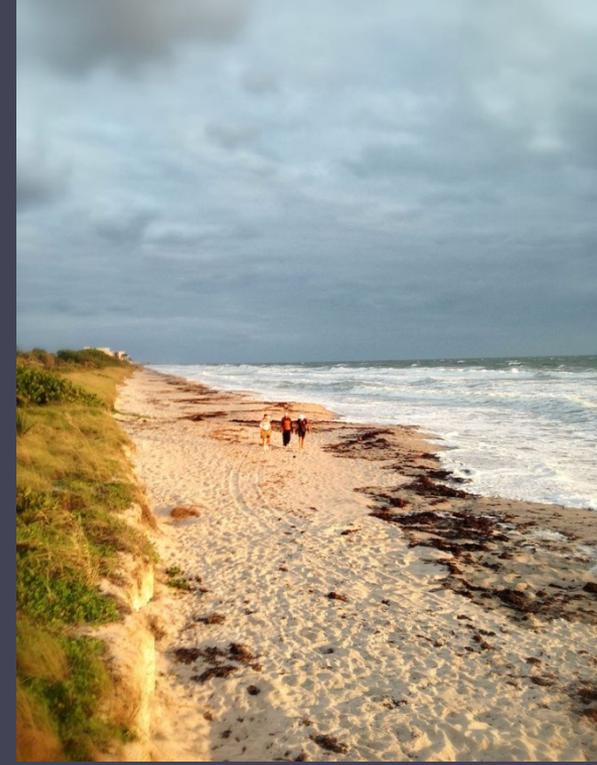


# Creating a Resilient Community



The City of Satellite Beach  
Community Resiliency Project



# Resources

- [www.climate.gov](http://www.climate.gov)
- [www.climate.nasa.gov](http://www.climate.nasa.gov)

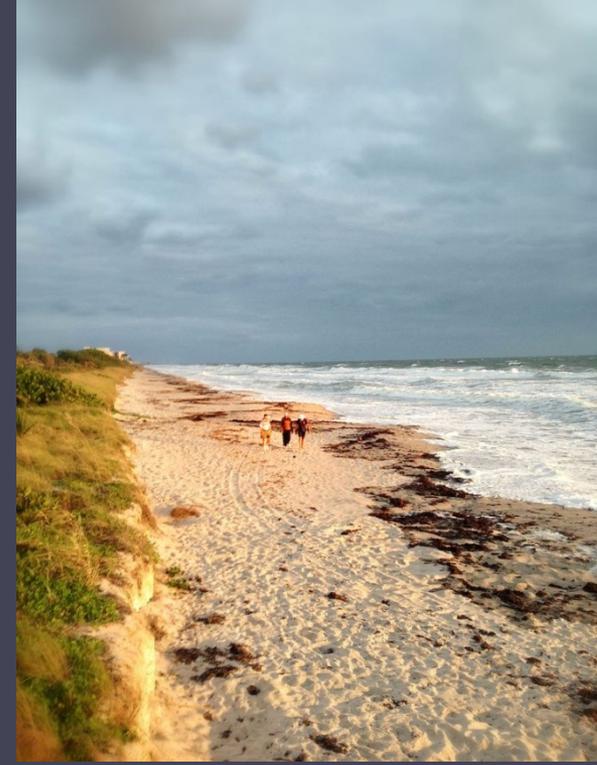


# Agenda

- **Creating A Resilient Community Project Overview**
- **Resiliency Panel Discussion**
- **Panel Questions and Answers**
- **Public Input Activities**



# Creating a Resilient Community



## The City of Satellite Beach Community Resiliency Project

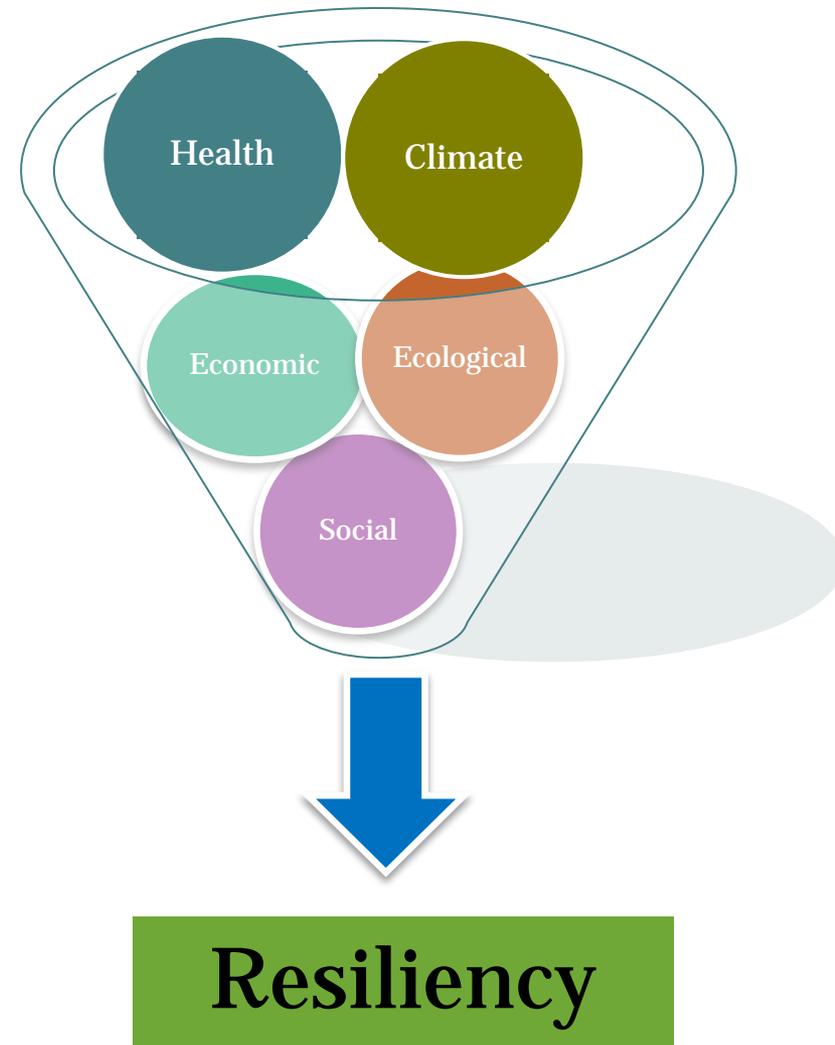


**Tara McCue, AICP**  
Director of Planning and Community Development  
East Central Florida Regional Planning Council



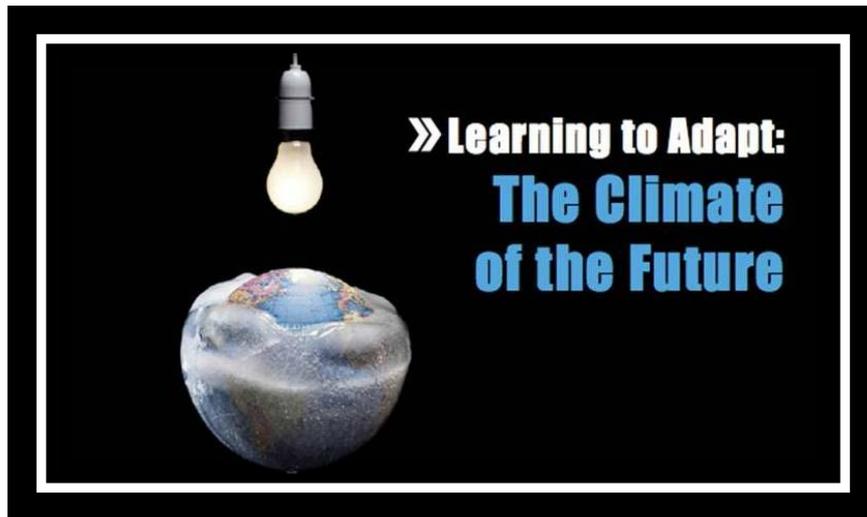
# What is Climate Resiliency?

- **Climate Resilience can be generally defined as the capacity for a community to adapt, reorganize, and to improve the sustainability of the community, leaving it better prepared for future climate change impacts and natural disasters.**



# What it means for Satellite Beach

- Identify approaches to mitigate and adapt to the effects of climate change while also positioning the City to take advantage of potential economic prosperity opportunities.





