

FORERUNNER

Planning for Future Conditions: Innovative Floodplain Management in Pinellas County

February 13, 2024

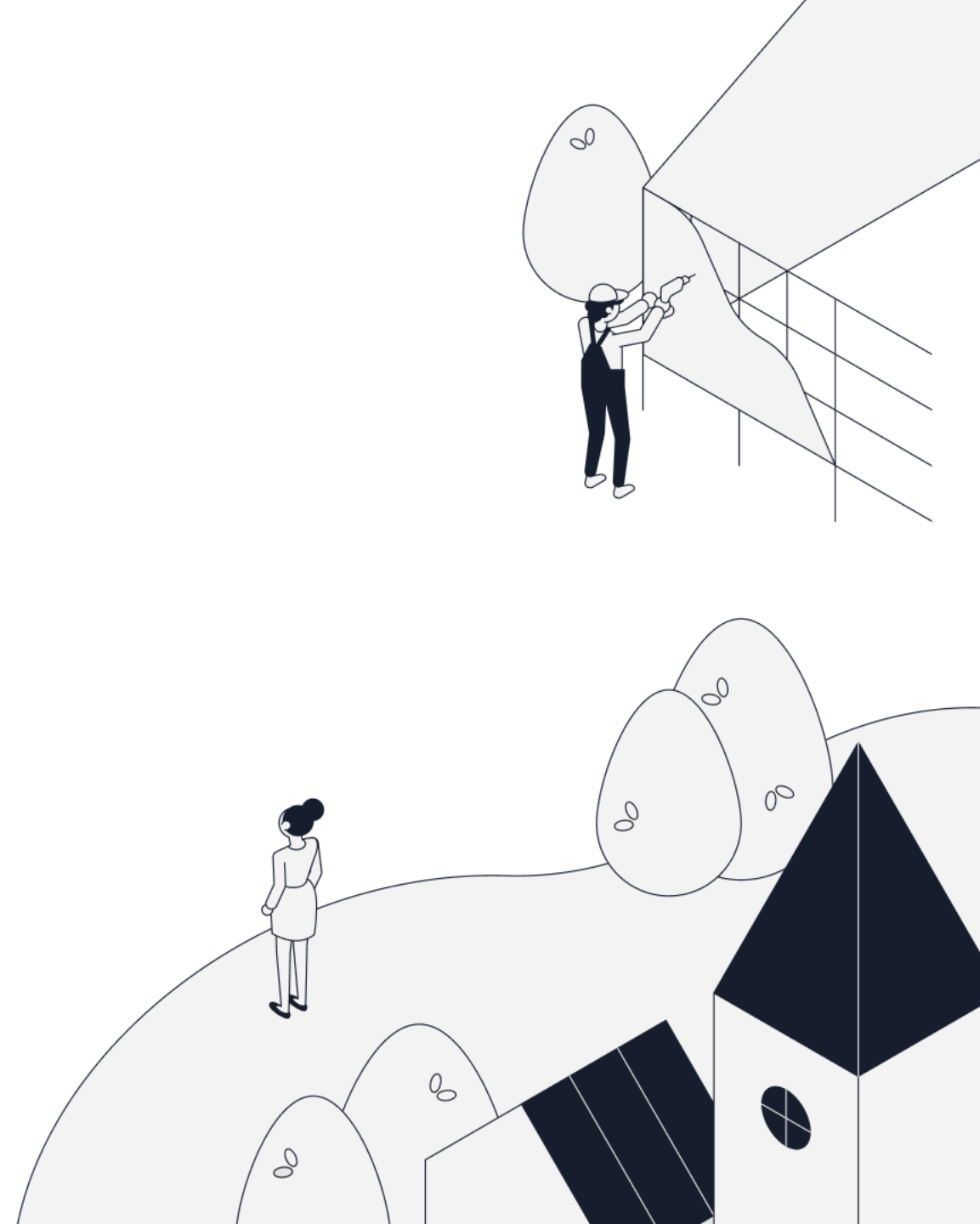
withforerunner.com



WELCOME

Housekeeping

- The presentation will be shared via email and posted on our blog
- Use the Q+A or the Chat to ask questions
- CFMs: Complete the post-attendance survey to receive your CEC. The CEC Certificate will be sent via email to you (and the list will be sent to ASFPM) next week



Agenda

- 1 **Introduction**
- 2 Planning for Future Conditions:
Innovative Floodplain Management in
Pinellas County
- 3 Walkthrough
- 4 Q+A

GOV. PARTNERS

We work with over
80 of the most at-risk
communities
throughout the U.S.



FDEM
Florida



Coral Gables
Florida



Pasco County
Florida



Clearwater
Florida



Jefferson Parish
Louisiana



Aventura
Florida



Miramar
Florida



Pompano Beach
Florida



Middletown
New Jersey



Manasquan
New Jersey



Belmar
New Jersey



Long Branch
New Jersey



Bay Head
New Jersey



Longport
New Jersey



Parkland
Florida



Harris County
Texas

PRODUCT

Our geospatial dashboard drives per-property insight.

FORERUNNER

The dashboard displays the following information:

- Parcel ID:** 0351050100090
- Address:** 141 Solano Prado, Coral Gables, FL 33156
- Buttons:** Share public profile, SI/SD Tracking
- Tabs:** Overview, Activity, SI/SD, Documents, Logs
- Warnings:**
 - Lowest Floor does not conform to local regulatory standards
 - Machinery does not conform to NFIP requirements
 - Machinery does not conform to local regulatory standards
 - Flood insurance requirement
 - Flood Zone changes
- Flood info:**
 - Effective FIRM: AE
 - Flood zone: AE
 - In Floodway: No
 - In CBRS: No
 - BFE: 12.0'
 - Design Flood Elevation: 13.0'
 - Datum: NGVD29
- Map:** Aerial view of the property with a yellow dot indicating the location. A callout box labeled 'Parcel-level Info' shows 'Zone: AE (EL 12 feet)'.

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Lisa Foster

CFM

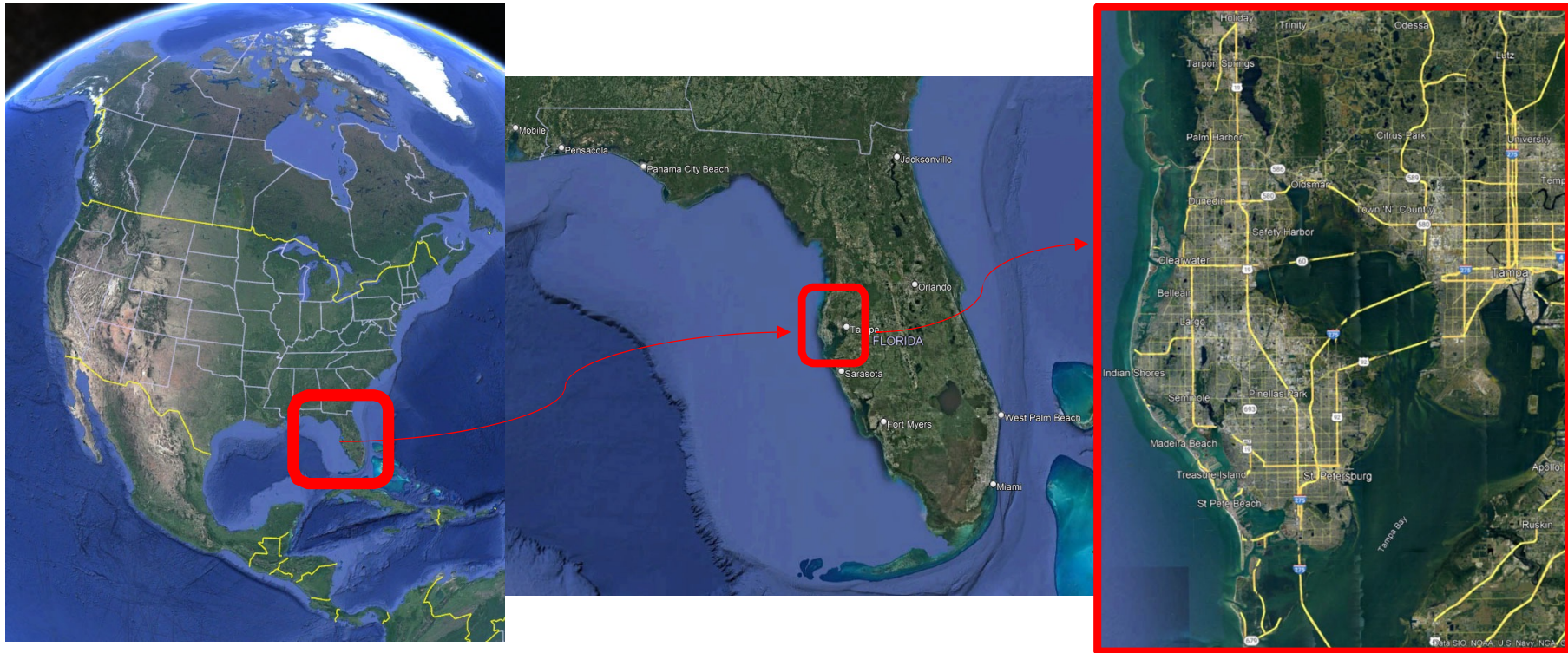
Floodplain Administrator
Pinellas County, Florida



