



Florida Resilient Coastlines Program: Creating More Resilient Florida Coastlines Together

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What is Coastal Resilience Planning?

Comprehensive Plans

- Maintain, restore and enhance the coastal zone
- Reduce flood risks
- Assess vulnerability of existing and future infrastructure
- Preserve natural and historic resources

163.3178 FS Coastal Mgmt

380.24 FS Coastal Zone Protection Element

163.3177 FS Comp Plans

163.3178(2)(f) FS "Peril of Flood"

163.3177(6)(g)(10) FS Adaptation Action Areas

Sea Level Rise

High Tide Events

Storm Surge

Stormwater







Benefits of Adaptation

September 6, 2014



Florida

Top 50 National Flood Insurance Program (NFIP) Policy Count Communities* and Community Rating System (CRS) Participation

*Ranked by the total number of NFIP insurance policies-in-force

Rank	CID	Community Name	Participating	CRS Class
1	120635	Miami-Dade County		
2	125124	Lee County		
3	120067	Collier County		
4	120192	Palm Beach County		
5	120650	Miami		
6	120651	Miami Beach		
7	125144	Sarasota County		
8	125105	Fort Lauderdale		
9	120112	Hillsborough County		
10	125148	St Petersburg		
11	125139	Pinellas County		
12	125095	Cape Coral		
13	125147	St Johns County		
14	120114	Tampa		
15	120061	Charlotte County		
16	120077	Jacksonville		
17	120230	Pasco County		
18	125113	Hollywood		
19	125092	Brevard County		
20	120153	Manatee County		
21	120055	Pompano Beach		
22	120317	Walton County		
23	125110	Hallandale Beach		
24	120161	Martin County		
25	120426	Marco Island		
26	125129	Monroe County		
27	120195	Boca Raton		
28	120004	Bay County		
29	125130	Naples		
30	120643	Hialeah		
31	120080	Escambia County		
32	120119	Indian River County		
33	125096	Clearwater		
34	120274	Santa Rosa County		
35	120678	Aventura		
36	120013	Panama City Beach		
37	120053	Pembroke Pines		
38	125126	Longboat Key		
39	120173	Okaloosa County		
40	125093	Broward County		
41	120285	St Lucie County		
42	120179	Orange County		
43	120054	Plantation		
44	120196	Boynton Beach		
45	125155	Volusia County	8,928	5
46	120688	Sunny Isles Beach	8,808	7
47	120680	Bonita Springs	8,694	5
48	120033	Coral Springs	8,567	8
49	120035	Davie	8,521	7
50	120062	Punta Gorda	8,383	5

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Climate Changed

Moody's Warns Cities to Address Climate Risks or Face Downgrades

By Christopher Flavelle

November 29, 2017, 4:00 AM EST

- ▶ Communities in Texas, Florida, other coastal states at risk
- ▶ Credit rating agency says it's adding climate to credit risks

CRS Class Data: October 1, 2017 / Policy Data: May 20, 2017

For a full list of all CRS Communities as of October 1, 2017, visit http://bit.ly/CRS_FIM_Oct_2017.

NOTES:

As of October 2017, 467 communities in Florida participate in the National Flood Insurance Program (NFIP). Of these communities, 238 (or 51%) participate in the Community Rating System (CRS). Of the top 50 Florida communities (in terms of flood insurance policies-in-force), 100% participate in CRS.

Benefits of Joining the CRS

- * Activities credited by the CRS provide direct benefits to the community, including enhanced public safety, reduction in flood damage and environmental protection.
- * Residents are reminded that the community is working to protect them from flood losses.
- * Public information activities will build a knowledgeable constituency interested in supporting and improving flood protection measures.
- * Money stays in the community instead of being spent on insurance premiums.



Program





- Elevated
- 40-foot pilings
- Built for 250 mph winds
(much higher than required for 120-150 mph)
- Poured concrete walls
- Break-away first floor
- Hurricane-resistant windows





We Know It Works

Natural Hazard Mitigation Saves: 2017 Interim Report

Summary of Findings

Federal Mitigation Grants Save \$6 per \$1 Spent, Exceeding Codes Saves \$4 per \$1 Spent

Natural hazards present significant risks to many communities across the United States. Fortunately, there are measures governments, building owners, developers, tenants, and others can take to reduce the impacts of such events. These measures—commonly called mitigation—can result in significant savings in terms of safety, and preventing property loss and disruption of day-to-day life.

Given the rising frequency of disaster events and the increasing cost of disaster recovery across the nation, mitigation actions are crucial for saving money, property, and, most importantly, lives. Activities designed to reduce disaster losses also may spur job growth and other forms of economic development.