# Where We've Been

**Satellite Beach  
Climate Ready  
Estuaries Pilot  
Project  
2009-2010**

**Florida  
Department of  
Economic  
Opportunity –  
Community  
Resiliency  
Initiative Begins  
Jan. 2011**

**City of Satellite  
Beach adopts  
Adaptation  
Action Area and  
Sea Level Rise  
Policy  
2013**

**Satellite Beach  
Sea Level Rise  
Subcommittee  
to CPAB  
2010**

**State Adopts  
Community  
Planning Act with  
Adaptation Action  
Area Language  
May 2011**

**FDEP  
Coastal  
Partnership  
Community  
Resiliency  
Grant  
2014/2015**



# Satellite Beach's Resiliency Efforts - *Satellite Beach Climate Ready Estuaries Pilot Project*

- 2009 – 2010
- Grant by U.S. Environmental Protection Agency 2009 Climate Ready Estuaries Program
- Investigate and assess of the potential effects of sea level rise on the City of Satellite Beach's infrastructure and resources;
- Education and Outreach





**LiDAR**

**Vertical datum NAVD88**

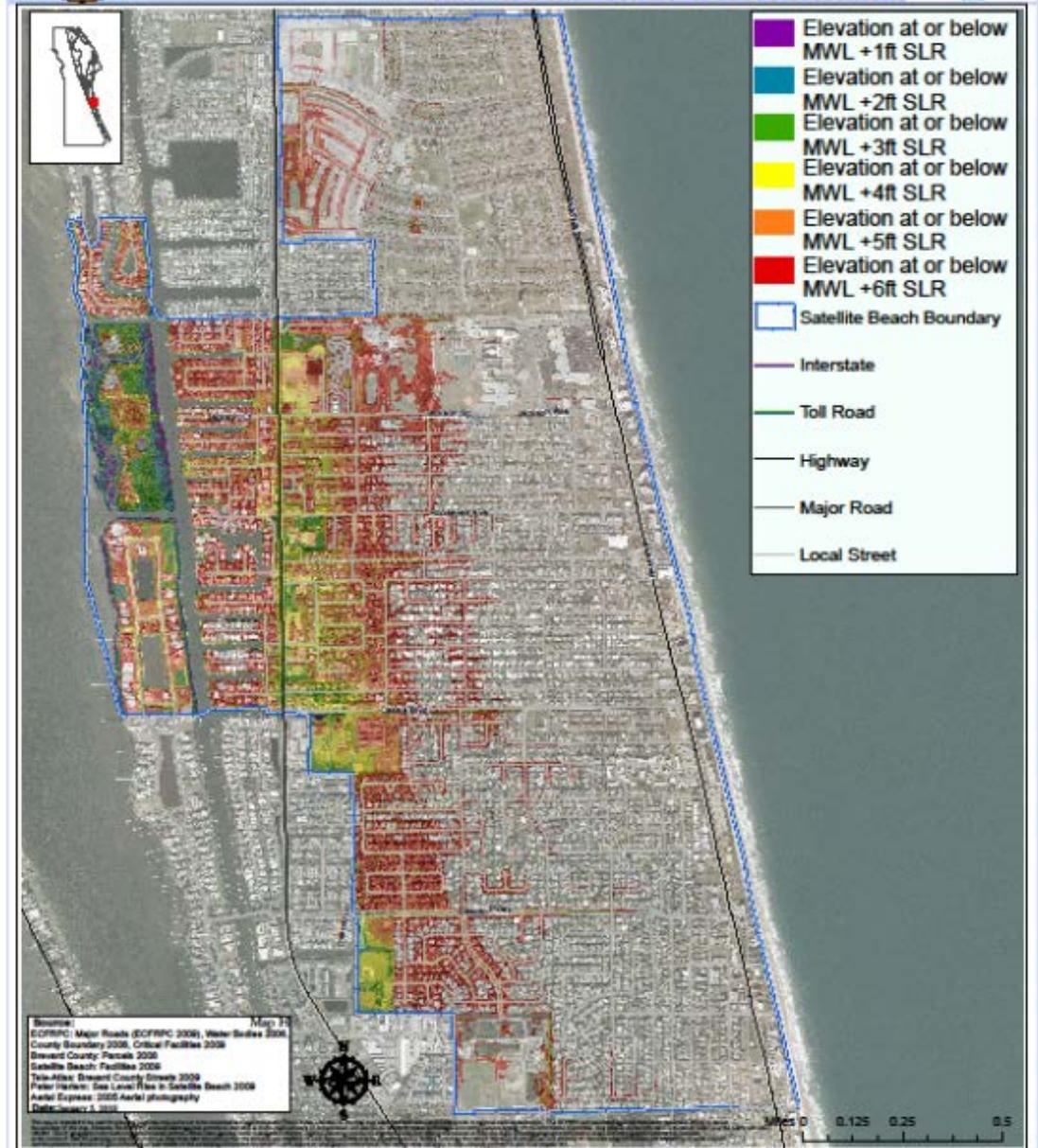
**Local adjustment based on  
Banana River data and SLR  
Final Adjusted MWL(2010)  
0.189m**

**2010 Sea Level Rise  
Sub-Committee unanimously  
forwarded recommendations  
to CPAB.**



# Stages of Submergence by Sea Level Rise with Aerial Overlay

Satellite Beach Sea Level Rise Assessment



# Community Resiliency Initiative

- In January 2011, National Oceanic & Atmospheric Administration (NOAA) approved the Florida Coastal Management Program's (FCMP) Section 309 Strategy 10, which supported a statewide Community Resiliency Initiative
- Collaboration between the Florida Department of Economic Opportunity (DEO) and the Florida Division of Emergency Management.





# Community Resiliency Initiative Goals



- Follow the lead of local governments.
- Provide the coastal resilience and adaptation technical assistance to local governments in the way that is most useful to them.
- Approach community resiliency at both the “grassroots” and statewide level.
- Better prepare the state for a resilient future.

# Projects of Special Merit

## ADAPTATION ACTION AREAS

CASE STUDY

FORT LAUDERDALE,

BROWARD COUNTY, FL

- Partnership with City of Ft. Lauderdale, Broward County, South Florida Regional Planning Council and Southeast Florida Regional Climate Compact.
- Address AAA in City of Ft. Lauderdale Local Comprehensive Plan.
- Create guidance for statewide dissemination.



July  
2014





# Adaptation Action Areas

May 8, 2011

Community Planning Act (HB 720)

Adaptation Action Area language at the state level.



Boston, Hurricane Sandy -  
[http://inapcache.boston.com/universal/site\\_graphics/blogs/bigpicture/sandy/bp48.jpg](http://inapcache.boston.com/universal/site_graphics/blogs/bigpicture/sandy/bp48.jpg)

**Section 163.3164(1), Florida Statutes Adaptation Action Area or “adaptation area” means a designation in the coastal management element of a local government’s comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning.**



# Satellite Beach Comprehensive Plan

## Coastal Element

### Adaptation Action Area Policy

---



#### Objective 1.4A

The City shall strive to reduce the exposure of human life and public and private property to natural hazards while reducing the cost of flood insurance.

**Policy 1.4A.1** - *The City shall initiate a public process to identify Adaptation Action Areas (AAAs) in accordance with Sections 163.3164(1) and 163.3177(6)(g)10 Florida Statutes. The purpose of the AAAs is to increase grant and other funding opportunities and identify creative solutions to achieve the following goals:*

- . Protect the health, safety and welfare of residents,*
- . Prevent damage to public and private property, and*
- . Reduce National Flood Insurance Program premiums to property owners.*

#### Objective 1.12A

Development and redevelopment within the City shall be permitted only when consistent with sound planning practices that shall protect life and property from the effects of coastal erosion, flooding, sea level rise, or damage to environmental systems.

**Policy 1.12 A.2**

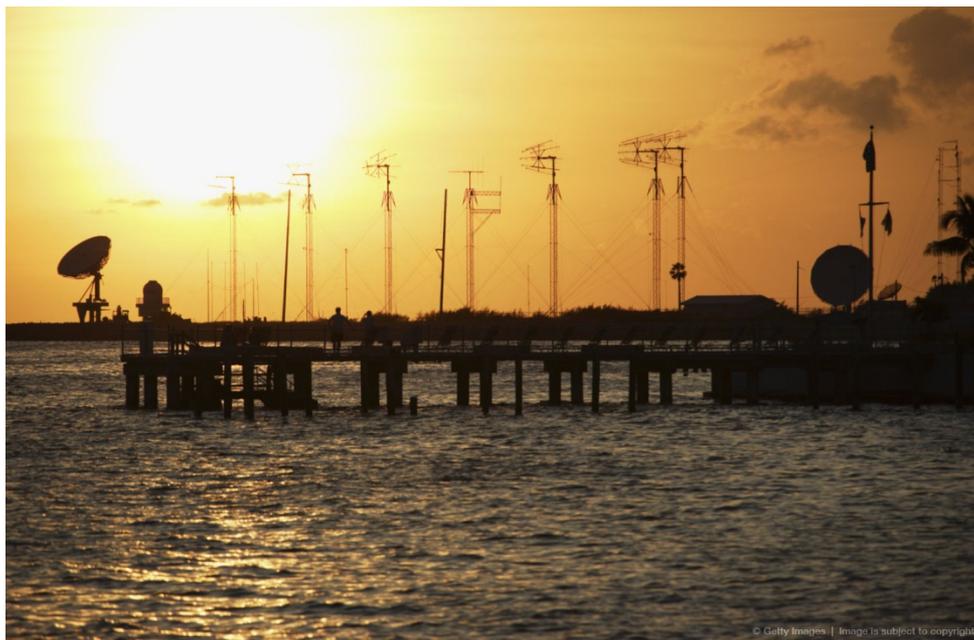
*The City of Satellite Beach designates the Adaptation Action Area (AAA) as that area which includes the CHHA and other areas of the City as may be identified by the City Council in the future as being subject to coastal erosion, flooding, sea level rise, or damage to environmental systems.*





# Creating a Resilient Community Project Overview

- Florida Department of Protection Grant Program – Coastal Partnership Initiative
- Community Resiliency
- 1 Year (July 2014- June 2015)





# Project Team

- City of Satellite Beach
- East Central Florida Regional Planning Council
- Brevard County
- Florida Institute of Technology
- Florida Department of Economic Opportunity
- UF – Florida Sea Grant



**PARTNERS IP**

# TAC Team



- City of Satellite Beach
- East Central Florida Regional Planning Council
- Brevard County
- Volusia County
- Florida Institute of Technology
- Florida Department of Economic Opportunity
- UF – Florida Sea Grant and GeoPlan
- Space Coast TPO
- River to Sea TPO
- FDOT
- NOAA – Melbourne Office
- Environmental Remediation
- USACE



# Project Goals

- Identify “*other areas of the City*” and/or criteria for Adaptation Action Areas.
- Set the foundation to bring in Adaptation Action Areas to the community and the City Council as a tool for improving community resilience.
- Engage the public to help develop strategies and priorities for the City to implement and address.



