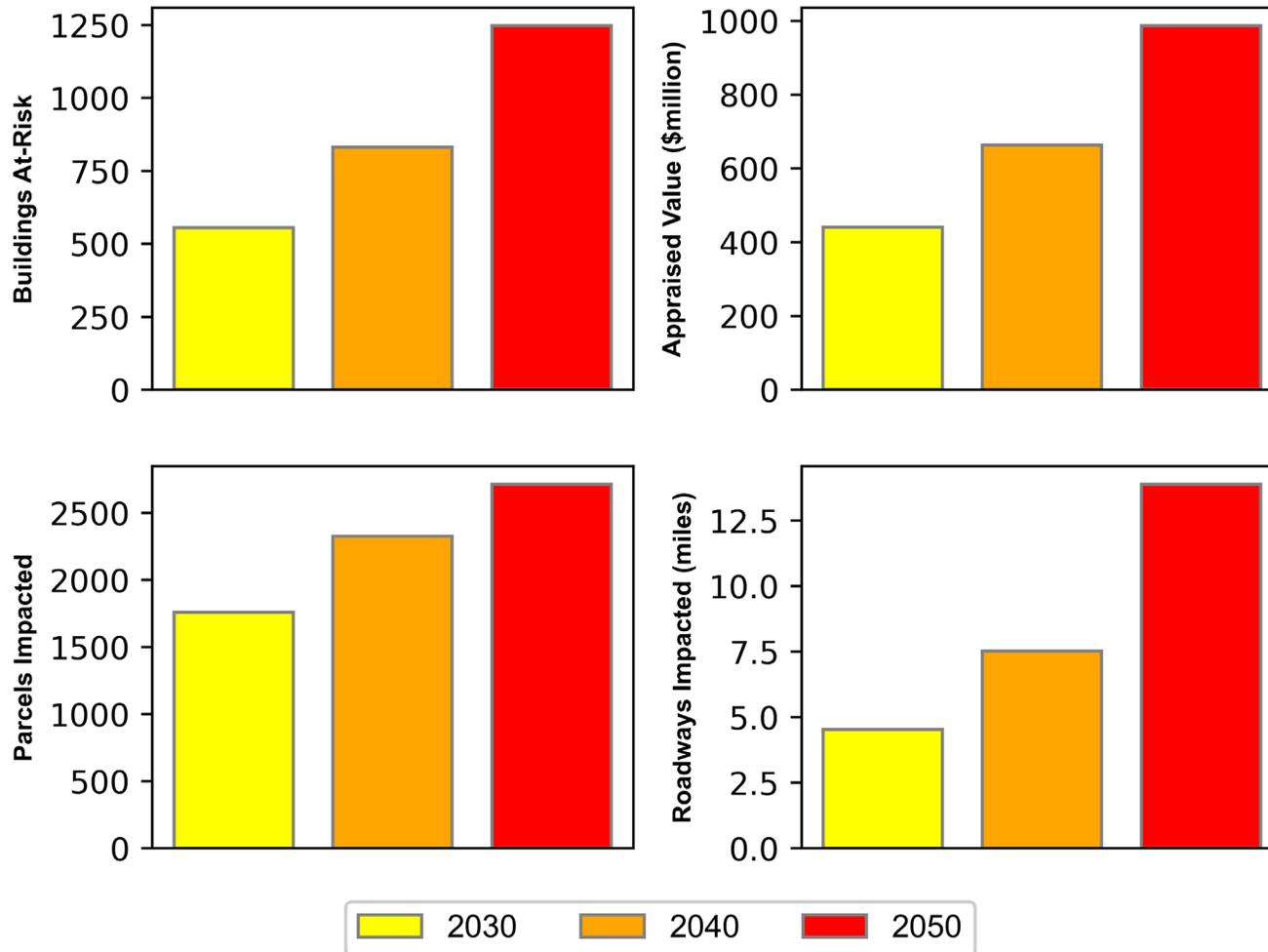
- 2023
- 2030
- 2040
- 2050



# VULNERABILITY ANALYSIS



## Impact Statistics (2050)



1. Buildings at risk ~ 1,250
2. Appraised Value ~ \$1 Trillion
3. Parcels Impacted- ~2,500
4. Roadways ~ 12.5 miles



## Policies

- A** Elevated tide and emergency operations policies
- B** Zoning ordinance updates for redevelopment
- C** Create a design tool for redevelopment
- D** Conduct water quality assessment plan



## Projects

- A** Infrastructure Maintenance
- B** Grey/ Rigid Infrastructure
- C** Green Infrastructure
- D** Perimeter Protections



## Programs

- A** Incentivizing private LID stormwater management
- B** Purchasing or conservation of flood prone property
- C** Educational Programs
- D** Create a demonstration rain garden





## Policies

- A Elevated tide and emergency operations policies
- B Zoning ordinance updates for redevelopment
- C Create a design tool for redevelopment
- D Conduct water quality assessment plan