Mitigation represents a sound financial investment. This Interim Study examined two sets of mitigation strategies and found that society saves \$6 for every \$1 spent through mitigation grants funded through select federal agencies and a corresponding benefit-cost ratio (BCR) of 4:1 for investments to exceed select provisions of the 2015 model building codes.

Just implementing these two sets of mitigation strategies would prevent 600 deaths, 1 million nonfatal injuries, and 4,000 cases of post-traumatic stress disorder (PTSD) in the long term. In addition, designing new buildings to exceed the 2015 *International Building Code (IBC)* and *International Residential Code (IRC)*, the model building codes developed by the International Code Council (also known as the I-Codes) would result in 87,000 new, long-term jobs, and an approximate 1% increase in utilization of domestically produced construction material.¹

National Benefit-Cost Ratio Per Peril <small>*BCR numbers in this study have been rounded</small>		Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio		6:1	4:1
	Riverine Flood	7:1	5:1
	Hurricane Surge	Too few grants	7:1
	Wind	5:1	5:1
	Earthquake	3:1	4:1
	Wildland-Urban Interface Fire	3:1	4:1

Table 1. Benefit-Cost Ratio by Hazard and Mitigation Measure.

¹Higher construction costs might also cost jobs if they make new homes less affordable, unless the higher cost of homes is offset by incentives as described in the section, "Incentivization Can Facilitate Ideal Levels of Investment."



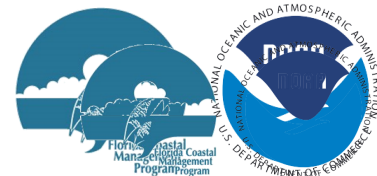


Building on a Strong Foundation

Community Resiliency Initiative

Starting in 2011 – in partnership with NOAA Coastal Zone Management Act – the Florida Department of Environmental Protection (DEP) funded the Department of Economic Opportunity (DEO) to provide technical assistance to coastal communities for innovative planning and development strategies:

- Funding opportunities
- Statewide focus group
- Developing and piloting Adaptation Action Areas
- Vulnerability Assessments and Adaptation Plans for three pilot areas
- Developing technical assistance documents





Florida Resilient Coastlines Program

Mission

Synergizing community resilience planning, natural resource protection tools and funding to prepare Florida's coastal communities for the effects of climate change, especially coastal flooding, erosion and ecosystem changes from sea level rise.



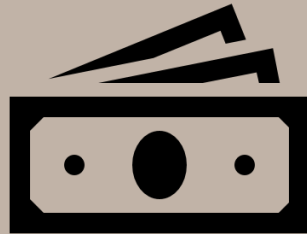


Florida Resilient Coastlines Program



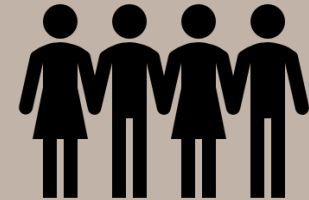
RESOURCES

Florida Adaptation
Planning Guidebook
& Technical Assistance



FUNDING

Resilience Planning Grants



COORDINATION

Quarterly Coastal
Resilience Forum





Adaptation Planning Book

Topics

- **Establishing Context**
- **Vulnerability Assessment (VA)**
- **Adaptation Strategies**
- **Implementation of Adaptation Strategies**
- **Specialty Topics**
 - **Economic Value of Adaptation Planning**
 - **Community Rating System and Adaptation**
 - **Historic and Cultural Resources**
 - **Adaptation Action Areas to Protect Natural Resources**
 - **Funding Opportunities**
- **Example VA and Adaptation Plan**





Steps to Creating Adaptation Plans

CONTEXT

- Assemble a steering committee
- Set guiding principles and motivations
- Establish planning area and describe geographic context
- Define public outreach approach and opportunities for community participation

ADAPTATION STRATEGIES

- Assess adaptive capacities
- Prioritize adaptation needs
- Identify adaptation strategies
- Integrate into existing plans



VULNERABILITY ASSESSMENT

- Conduct an exposure analysis
- Conduct a sensitivity analysis
- Assign focus areas

IMPLEMENTATION STRATEGIES

- Assess implementation capabilities
- Create a schedule of activities, actions, and actors
- Monitor and evaluate