# Long-term Goals



Mitigating homes to above projected inundation and flood levels

- Reductions in long-term risk exposure to sustain and increase community resilience and affordability.
- Adaptation Action Areas used as a tool that contributes to enhancing resilience.
- Prioritize funding.





# Three Step Process



# Understand Your Baseline Risk and Data Collection

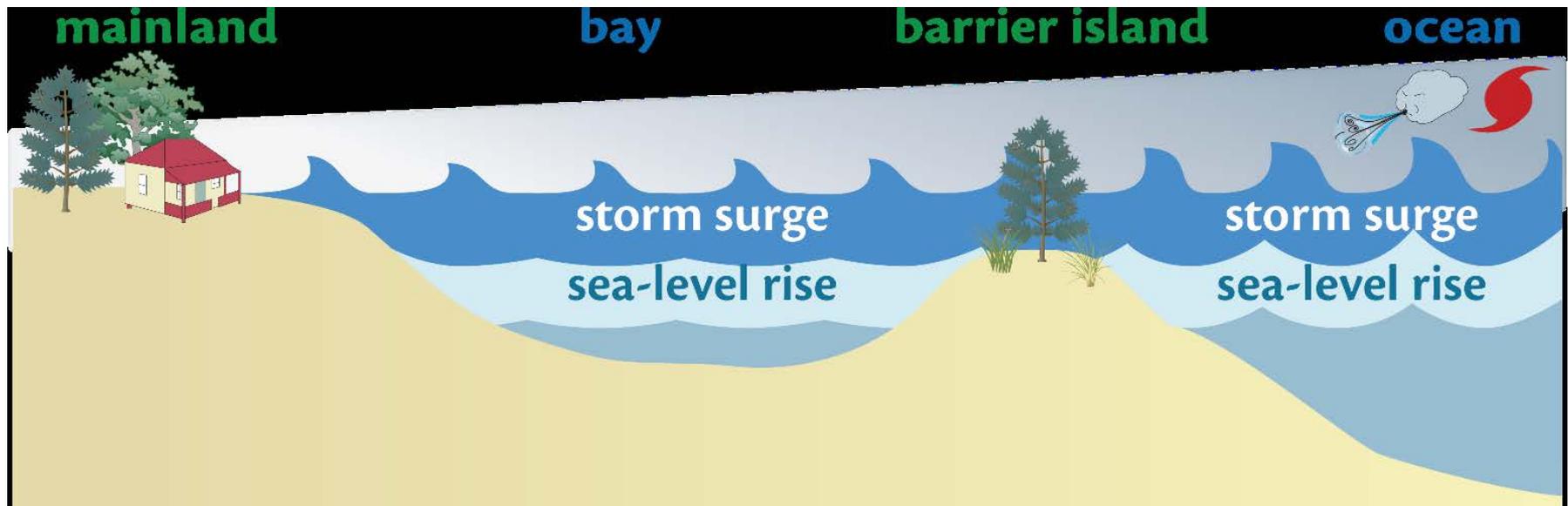
- Sea Level Rise
- Storm Surge
- Flood Risks
- Erosion

Brevard Local Mitigation  
Strategy as a template with  
the inclusion of sea level rise



# Sea Level Rise

- higher storm surge
- tidal flooding,
- compromised storm-water management system



Sea-level Rise and Storm Surges on Barrier Islands: Conceptual diagram illustrating the effects of sea-level rise and storm surges on barrier islands. When sea-level rise combines with strong storms, barrier islands experience high storm surges which increases the effects of flooding and erosion. Diagram from [http://ian.umces.edu/link/tos\\_barrier\\_learn](http://ian.umces.edu/link/tos_barrier_learn)



**UF** UNIVERSITY of  
**FLORIDA**



# SEA LEVEL SCENARIO SKETCH PLANNING TOOL

## Atlantic Coast

Mean High High Water (NAVD88)

USACE Low, Intermediate and High Projection Rate Curves

Planning Horizon: 2040, 2070, 2100

## Lagoon Side

Mean Annual High Water (NAVD88)