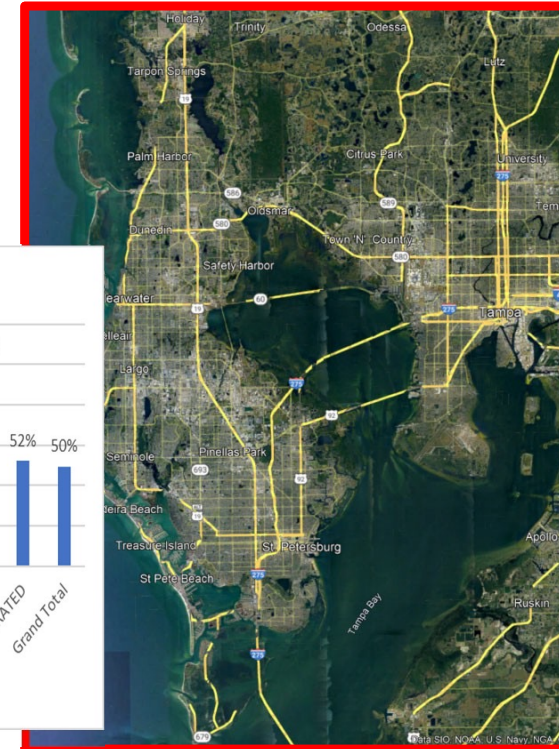
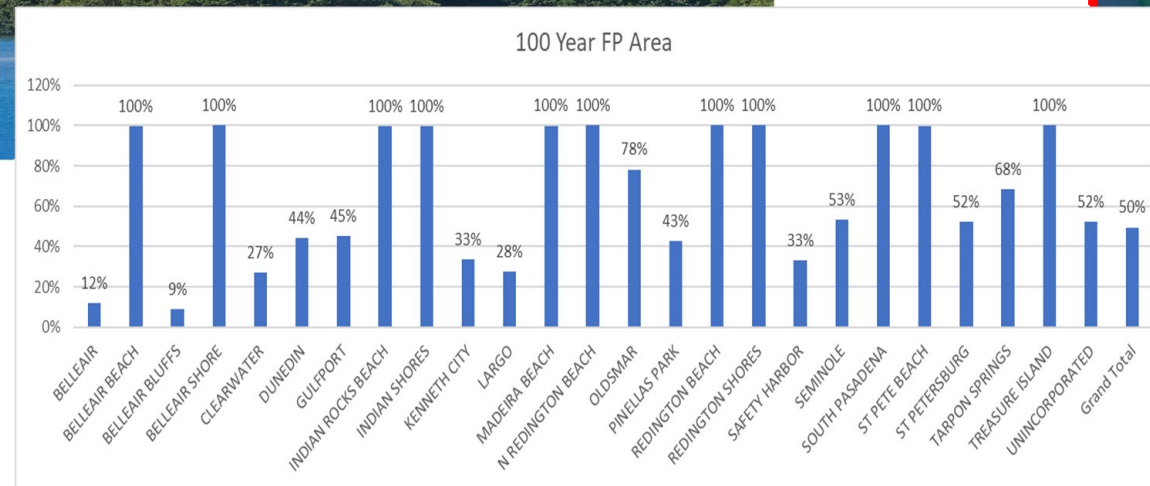
Planning for Future Conditions

Lisa Foster, CFM
Floodplain Administrator
LD Foster@pinellas.gov
February 13, 2024