Strategy Types

	A ZONE		V ZONE
FLOOD PROTECTION STRATEGY	DRY FLOODPROOFING WATERTIGHT STRUCTURE e.g. FLOOD SHIELDS	WET FLOODPROOFING WATER TO RUN-IN / RUN-OUT e.g. FLOOD VENTS	ELEVATED STRUCTURE VIRTUALLY OPEN STRUCTURE e.g. OPEN LATTICE
GROUND FLOOR CONFIGURATION	<p>FLOOD SHIELDS PREVENT WATER FROM ENTERING</p> <p>NON-RESIDENTIAL SPACE</p>	<p>1 INCH OF NET OPEN AREA PER 1 SQ. FT. OF ENCLOSED AREA</p> <p>1" MAX.</p>	<p>OPEN STRUCTURE</p> <p>VERTICAL FOUNDATION MEMBER</p>
PERMITTED USE BELOW DFE	<p>LOWEST OCCUPIED FLOOR ALLOWED TO BE EXCAVATED BELOW GRADE NOT PERMITTED FOR ENTIRELY RESIDENTIAL BUILDINGS</p> <ul style="list-style-type: none"> ✓ PARKING ✓ ACCESS ✓ STORAGE ✓ NON-RESIDENTIAL ✗ RESIDENTIAL 	<p>LOWEST OCCUPIED FLOOR TO BE AT OR ABOVE DESIGN FLOOD ELEVATION</p> <ul style="list-style-type: none"> ✓ PARKING ✓ ACCESS ✓ STORAGE ✗ NON-RESIDENTIAL ✗ RESIDENTIAL 	<p>BOTTOM OF LOWEST STRUCTURAL MEMBER TO BE AT OR ABOVE DESIGN FLOOD ELEVATION</p> <ul style="list-style-type: none"> ✓ PARKING ✓ ACCESS ✓ STORAGE ✗ NON-RESIDENTIAL ✗ RESIDENTIAL

TYPES OF ADAPTATION STRATEGIES



Once major needs and priorities are defined, specific adaptation strategies can be developed, vetted, and defined.



01 Protection

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered.



02 Accommodation

Accommodation strategies alter physical design of vulnerable structures to allow the structure or land use to stay in place with modification.



03 Retreat

Retreat from areas or infrastructure where protection or accommodation will not be efficient or effective can be voluntary, incentivized, or done gradually.



04 Avoidance

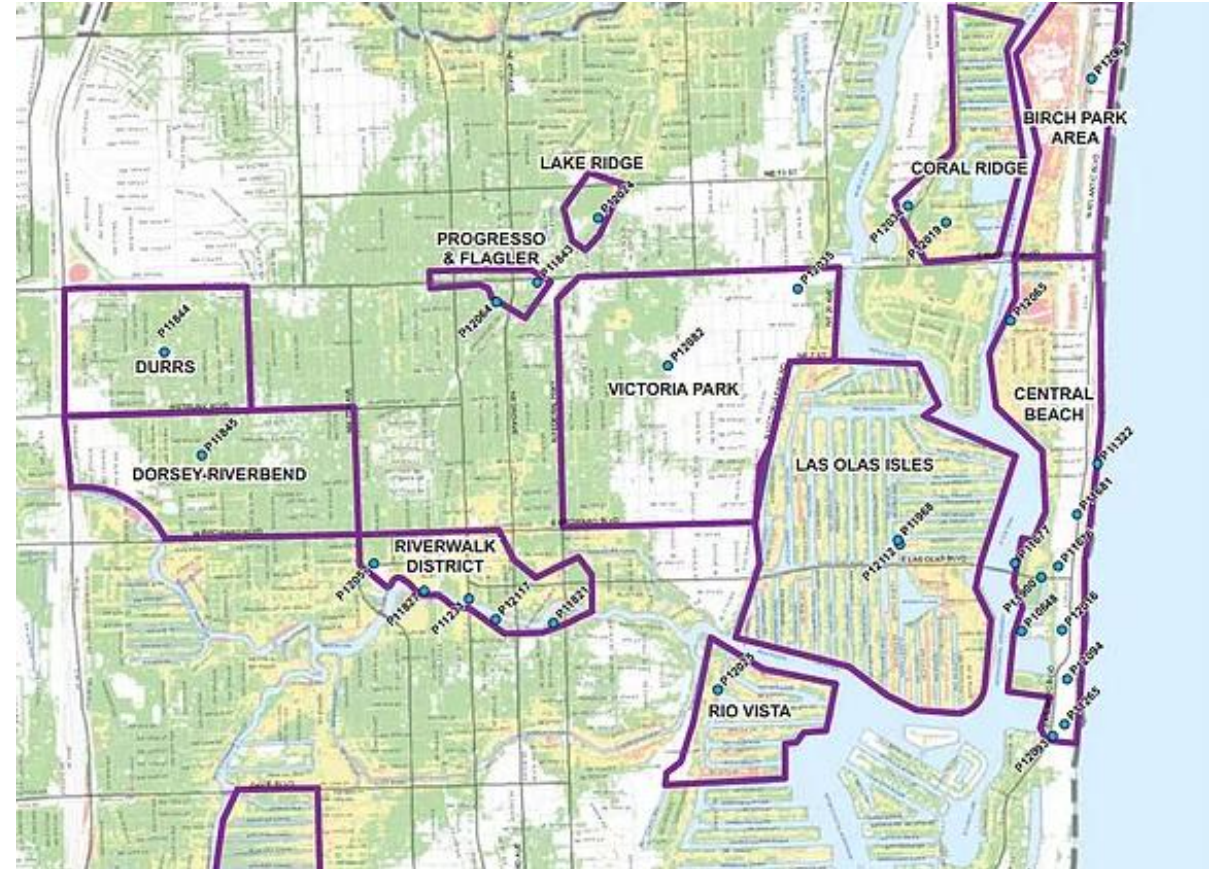
Avoidance involves guiding new development away from areas that are subject to coastal hazards and can be done by implementing policy and/or offering of incentives.