USACE Low, Intermediate and High Projection Rate Curves

Planning Horizon: 2040, 2070, 2100

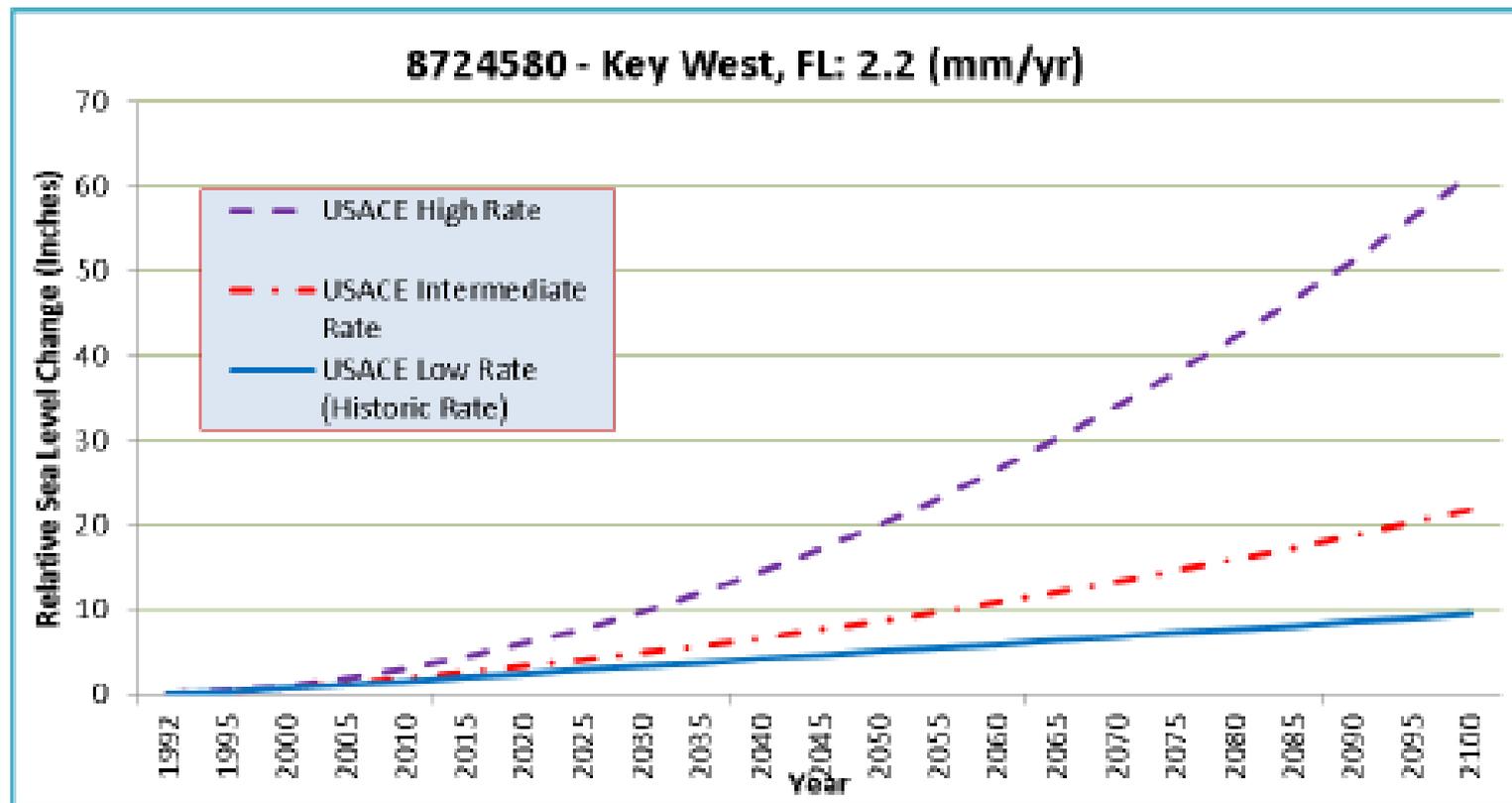
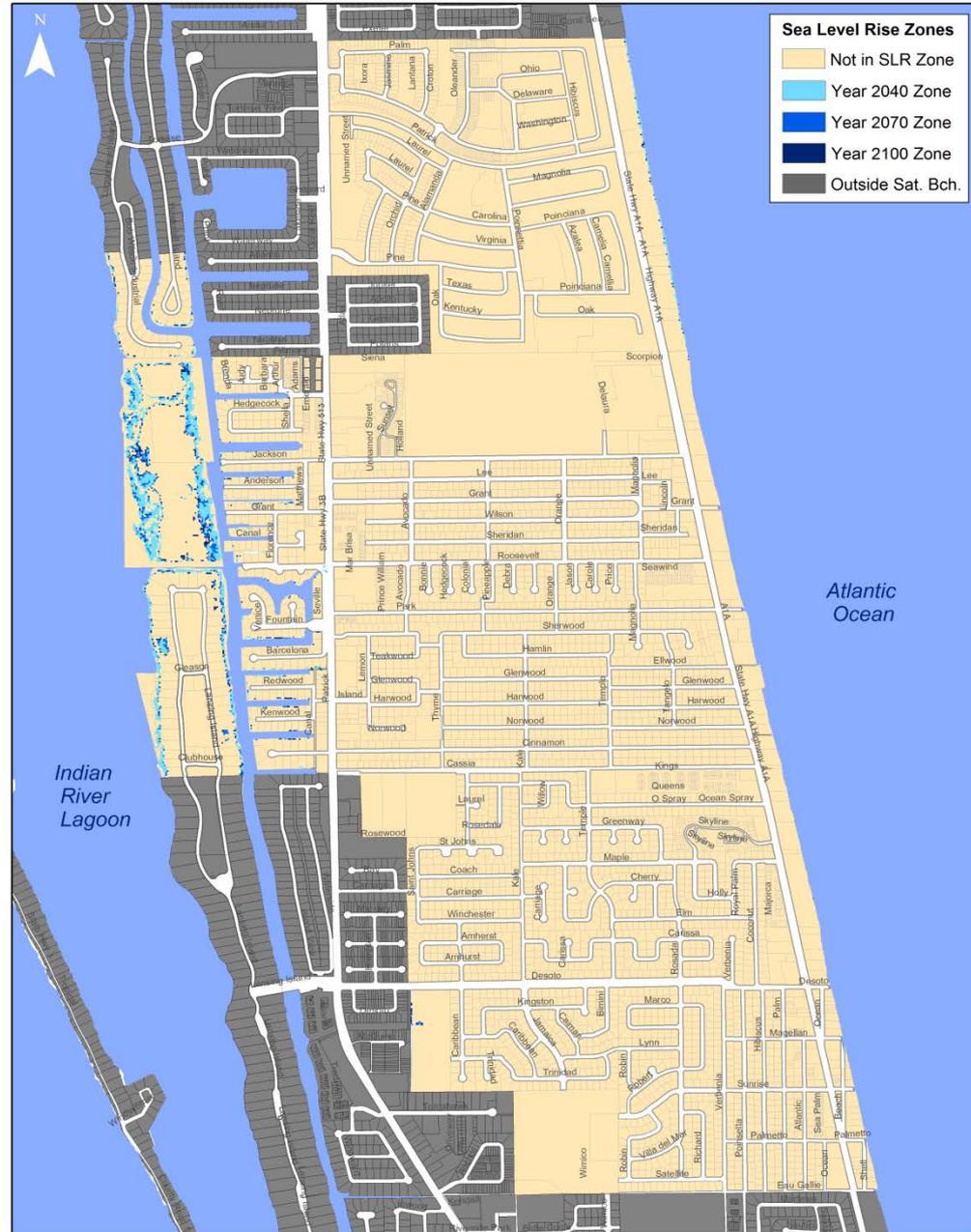


Figure 2 Projected Sea Level Change Curves (Source USACE, 2012)



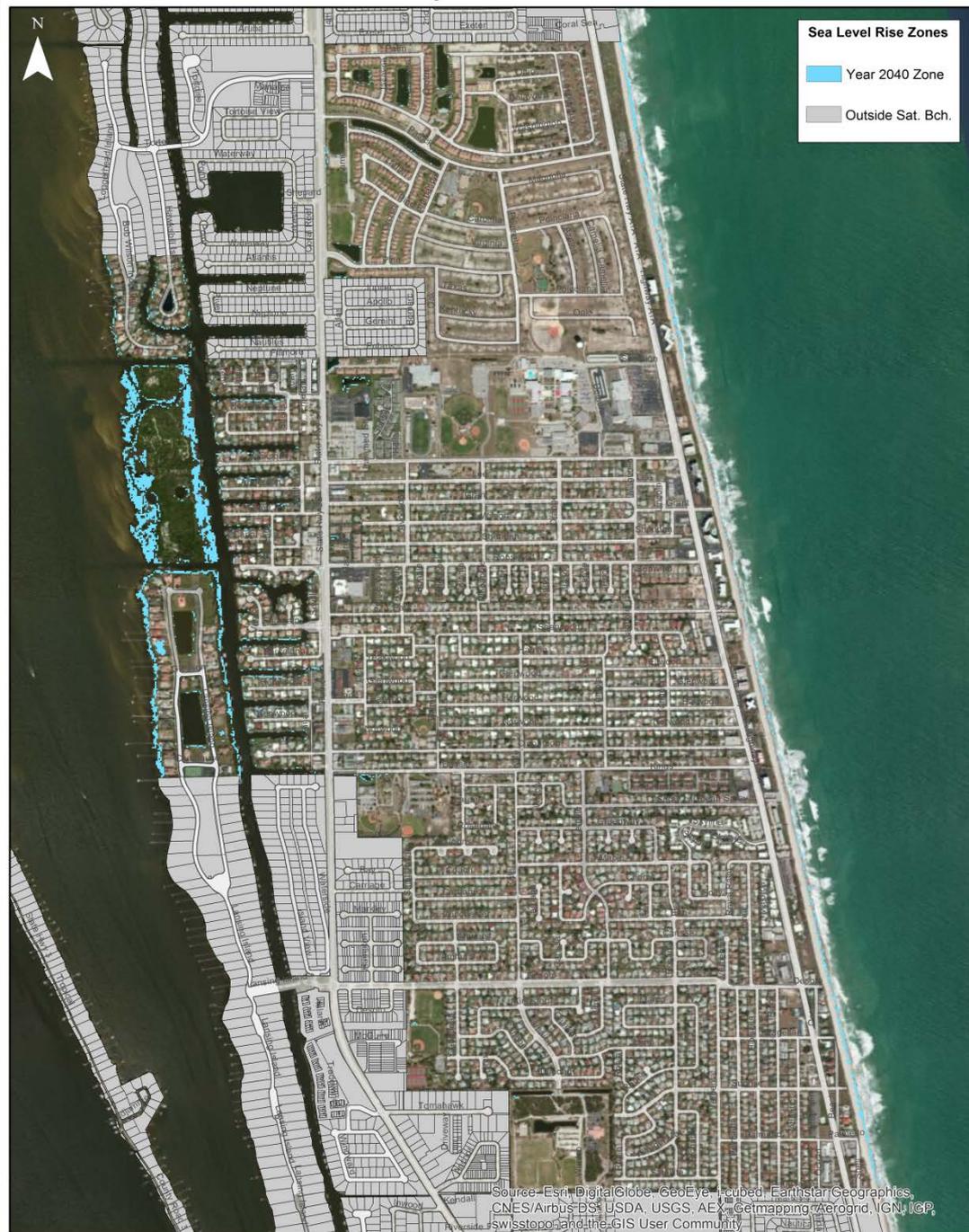
Source(s): ECFRPC, Brevard County GIS, FDOT, UF GeoPlan Center

# Low USACE Projection Rate Curve

- 2040:
  - 36 inch inundation using MHHW (Atlantic),
  - 9 inch inundation using MAHW (Lagoon)
- 2070:
  - 39 inch inundation using MHHW (Atlantic),
  - 12 inch inundation using MAHW (Lagoon)
- 2100:
  - 41 inch inundation using MHHW (Atlantic),
  - 14 inch inundation using MAHW (Lagoon)