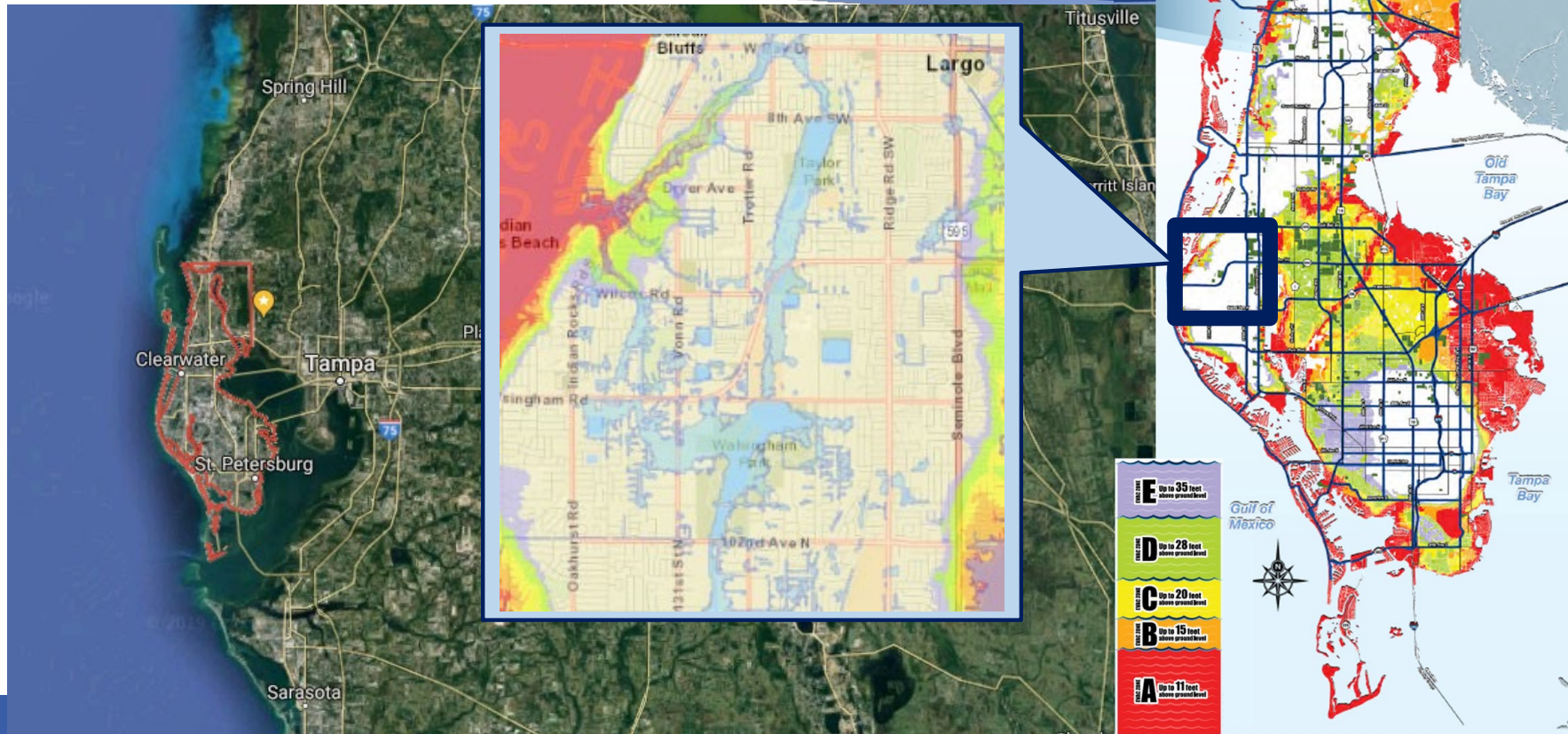
County Context



County Context



Pinellas County, FL





Types of Flood Risk



Coastal

- Storm Surge
- Blue Sky



Riverine



Surface / Localized

Tropical Storm Eta, 2020



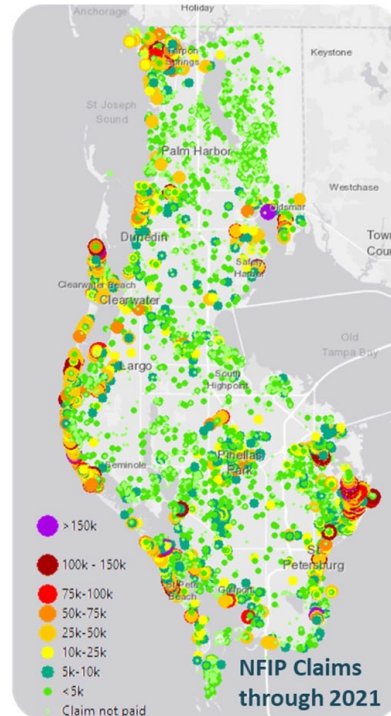
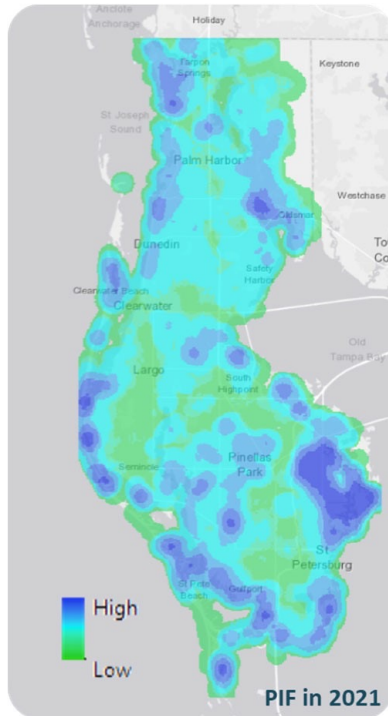
Tropical Storm Hermine, 2016



Current Blue Sky Impact



County NFIP Policies & Claims



Best Available Data – Flood Hazard Maps



Coastal

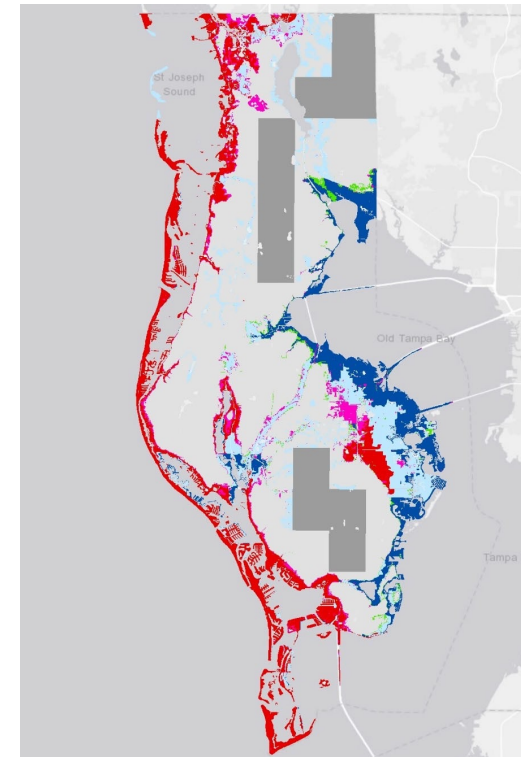
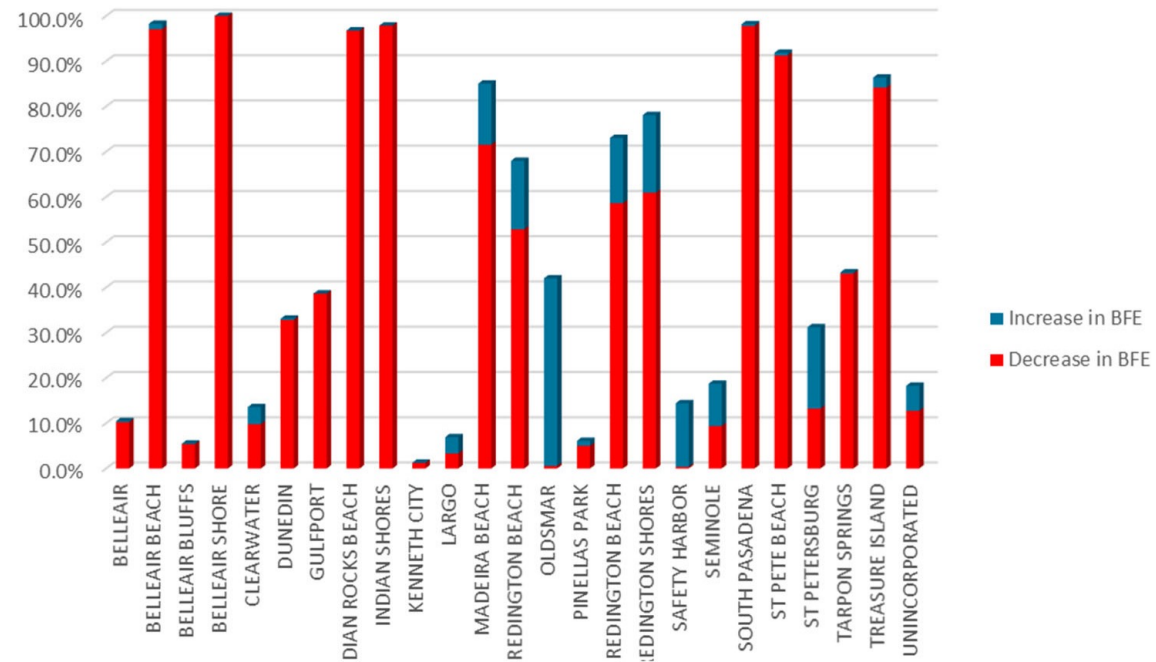
- **FEMA Flood Insurance Study (FIS) & Flood Insurance Rate Map (FIRM)**
- **Pinellas County Vulnerability Assessment**
- **SLOSH**



Non-tidal

- **FEMA Flood Insurance Study (FIS) & Flood Insurance Rate Map (FIRM)**
- **Pinellas County Stormwater Master Plan (SWMP) and Watershed Management Plans (WMPs)**