Figure 19. Types of Adaptation Strategies.



Adaptation Action Areas

- Added to Florida Community Planning Act in 2011 session
- Florida Statutes 163.3177(6)(g)10
- Optional comprehensive plan designation for areas that:
 - experience coastal flooding
 - are vulnerable to related impacts of rising sea levels
- Purpose: prioritizing funding for infrastructure and adaptation planning





Technical Assistance

Outreach to Local Governments

- The Nature Conservancy's Coastal Resilience Mapper

<http://maps.coastalresilience.org/network/>

- NOAA's Coastal Flood Exposure Mapper

<https://coast.noaa.gov/digitalcoast/tools/flood-exposure.html>

- NOAA's Sea Level Rise Viewer

<https://coast.noaa.gov/digitalcoast/tools/slr.html>

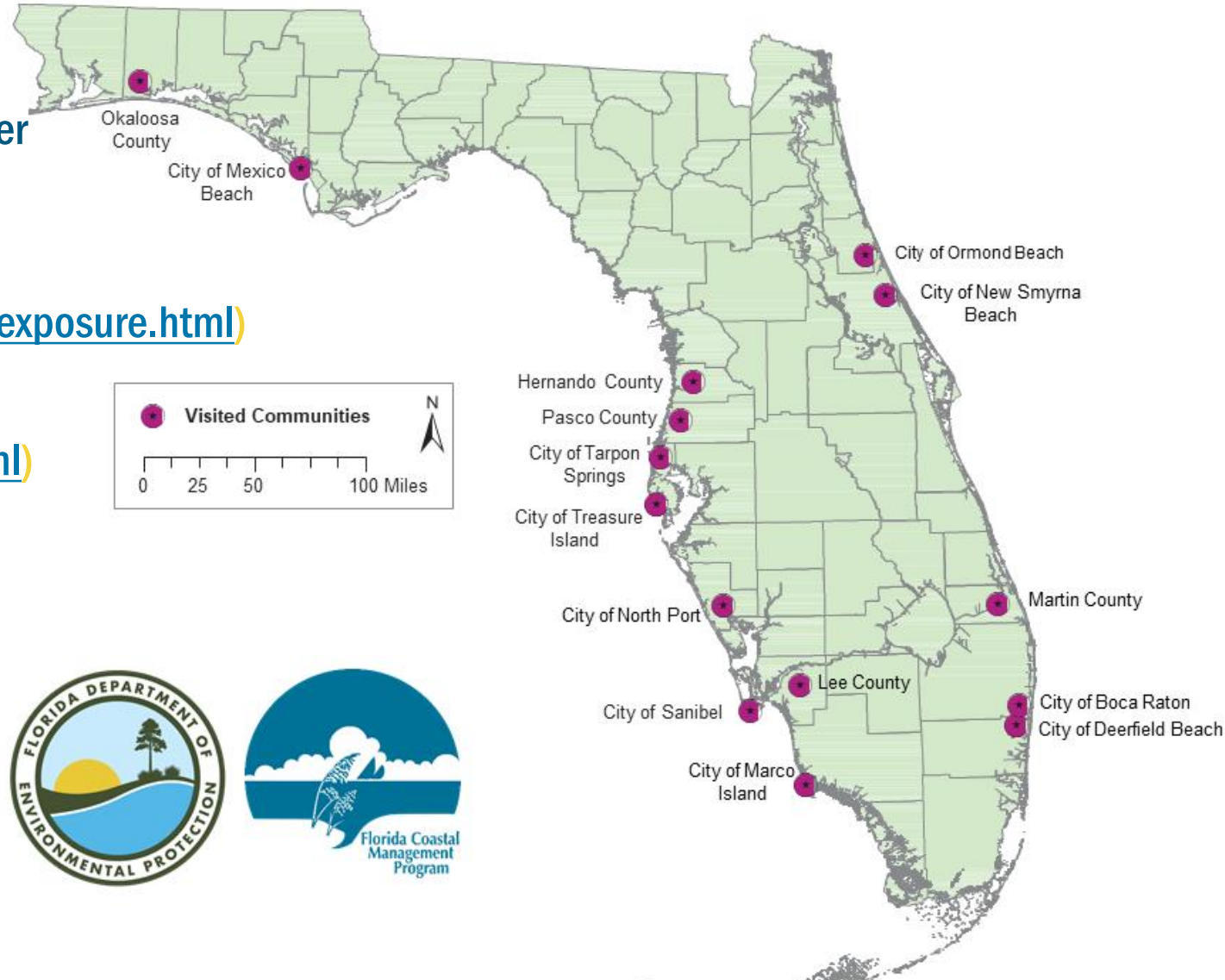
- UF GeoPlan/FDOT Sea Level Sketch Planning Tool