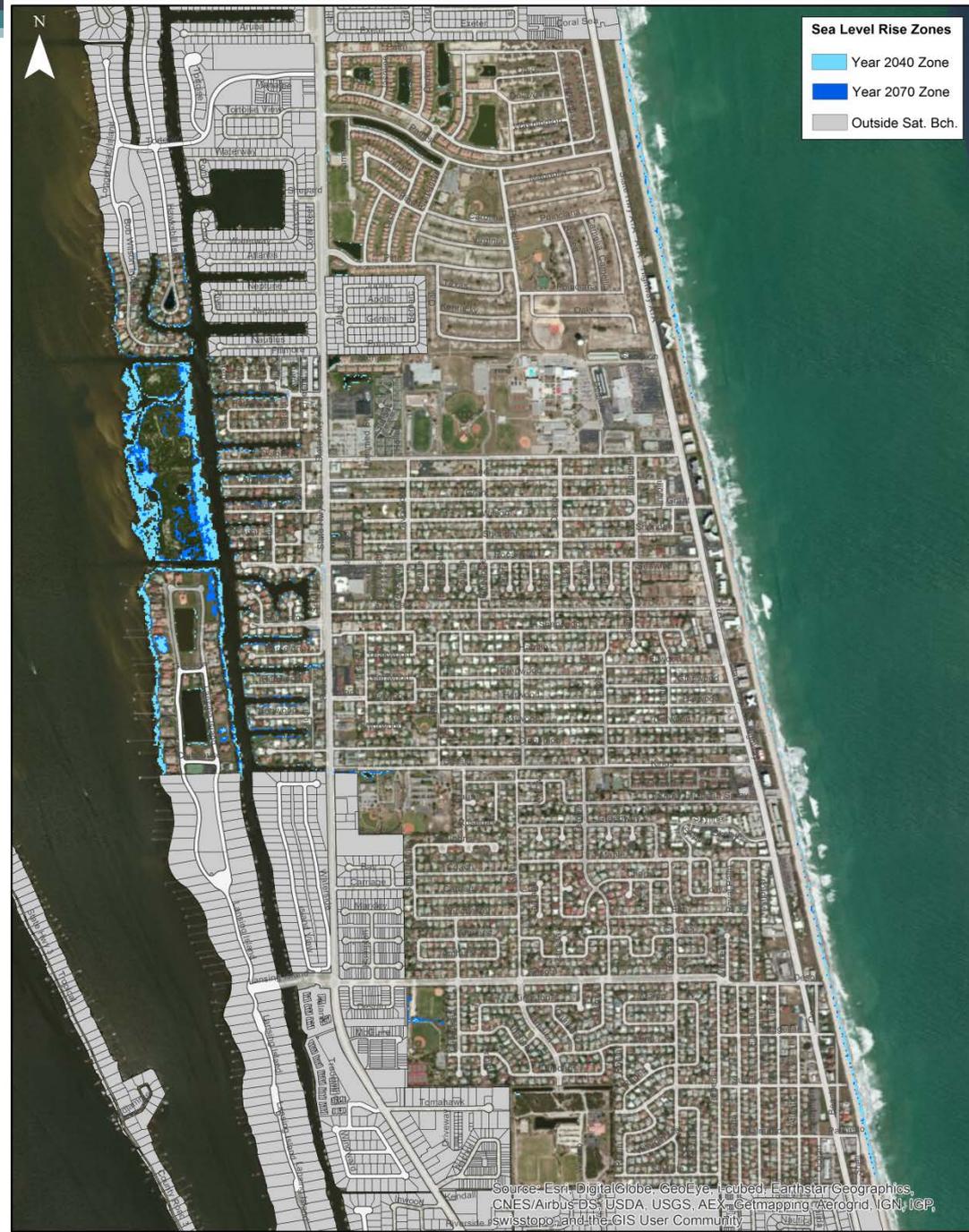
# Intermediate USACE Projection Rate Curve 2040

- 2040:
  - **38** inch inundation using MHHW (Atlantic),
  - **11** inch inundation using MAHW (Lagoon)



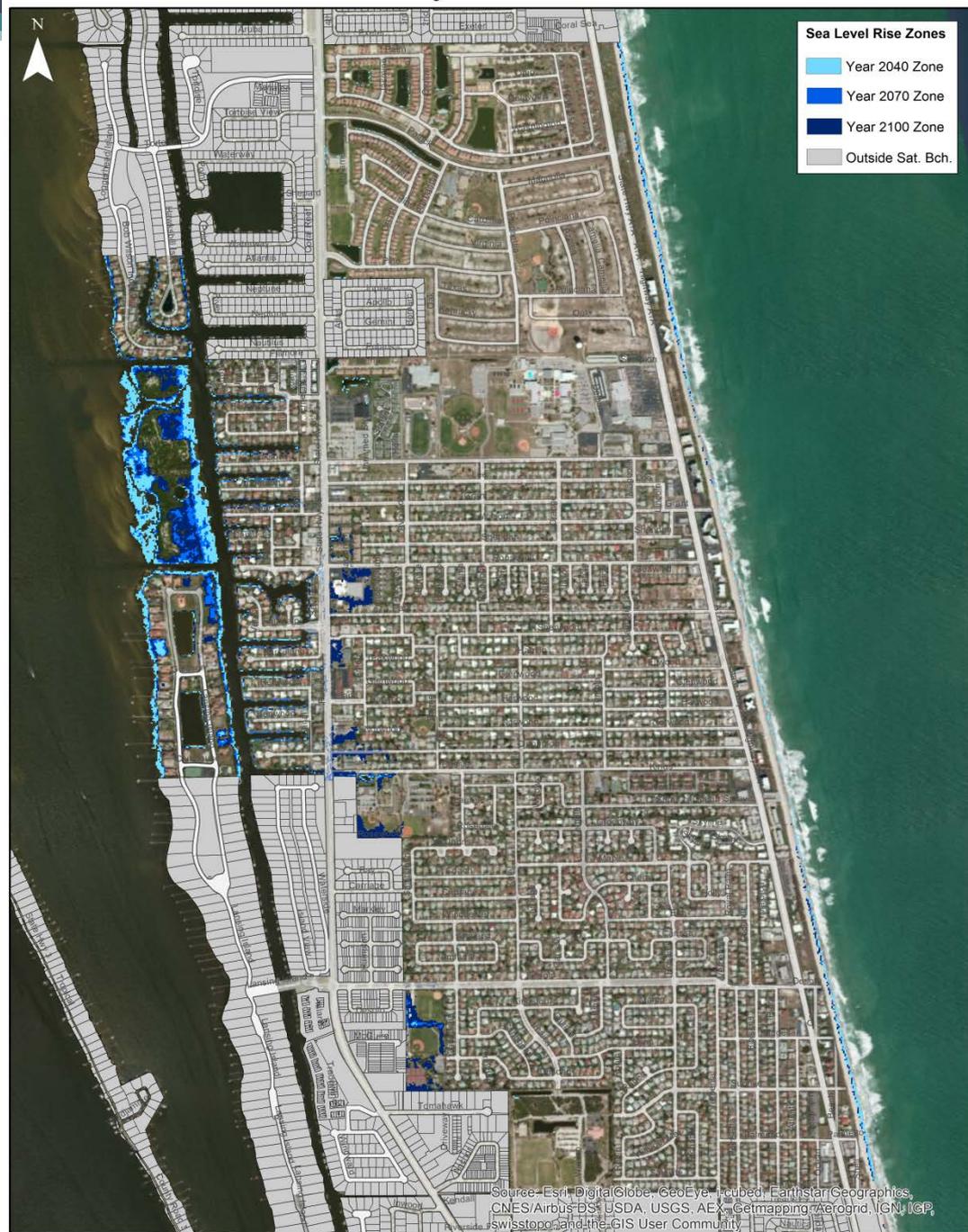
# Intermediate USACE Projection Rate Curve 2070

- 2070:
  - **45** inch inundation using MHHW (Atlantic),
  - **18** inch inundation using MAHW (Lagoon)