Old FIRM vs 'New' FIRM

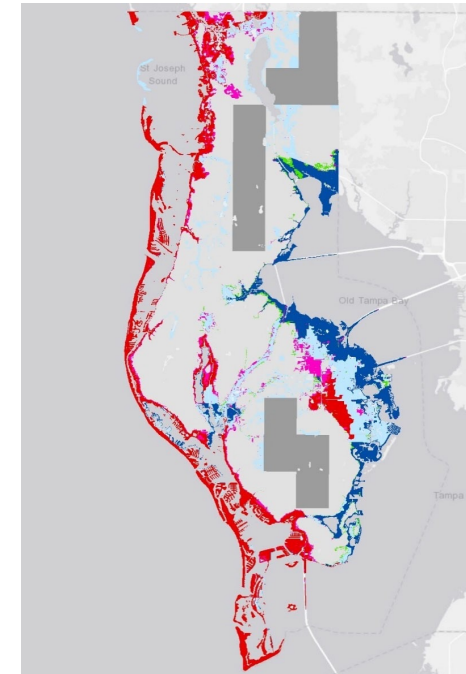
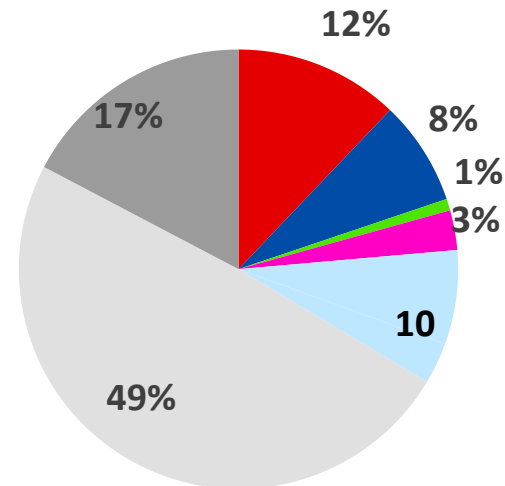
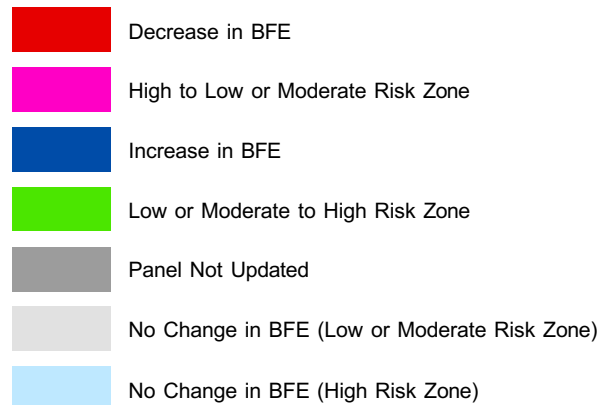