<http://sls.geoplan.ufl.edu/#intro>

- GulfTREE

<http://www.gulftree.org/>

- Joseph.Bauer@FloridaDEP.gov





Resilience Planning Grants

Promote community resilience planning:

- Compliance with “Peril of Flood” statute
- Development of Adaptation Action Areas
- Vulnerability Assessments, Adaptation Plans or Resilience Plans
 - Includes plans for historic resources, stormwater systems, etc.
- Regional collaboration efforts

Recent Round of Funding Opened on Aug. 1, 2019

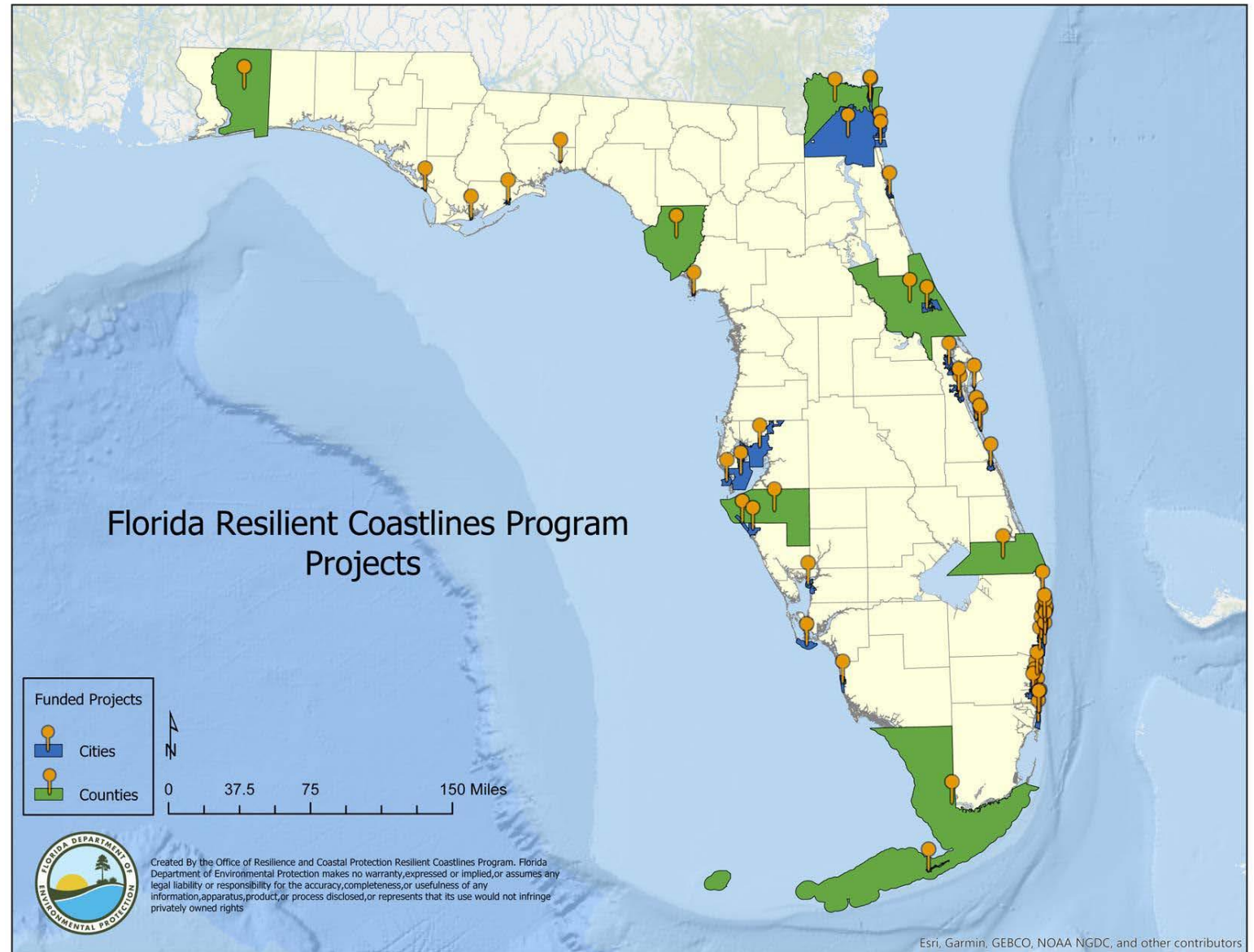




FRCP Community Projects

60 Community Projects

- 14 Counties