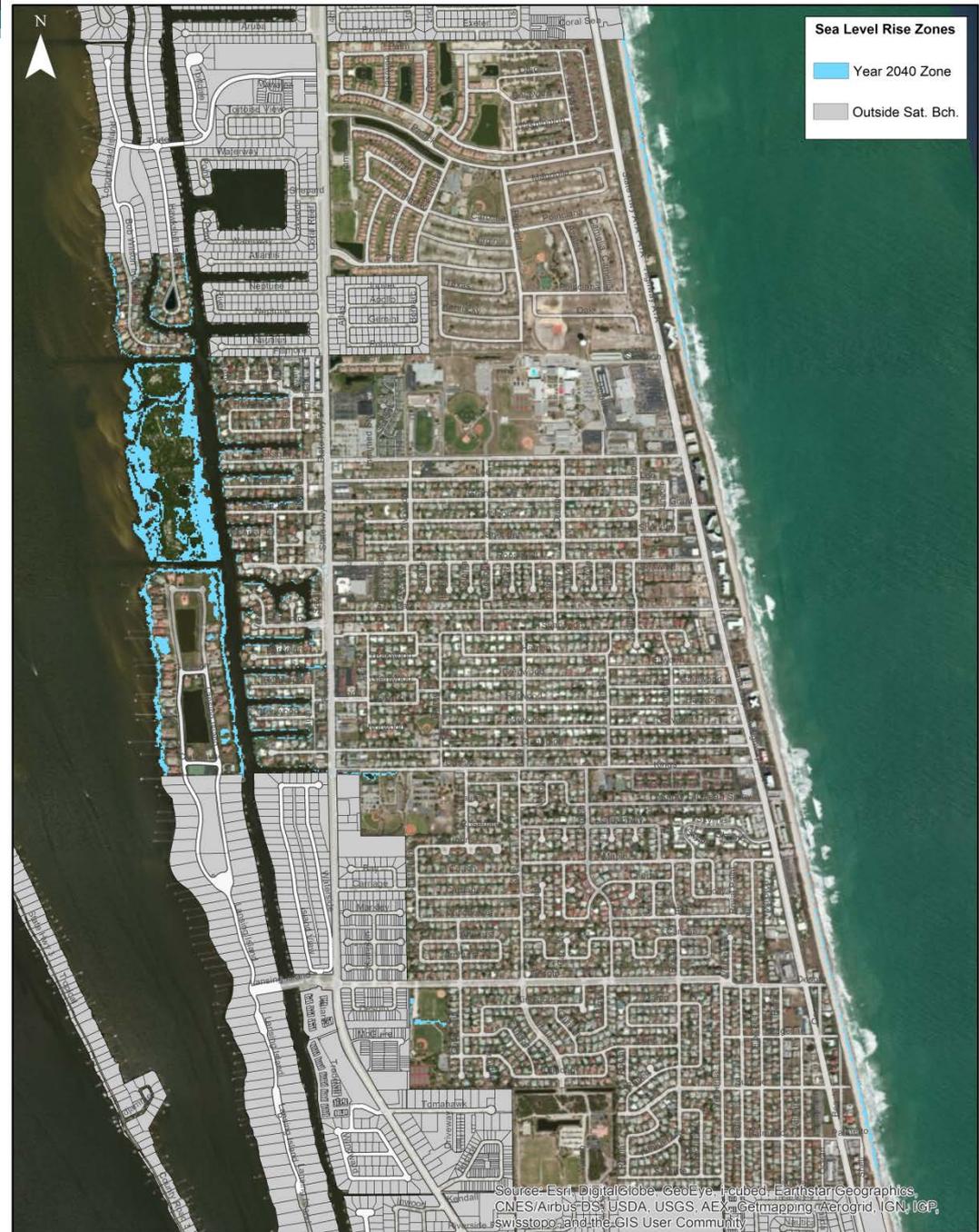
# Intermediate USACE Projection Rate Curve 2100

- 2100:
  - **54** inch inundation using MHHW (Atlantic),
  - **27** inch inundation using MAHW (Lagoon)



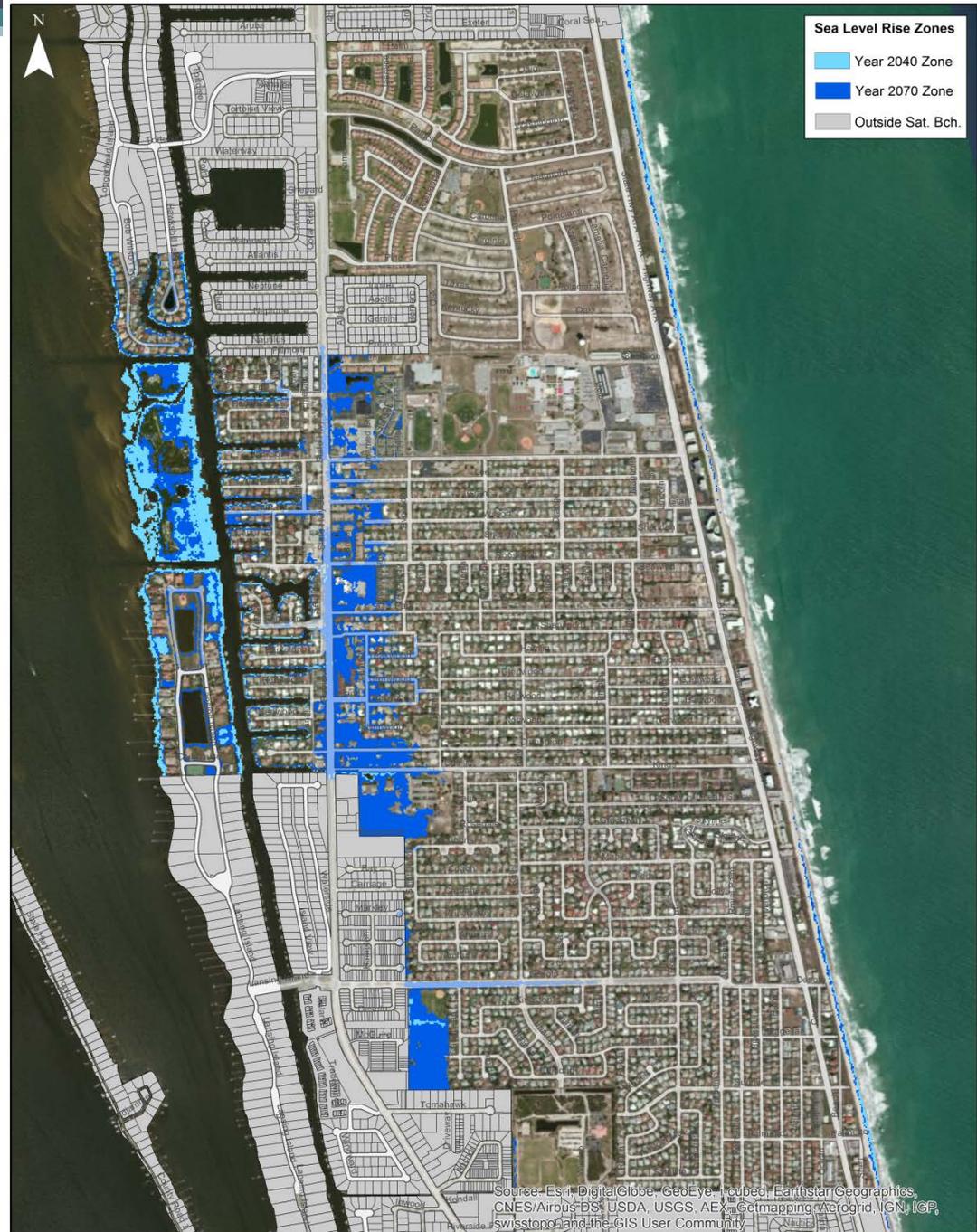
# High USACE Projection Rate Curve 2040

- 2040:
  - **46** inch inundation using MHHW (Atlantic),
  - **19** inch inundation using MAHW (Lagoon)



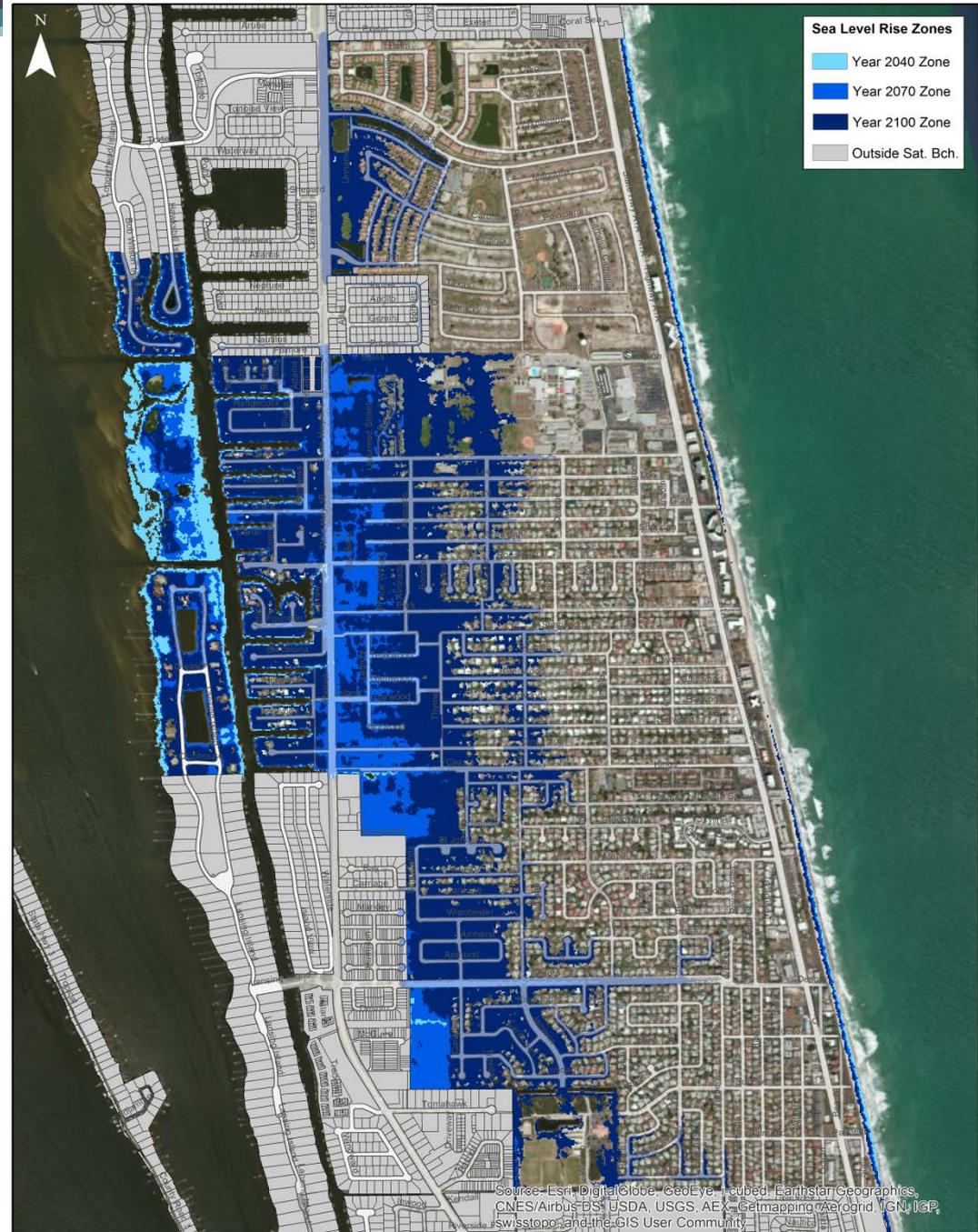
# High USACE Projection Rate Curve 2070

- 2070:
  - **66** inch inundation using MHHW (Atlantic),
  - **39** inch inundation using MAHW (Lagoon)