Flood Insurance Rate Map (FIRM) Update for Pinellas County

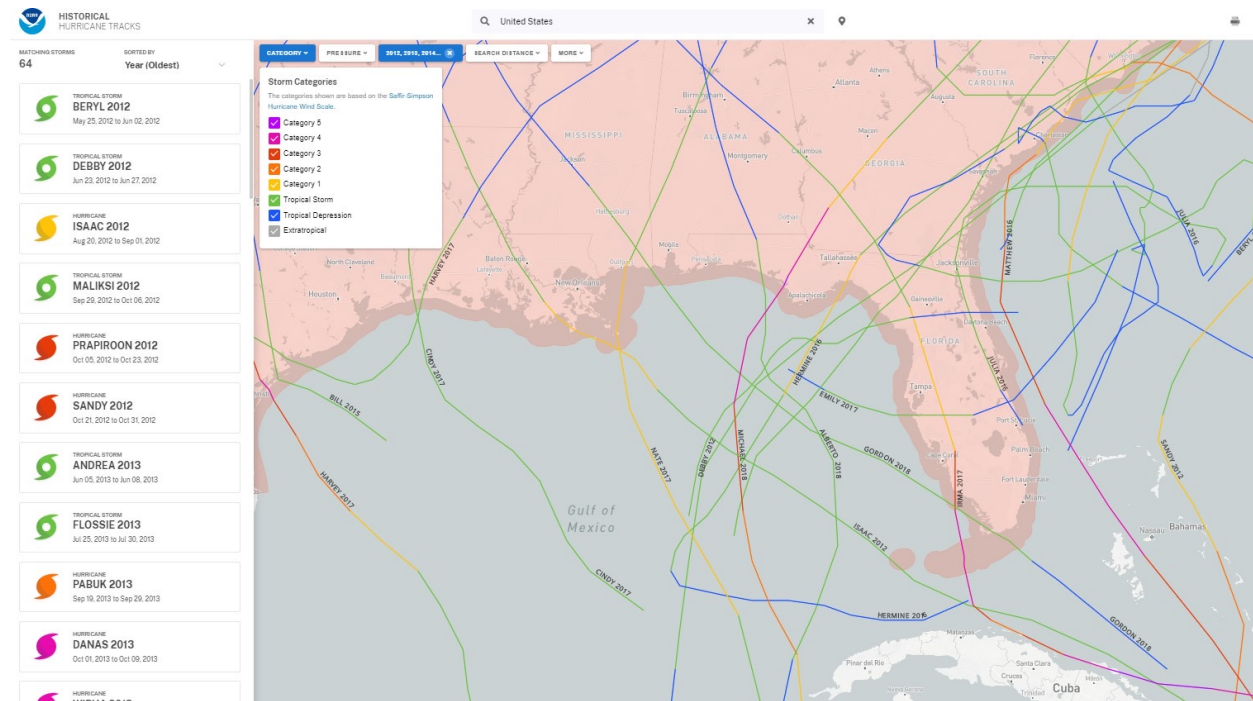


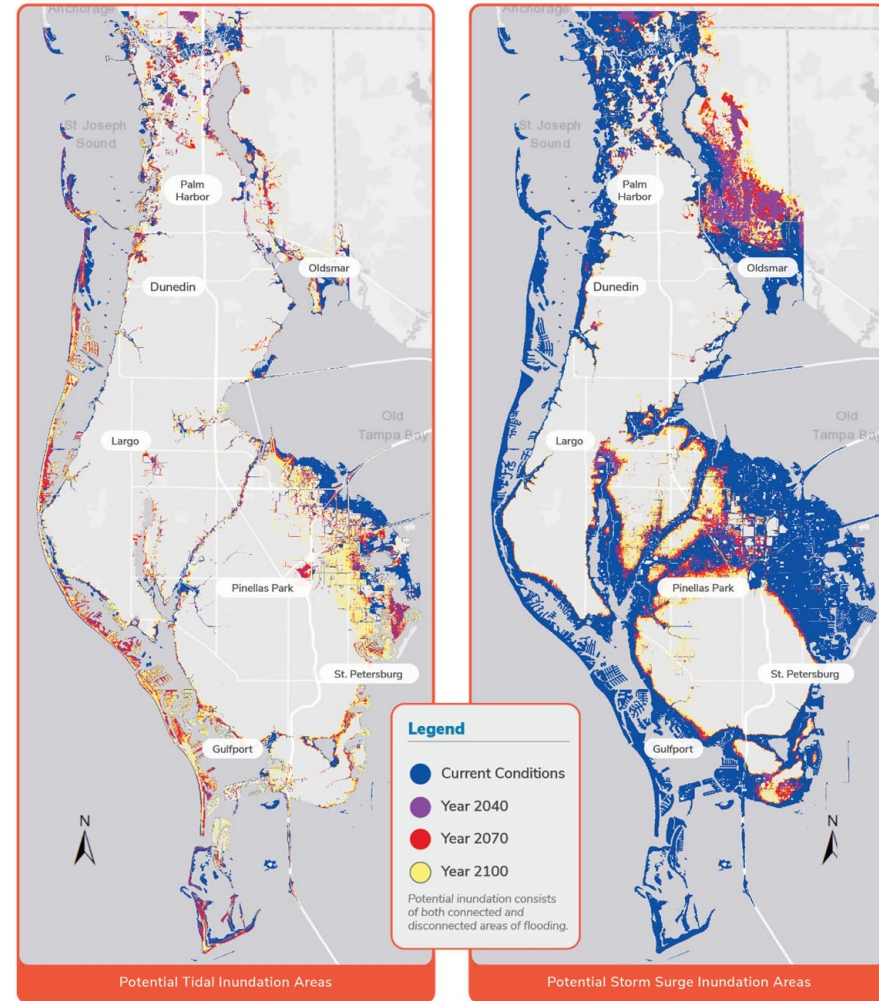
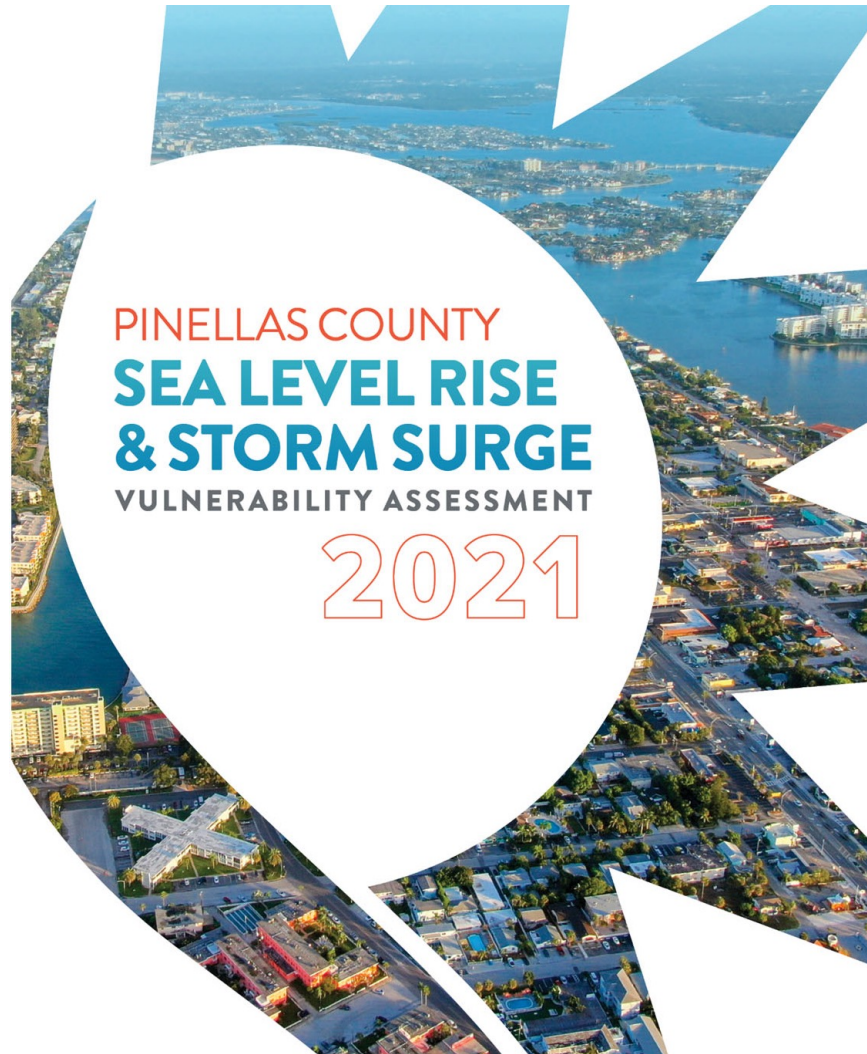
Overview of Changes from 2003 FIRM to New FIRM (2021)

Area - Countywide



Tropical Storms/Hurricanes 2012 – 2018





Determination of SLR/Flood Conditions



Time Horizons

- Current year (2018)
- 2040
- 2070
- 2100

SLR Projections

- Intermediate low, Intermediate, High
- Hours per year (From MHW to 1 hpy ("king tide"))

Storm Surge

- 25, 50, 100, 250, 500-year



St. Petersburg

Risk-Based Approach for Investments



**Develop Full Inventory
of Stressors: SLR, Surge,
Groundwater Rise,
Precipitation**



**Determine Impacts
on County
Facilities, Assets,
Community Features**



**Monetize Risks in
Today's Dollars
for Every Asset**



**Develop Present Value
Costs for Areas at
Risk County-wide**



**Focus Investment
Where Most Effective**

Flood Resiliency Tool



Creation and approval of [Pinellas County Administrative Directive](#) (dated 09/24/2019):

- 1) *"A sea level rise impact analysis shall be performed for projects with a total cost greater than \$1.0M in accordance with the County "Sea Level Rise Capital Planning Tool". Critical infrastructure projects with a total cost less than \$1.0M shall use this tool to evaluate the impacts of future conditions."*
- 2) *"All master plans and long-range plans shall evaluate the impacts of a changing climate, including sea level rise impacts in developing projects and programs or evaluating existing functions. These plans should include adaptive and/or mitigation measures to plan for these future conditions."*

Four key steps outlined in Pinellas County's Guidance for Incorporating Sea Level Rise into Capital Projects:

- 1) Current climate science and the local projections for sea level rise
- 2) Assets vulnerable to sea level rise
- 3) Assets at risk to sea level rise
- 4) Adaptation measures to improve assets' resiliency to impacts from sea level rise

Flood Resiliency Tool



[← TO DASHBOARD](#)

✓ Pre-Checklist — ✓ **Project Information** — 3 Location — 4 Vulnerability Assessment — 5 Coastal Flood — 6 Assets and Adaptation Measures

Project Information

Enter your project's planning horizon year and remaining functional lifespan along with a brief explanation.

Planning horizon year *
2100

PLANNING HORIZON YEAR DEFINITION

Remaining or potential functional lifespan of the project
|

FUNCTIONAL LIFESPAN DEFINITION

Brief explanation on how the functional lifespan was derived.

[< PREVIOUS](#) [NEXT >](#)

Flood Resiliency Tool



Pinellas County Sea Level Rise Capital Planning Tool Test

The logo for the Flood Resiliency Tool, featuring a circular design with a blue sky, green leaves, and the text "FLOOD RESILIENCY TOOL".

View All Projects

Project Members

Project Documentation

Hamlin Boulevard Stormwater Outfall

SLR Checklist

Last Visited: Location

CONTINUE

✓ Pre-Checklist

✓ Project Information

✓ Location

4 Vulnerability Assessment

5 Coastal Flood

6 Assets and Adaptation Measures

Summary

Based on the data collected...

Planning horizon year: 2070

Lowest ground elevation: 1.46 ft.

Coordinates: -82.84113822, 27.86407951

Nearest tide gauge: Clearwater Beach

Mean higher high water: 0.95 ft.

100 year storm surge elevation: 9 ft.

Flood Zone: AE

V Datum: NAVD88

See <https://www.tidesandcurrents.noaa.gov/> using the station closest to your project location.