- 46 Cities





Funding Sources and Amounts

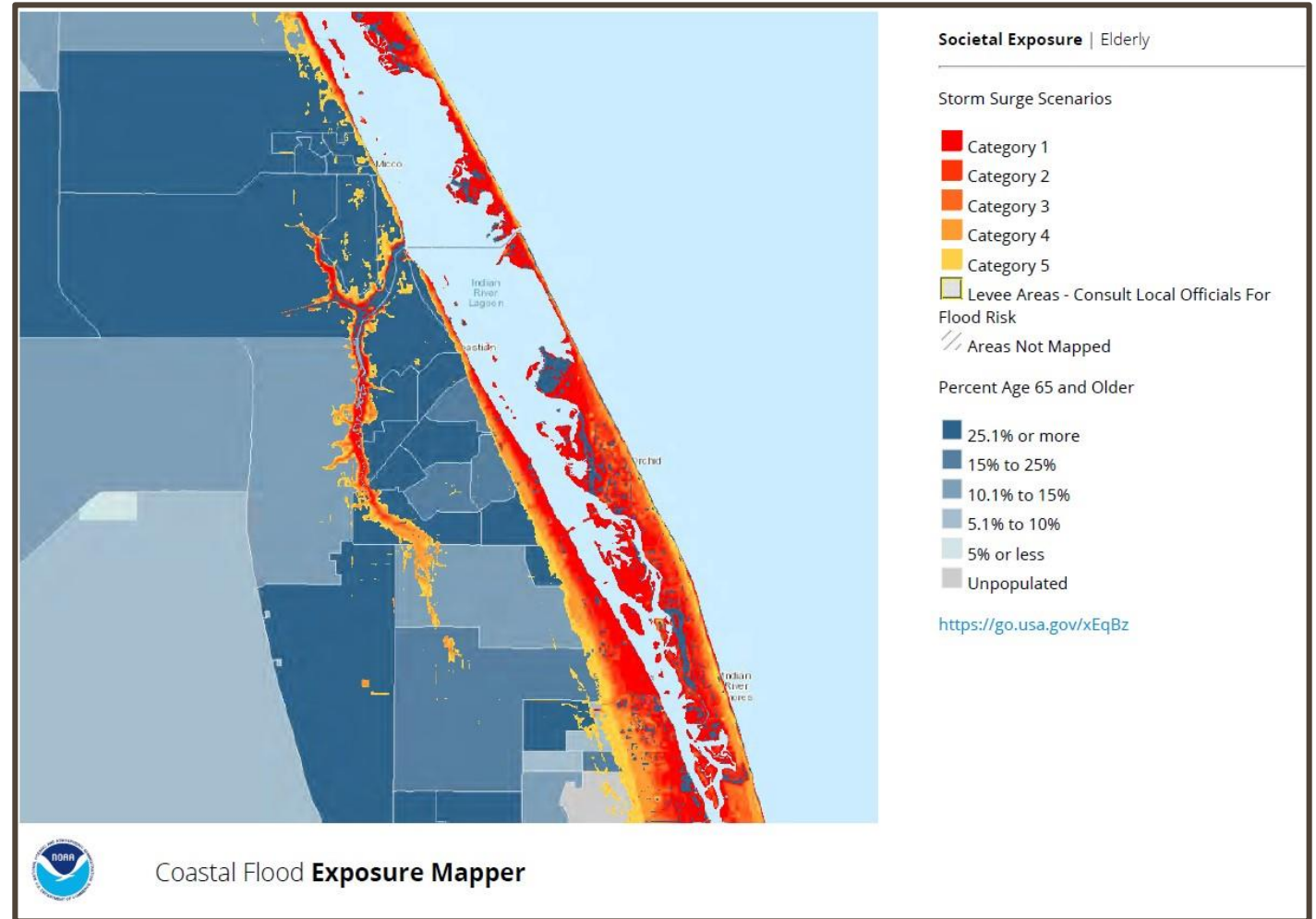
- Funding through Florida Coastal Management Program from NOAA
 - 306 Program: \$325,001
 - 309 Adaptation Action Initiative Strategy: \$829,784
- Funding from Florida's Governor and Legislature: \$3,296,230
- Total through FY 2019-2020: \$4,451,016





All Project Types

- Vulnerability Assessments
 - Peril of Flood Statute (163.3178(2)(f) F.S.)
 - Stormwater Management Systems
 - Historic Resources
- Adaptation/Resilience Plans
- Implementation of Plans
 - Living Shorelines
 - Stormwater Outfalls