1. **Elevated Tide & Emergency Response Program**
  - Adopt operations policy
2. **Update Zoning and Building Ordinance**
  - Additional fill
  - Limit new development
  - Septic conversion
  - Stormwater requirements
3. **Create a Design Tool for redevelopment**
4. **Conduct a Water Quality Assessment Plan**





## Projects

- A** Infrastructure Maintenance
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Beach renourishment at Breach Inlet



Cleaned and reinforced existing ditch in the right-of-way

## 1. Infrastructure Maintenance

- Clean storm pipes, ditches & swales
- Replace check valves

## 2. Post – storm/flood inspections & maintenance

## 3. Web-based maintenance portal

**TIDEeye • Wed, May 8**

HIGH TIDES FORECAST Charleston Harbor, SC

Wed May 8	Thu May 9
6'9" 9PM	5'2" 9AM
13 mph	18 mph
	25%
	6'6" 10PM
	18 mph
	25%

**CURRENT CONDITIONS**

TIDES @	Cooper River	Church Creek
Latest Observed	0.40' 1:06 pm	2.48' 10:20 am
Next High Tide		
Last High Tide		2.46' 2:15 am

First Quarter

Last NWS Update: 12:54 pm





## Projects

- A** Infrastructure Maintenance
- B** Grey/ Rigid Infrastructure
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Check valves on marsh outfall



Increase storm pipe size and structure

- 1. Upgrade & replace pipes**
- 2. Add water control structures**
  - Check valves
- 3. Incorporate dune infiltration systems**
- 4. Raising flood-prone roadways**





## Projects

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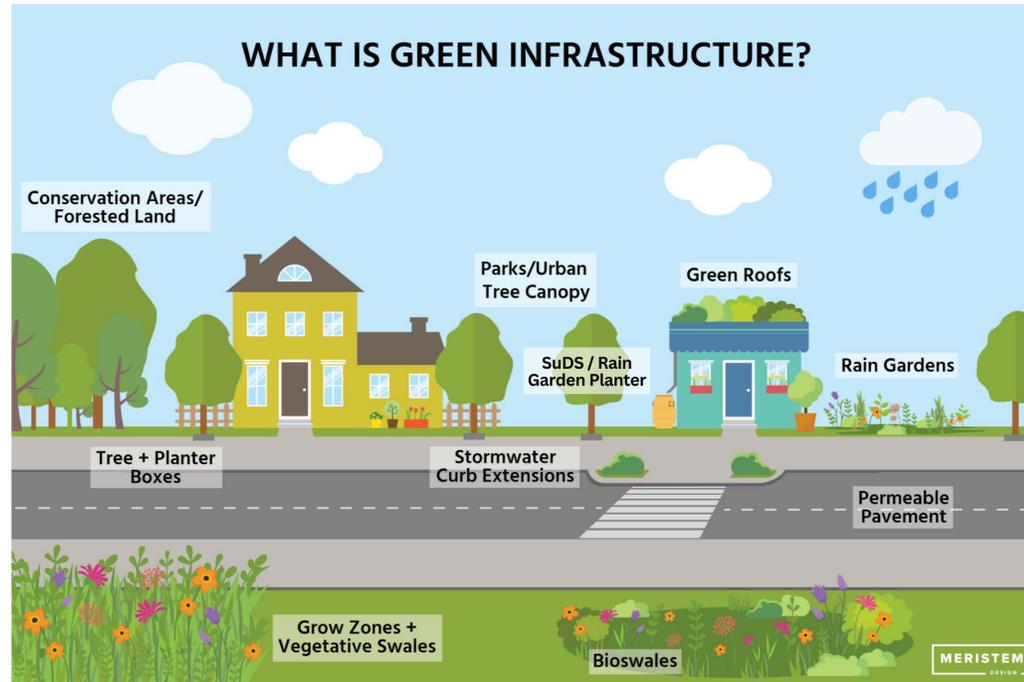
- 1. Implement living shorelines**
- 2. Vegetated berms (public + private)**
- 3. Structural fill**
- 4. Beach/Dune renourishment**





## Projects

- A Infrastructure Maintenance
- B Grey/ Rigid Infrastructure
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1. Incorporate (LID) bioswales & rain gardens into public improvements
2. Re-establish interior canals
  - Revegetate
  - Habitat creation
  - Amenity (increased property values)
  - Provide additional water volume/storage during storm events



## Programs

- A Incentivizing private LID stormwater management
- B Purchasing or conservation of flood prone property
- C Educational Programs
- D Create a demonstration rain garden



1. Educational Programs
  1. SLR Study
2. Incentivize low impact development for private development
  - Rain gardens/cisterns
  - Replace lawn with natives
  - Tree canopy
3. Conservation of flood prone properties
4. City to create demonstration rain garden





1. **Community & City Feedback**
2. **Finalize Recommendations for High-Risk Areas**
3. **Draft Document Creation**
4. **Final Document**
5. **Revisit Document every 5 years**