VIEW PROJECT LOCATION

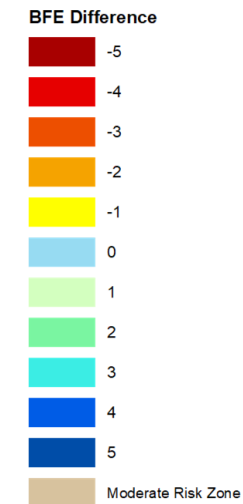
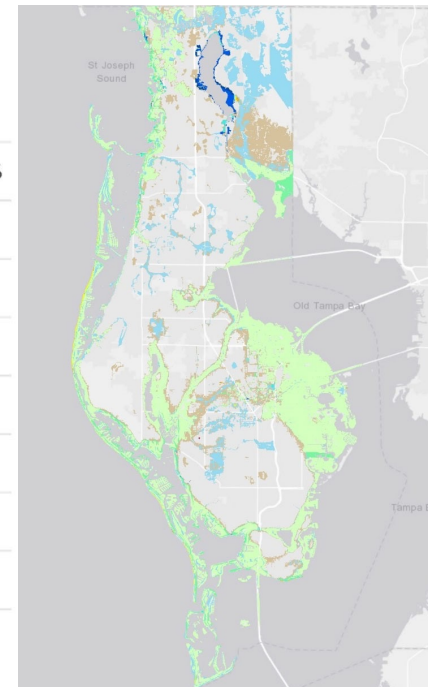
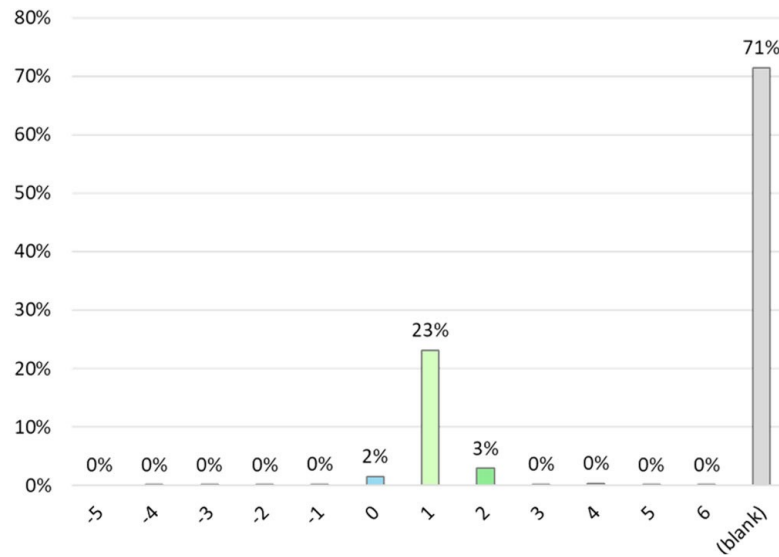
Future Flooding Calculation

SLR Scenario (NOAA et al. 2017)	Inundation level at planning horizon year	Year impacted based on lowest ground elevation	Inundation level at elevation impact year
Low	0.88	2100	1.21
Int. Low	1.14	2090	1.47
Intermediate	2.13	2060	1.67
Intermediate High	3.21	2050	1.77
High	4.36	2040	1.6

Prior FIRM (2003) vs VA (Current Day)



Generally +1 ft Countywide

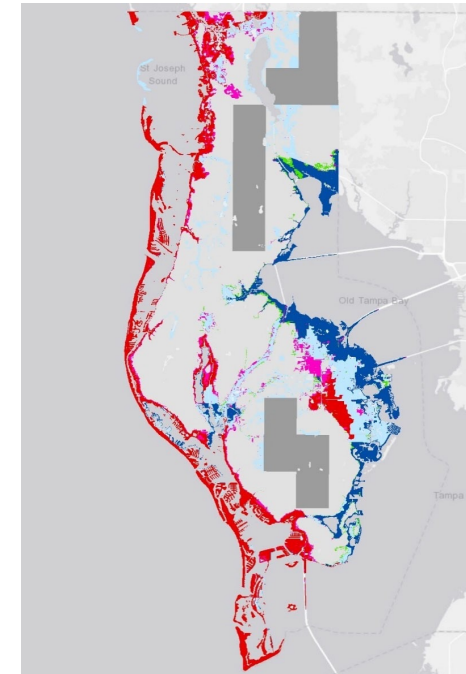
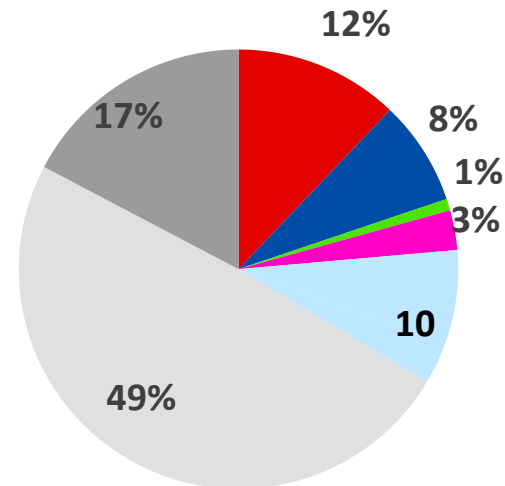
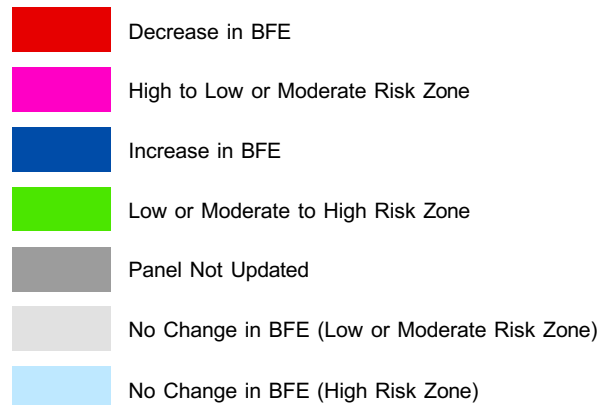


Flood Insurance Rate Map (FIRM) Update for Pinellas County



Overview of Changes from 2003 FIRM to New FIRM (2021)

Area - Countywide



Flood Insurance Rate Map (FIRM) Update for Pinellas County



New FIRM vs Vulnerability Assessment

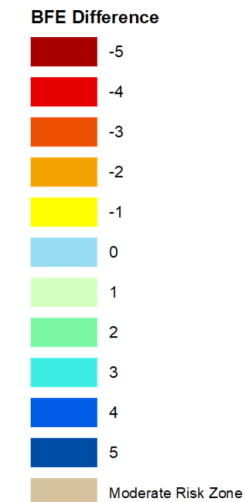
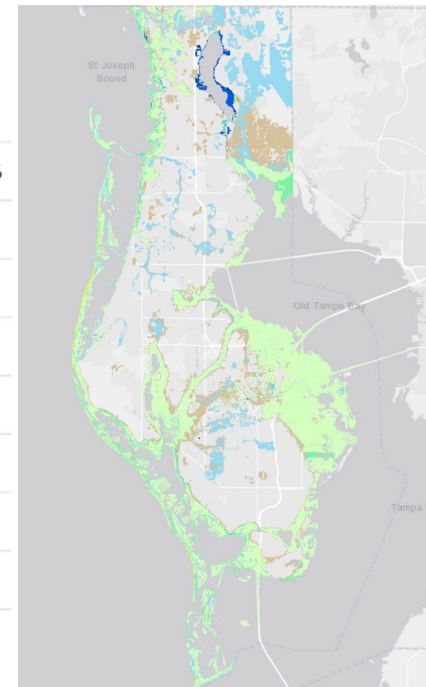
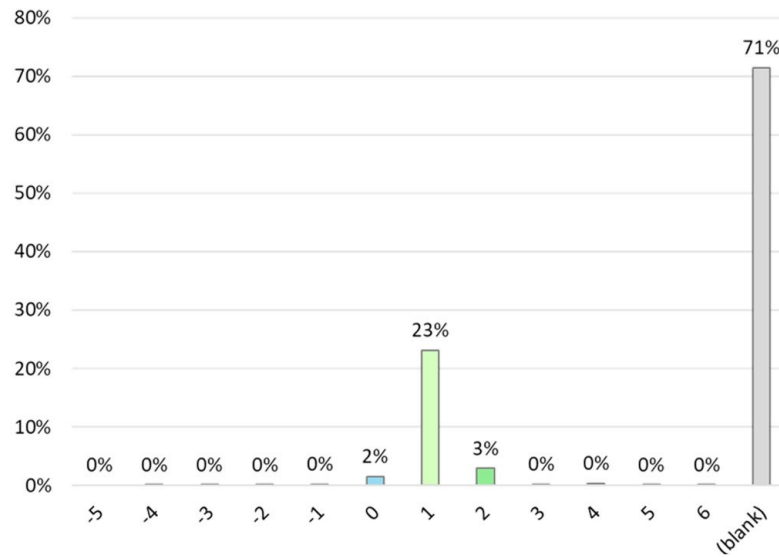
- **Data**
- **Methodology**
- **Models**