Using Peril of Flood Statute to Improve Coastal Resilience

- 2015 law requires consideration of current and future flooding from storm surge and **sea level rise** in coastal management element of comprehensive plans

- Must include development principles, strategies, and flood risk in coastal storm surge, and related impacts of sea level rise

ADAPTATION





Using Peril of Flood Statute to Improve Coastal Resilience

- **211 Florida communities have coastal management element and are required to complete Peril of Flood analyses**
 - **35 Counties**
 - **174 Cities**
- **DEP has funded 29 of these communities, about 35% of those that have submitted their analyses to DEO**





Resilience Planning Grants

City of Sanibel	Vulnerability Assessment (Peril of Flood)	\$53,500
Atlantic Beach	Vulnerability Assessment	\$40,000
University of Florida	Permitting Living Shorelines/Cedar Key	\$41,024
Nassau County	Nassau County Vulnerability Assessment	\$40,000
City of Rockledge	Resilient Planning for the Future of Rockledge (Peril of Flood)	\$55,000
City of Carrabelle	Carabelle Targeted Resilience Assistance	\$23,000
SFRPC	Peril of Flood Updates/ Dania Beach & Palmetto Bay	\$36,885
City of Punta Gorda	Climate Adaptation Plan Update & Living Shoreline Element	\$74,968
Dixie County	Coastal Resilience Adaptation Plan	\$52,000
City of Marathon	Resilient Marathon (Peril of Flood)	\$55,000
City of Boynton Beach	Palm Beach County Resilience Partnership (Peril of Flood)	\$72,000
Pasco County	Comprehensive Plan Update and PDRP (Peril of Flood)	\$70,000
		\$613,337