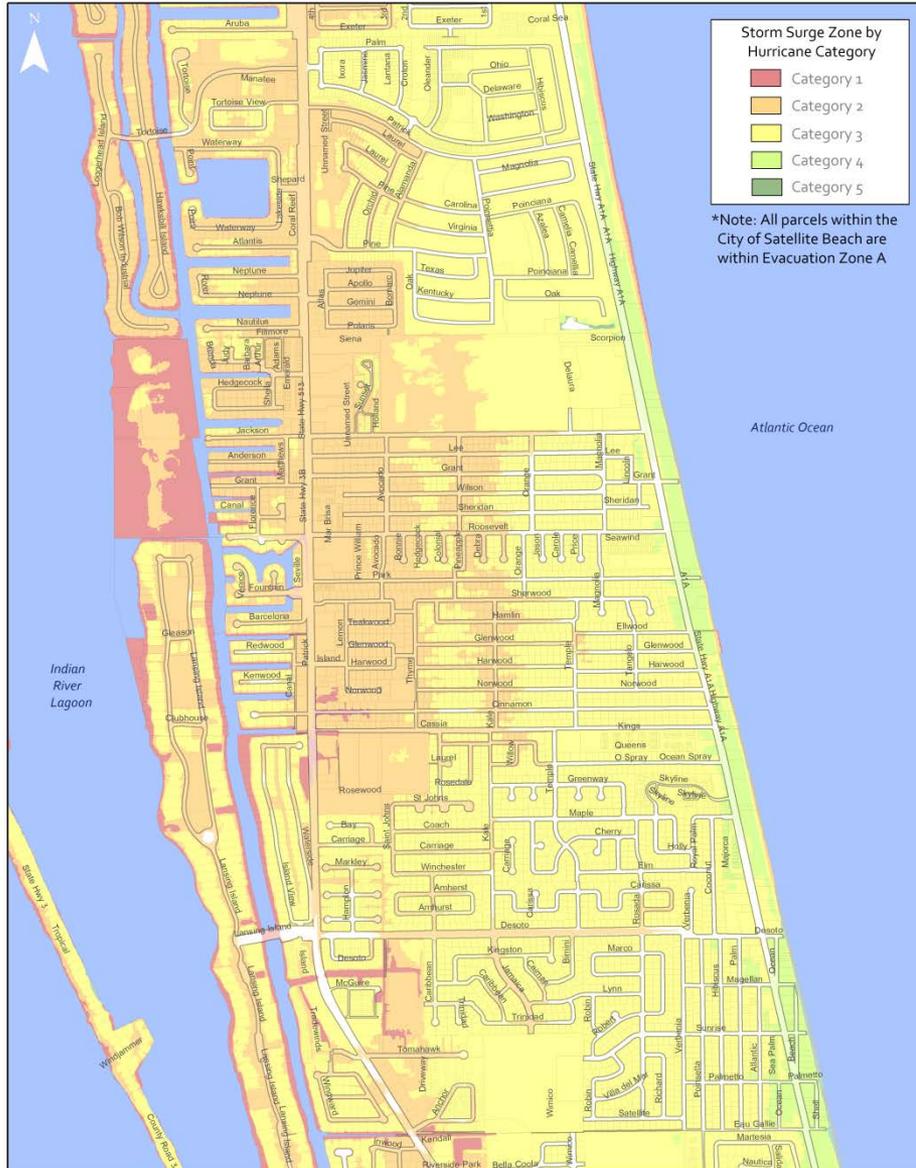


# High USACE Projection Rate Curve 2100

- 2100:
  - **93** inch inundation using MHHW (Atlantic),
  - **66** inch inundation using MAHW (Lagoon)



## Satellite Beach, Florida - Storm Surge Zones by Hurricane Category



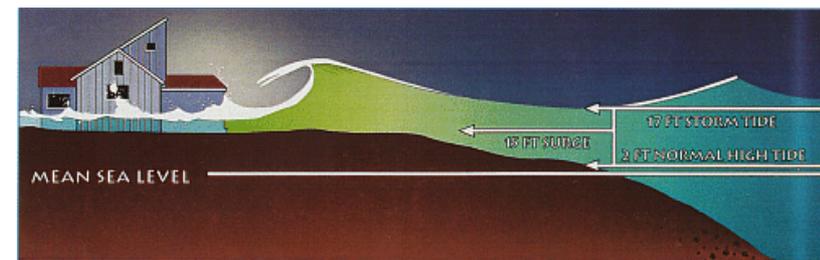
Source(s): ECFRPC, Brevard County GIS, NOAA (SLOSH)

# Storm Surge



*Storm Strength	Brevard
Category 1	Up to 6'
Category 2	Up to 10'
Category 3	Up to 16'
Category 4	Up to 21'
Category 5	Up to 26'

**\*\* Surge heights represent the maximum values from SLOSH MOMs**



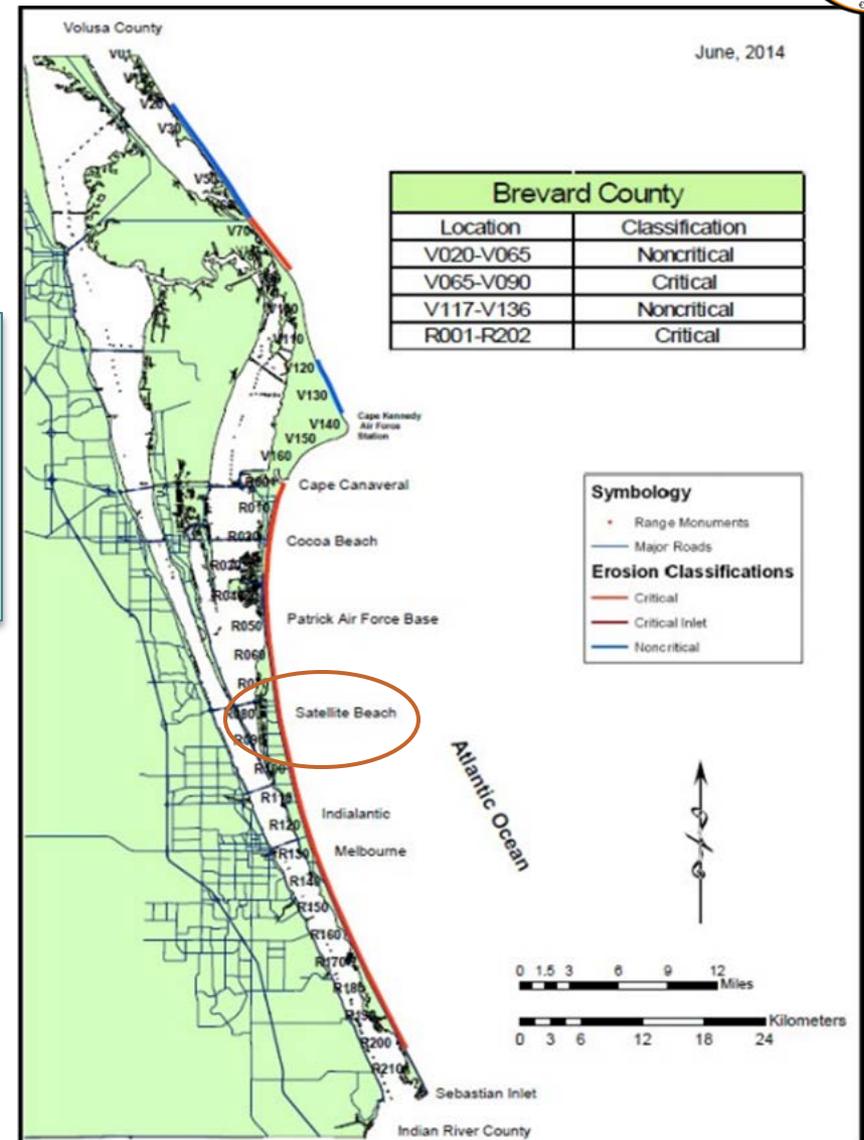


# Coastal Erosion

41.2 miles of Brevard County Beaches classified as Critically Eroded

**Definition:** erosion and recession of the beach or dune system threatens or caused loss of upland development, recreational interests, wildlife habitat, or important cultural resources