Study	Storm Ensemble	Current Storms	Future Storms	Model	LiDAR
New FIRM	357	<2012	No	ADCIRC+SWAN (2D)	2007
Vulnerability Assessment	300+	<2018	Yes	CH3D+SWAN (3D)	2017

Prior FIRM (2003) vs VA (Current Day)



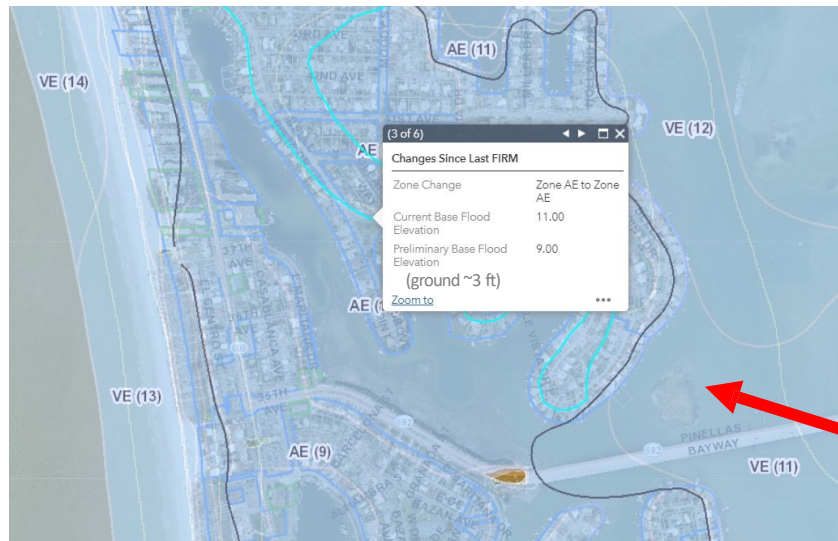
Generally +1 ft Countywide



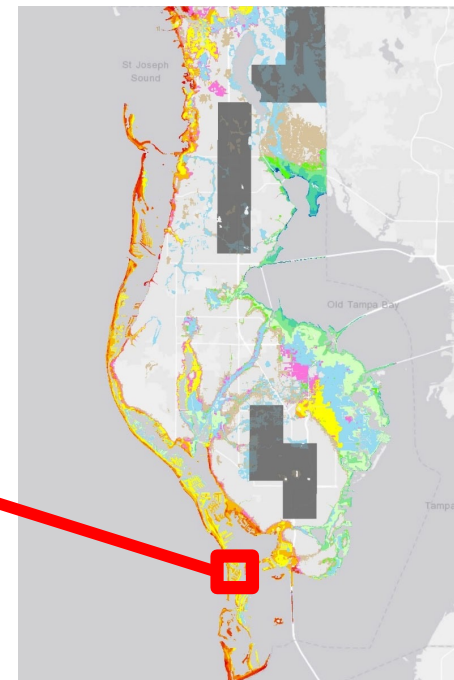
Flood Insurance Rate Map (FIRM) Update for Pinellas County



St Pete Beach: BFE Dropping 2 ft



BFE 11 to BFE 9 ft; VA 12 ft
(Depth ~8 ft going down to ~6 ft)



Change in BFE

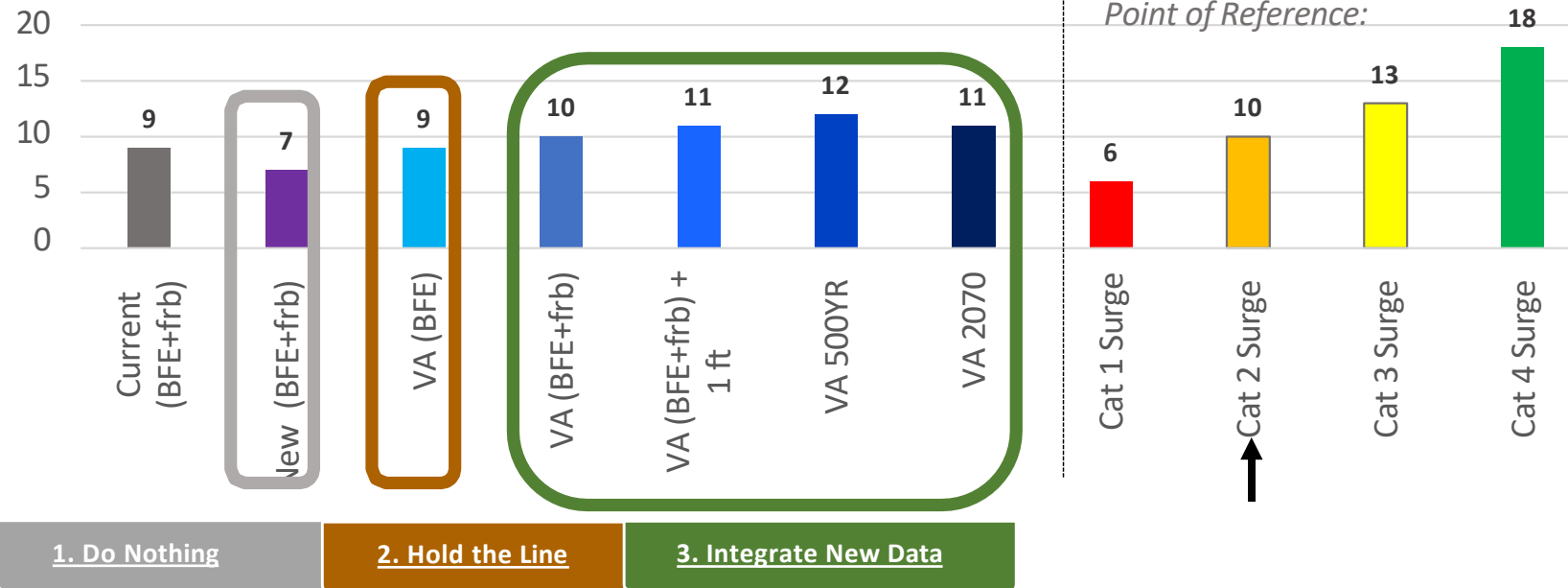


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St Pete Beach

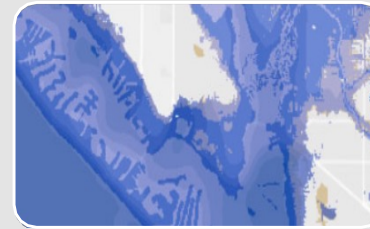
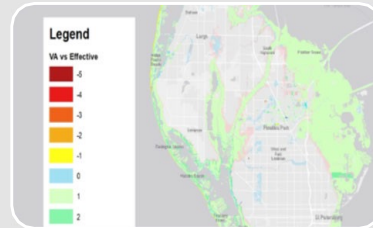
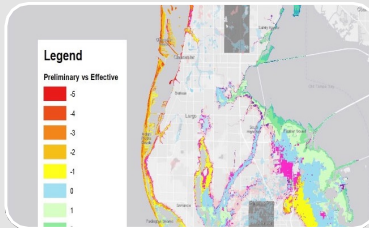
Height Above Ground (ft)