- 2005 Emergency Dune Stabilization Project from 2004
- 2014 Mid Reach Recovery Project



Source: Critical Erosion Report; FDEP

<http://www.dep.state.fl.us/beaches/publications/pdf/CriticalErosionReport.pdf>

## Satellite Beach, Florida - 100 Year Flood Hazard Zone



# Flood-zones



Flooding from Hurricane Fay  
<http://www.srh.noaa.gov/images/mlb/surveys/fay/Fay4sb.jpg>

Source(s): ECFRPC, Brevard County GIS, FEMA (2011)

# Community Stakeholder Input

- **Aware, informed and active community**
- **Local concerns and preferences are considered**
- **Solutions can be tailored to the community**
- **Help feed into the Adaptation Action Area planning process**
- **Adjust plans, direct energy and allocate resources to tackle suggested strategies**





# Next Steps

- **Public Input through Metroquest**
- **Analysis of Data and Public Input to Identify Tools, Strategies, and Initiatives to Identify Adaptation Action Areas Options**
- **Draft Policy Language and Strategies for Consideration**



MetroQuest  
Engagement Made Easy



## ✓ How should we grow?

WELCOME

imagine

hillsborough

2040

By 2040, Hillsborough County will have up to 600,000 new residents and about 400,000 new jobs.

Let's **work together** to turn the challenges that come with growth into opportunities for a **thriving future**.

### Imagine 2040

The vision you help develop now will guide the plans that are the roadmap to the future...

The 2040 Transportation Plan and the Comprehensive Plans for Tampa, Temple Terrace, Plant City and Hillsborough County.

➔ Begin

2 PRIORITIES

3 STRATEGIES

4 PREFERENCES

5 STAY INVOLVED

Share



help



# MetroQuest

Engagement Made Easy



1

WELCOME

2

SURVEY

3

DESIRED OUTCOMES

## Priorities What is important to you?

Higher  
Priority



More Transit Service

Pedestrian-Safety and Comfort

Reduced Auto Speeds

Drag your 5 highest priorities above this line.

Increased On-Street Parking

Improved Streetscape

Bicycle-Safety and Comfort

Less Through Truck Traffic

Increased Off-Street Parking

Reduced Auto Congestion

Increased Foot Traffic



### More Transit Service

Expand options for traveling via public transit, such as new routes or more buses.

Priority ranked 1 of 3.

Would you like to add a comment?



Add comment  
on a map



Add a comment  
about this priority



Suggest another priority

4

FACILITY PREFERENCES

5

STAY INVOLVED

Share





# MetroQuest

Engagement Made Easy



1

WELCOME

2

SURVEY

3

SHOW US

## Map Input show us how you use PCH and how to improve it.

➔ Drag markers to identify the destinations you go, the safety concerns you have, and transportation improvements you would like to see. ⓘ

Destinations      Safety Concerns      Transportation Improvements

Sidewalks      Crosswalks      Bike Facilities      Parking      Raised Medians      Traffic Signal      Other Improvements

Map      Satellite

Map data ©2013 Google      Terms of Use      Report a map error

4

STAY INVOLVED





# MetroQuest

Engagement Made Easy



START HERE

PRIORITIES

STRATEGIES

## Strategies What strategies should we pursue?

4 SURVEY 5 STAY INVOLVED

Introduction

Safety & Security

Environmental Stewardship

Economic Prosperity

Community Vitality

Quality of Service

System Preservation

Suggest a strategy

Provide support for a competitive Maryland economy through an easy-to-use system that helps sustain and grow jobs and businesses statewide.

Invest to reduce highway, rail, port, and airport bottlenecks that hinder reliability of freight travel times.

Invest in improving transit access to major employment and commercial centers.

Invest in improving highway access to major employment and commercial centers.

Invest in improving airport capacity to facilitate air travel.

Pursue public-private partnership opportunities where appropriate.

Share

Facebook, Twitter, Email, and a plus sign for more sharing options.

help

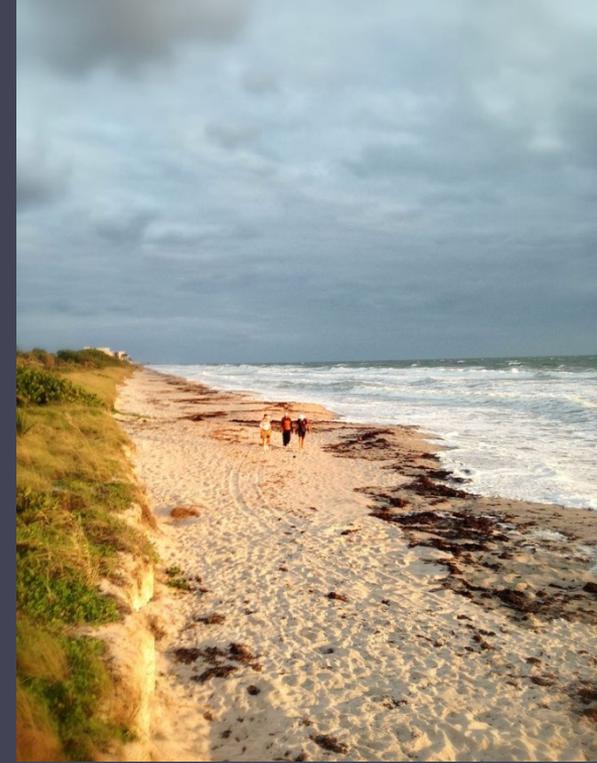
Tara McCue, AICP  
Director of Planning and Community Development  
East Central Florida Regional Planning Council  
[tara@ecfrpc.org](mailto:tara@ecfrpc.org)



# Panel Discussion

- **Coastal Resiliency: Challenges and Opportunities around the State**  
Mr. Thomas Ruppert, Esq.  
Florida Sea Grant – UF
- **All-Hazards Emergency Preparedness**  
Chief Don Hughes  
Satellite Beach Fire Chief/Emergency Management Director
- **Adaptation Action Area Planning: The Ft. Lauderdale Journey**  
Ms. Adrienne Ehle, LEED AP  
City of Fort Lauderdale | Environmental Analyst

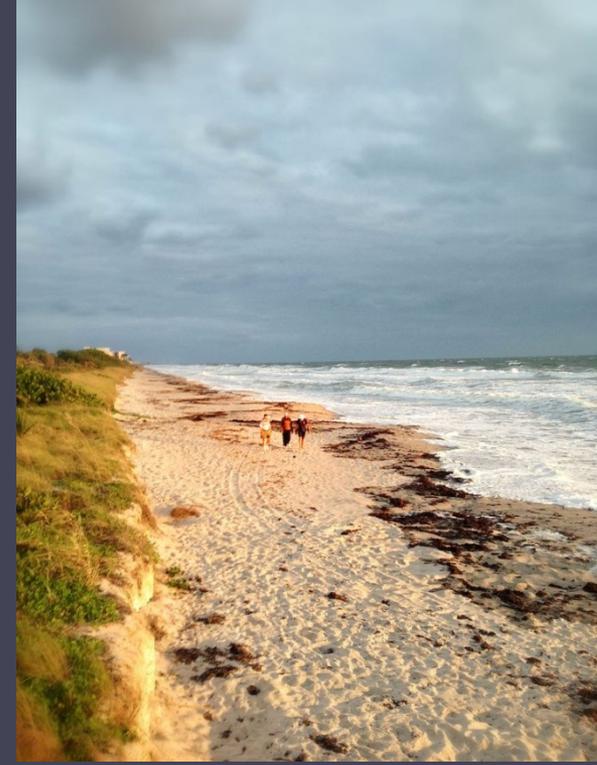
# Panel Questions and Answers



The City of Satellite Beach  
Community Resiliency Project



# Public Engagement Activities



The City of Satellite Beach  
Community Resiliency Project



# Activity 1

- **“When you think about the environmental, social and economic aspects of the City, what are the biggest opportunities over the next 50 years?”**

# Activity 2

- **“When you think about the environmental, social and economic aspects of the City, what are the biggest challenges over the next 50 years?”**

# Activity 3

- **“What approaches would you like the City to take to address the opportunities and challenges identified in the previous questions?”**

# Directions

- Each participant has 15 dots to place on the flip chart answers.
- Put 5 dots on comments from each activity that you feel most strongly about.
- You also have 3 dots for each of the map activities.
  - identify the areas of the City that “you” identify as the most vulnerable to natural risks.
  - identify the areas “you” feel are the most important or valued areas or functions of the City.
- When you have completed the final input activity, please put the envelopes in the box on the way out so that we can re-use them.

# Resources

- [www.climate.gov](http://www.climate.gov)
- [www.climate.nasa.gov](http://www.climate.nasa.gov)