Flood Insurance Rate Map (FIRM) Update for Pinellas County



Elevation Options



1. Do Nothing

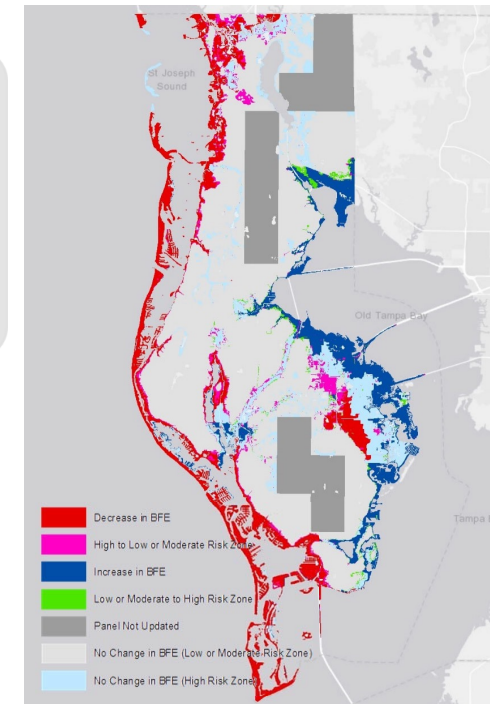
New FIRM +
Current Freeboard

2. Hold the Line

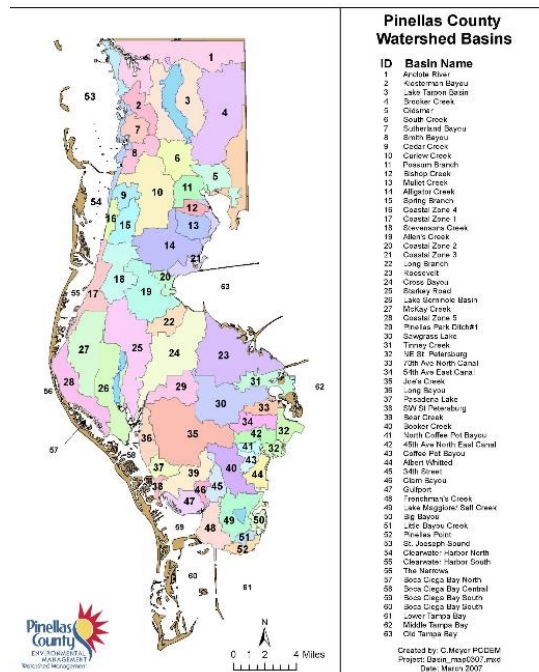
- Adopt Vulnerability Assessment &
- Higher of:
 1. New FIRM BFE + Current Freeboard
 2. Vulnerability Assessment BFE (Current Conditions)

3. Integrate New Data

- BFE Higher of New FIRM or Vulnerability Assessment BFE + Current Freeboard or
 - VA 2070 100YR or
 - VA 2018 500YR



Non-Coastal Floodplains – Watershed Plans

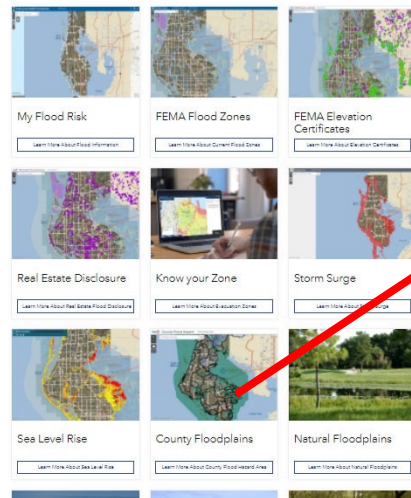


**CURLEW CREEK AND SMITH BAYOU
WATERSHED MANAGEMENT PLAN**
Pinellas County Board of County Commissioners | December 2019

Pinellas County Flood Maps



Welcome to the Pinellas County Flood Map Service
Below you will find a library of flood map apps with data from local, state, and federal resources.



Pinellas County Flood Hazard Area Map App:



Pinellas County has a proactive Floodplain Management Program. A component of the program includes the development of flood risk data and maps. Flooding from rainfall is mapped through the Watershed Management Planning program, which began in the early 1980s with the development of a countywide Stormwater Master Plan (SWMP) to bring 37 watersheds into development and construction standards. Flood risk data and maps are developed through the process of developing a Watershed Management Plan (WMP) for each watershed that will update the SWMP with better information. WMPs are developed to guide Pinellas County in protecting and managing environmental resources, achieving improvements in water quality and providing flood protection when needed. Use the 2016 Flood Hazard Map (Map 2016) to view the 100-year flood risk areas with one percent annual chance of flooding across Pinellas County. Flood Hazard Maps (FHM) are used to determine development standards.

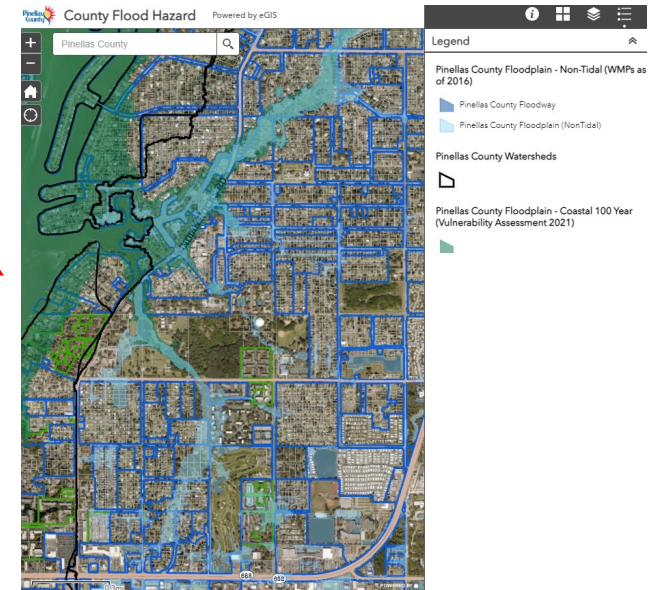
Pinellas County also looks at coastal flooding, including tide flooding from sea level rise as well as current and future storm surge flooding. Coastal Flood Hazard data, developed through a countywide sea level rise and storm surge vulnerability assessment through the Resources and Ecosystems Sustainability, Tourist Opportunities and Revised Economic of the Gulf Coast State Act (RESOLVE Act), was completed in 2021.

This assessment of current and long-term vulnerabilities and development of climate adaptation strategies in response to future tide flooding and storm surge for all of Pinellas County will enhance community resilience, include the most up-to-date coastal flood hazard data and is the first assessment completed throughout the county that provides information on future flooding scenarios, such as sea level rise and future storm surge.

These flood maps and data help identify potential long-term capital investments and policy strategies to mitigate or adapt to the environmental risks associated with climate change. Use with the 2016 Flood Hazard Map (Map 2016) and the 2016 and subsequent WMP Floodplain maps and data, the coastal flood hazard map that summarizes sea level rise potential annual chance of current condition coastal flooding is also used to determine development standards.

*Federal requirements for flood insurance are only based on the 2016 Flood Hazard Map, not the Pinellas County Flood Hazard Map.

The data is for reference purposes only and is considered neither survey, precision nor official source documentation. Call (727) 460-7700 to speak with a specialist.



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Thank you!

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