Resilience Implementation Grants

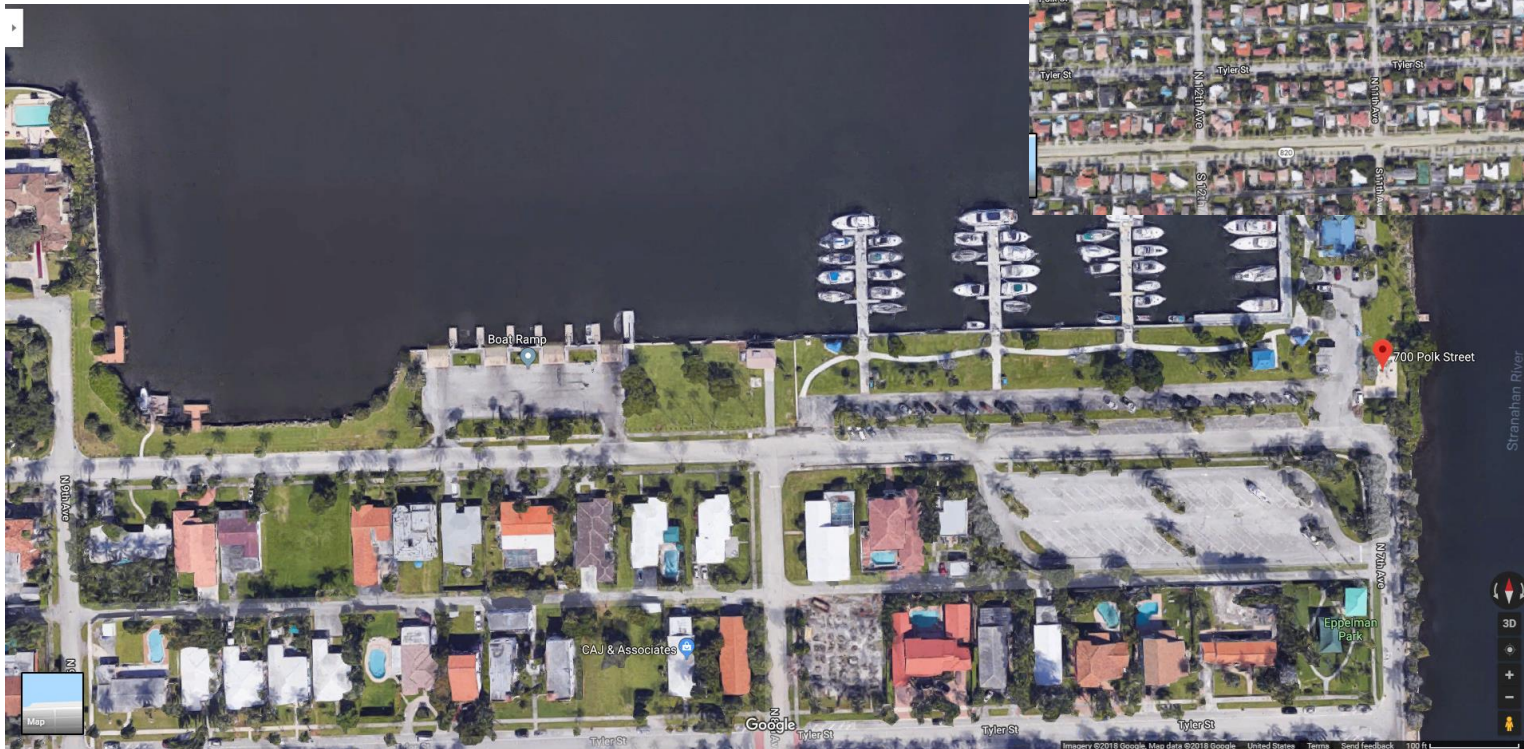
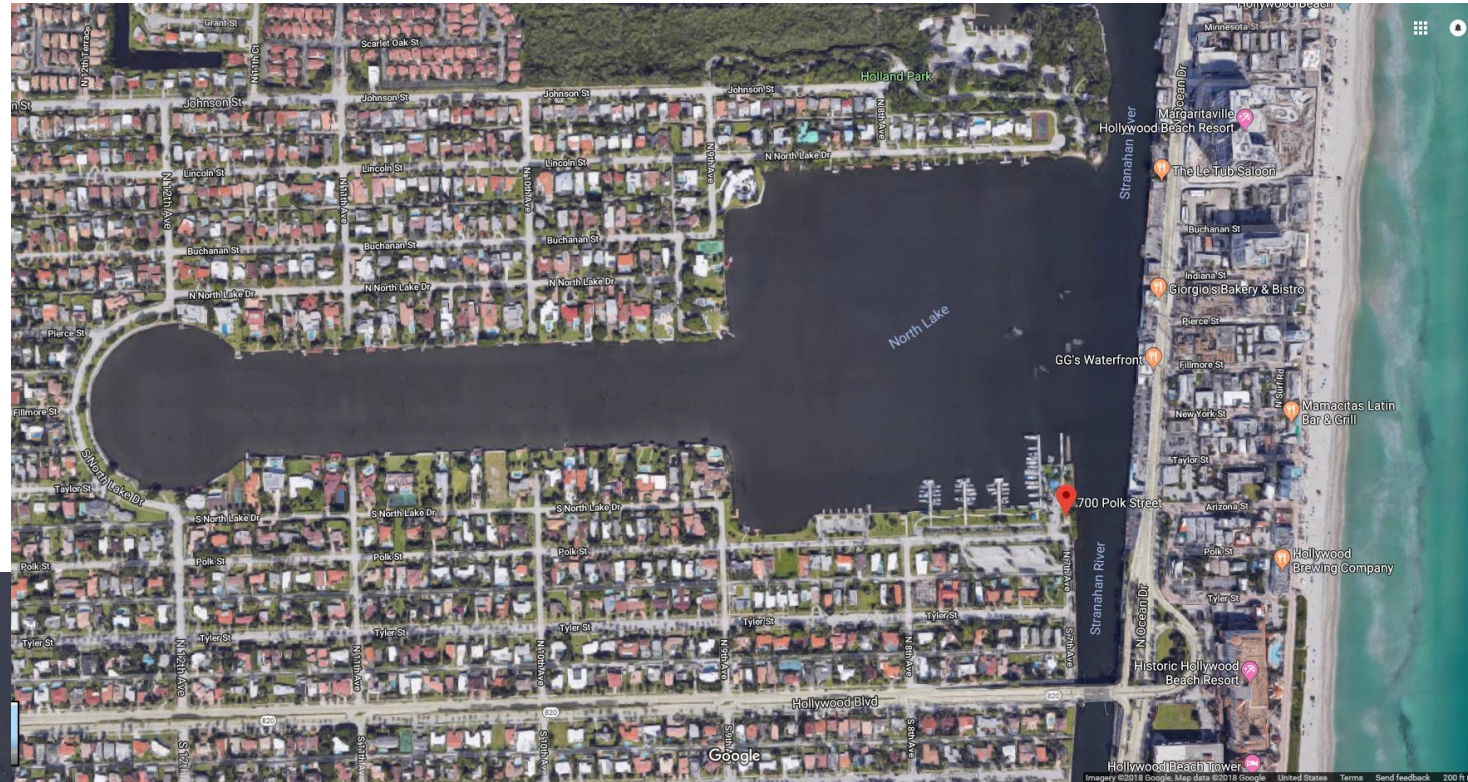


City of Miami Beach	Lake Pancoast Living Shoreline	\$34,965
City of Sarasota	Resilient Shoreline	\$174,337
RBNERR	Fruit Farm Creek Mangrove Restoration	\$276,948
City of Hollywood	Marina Boat Ramp Improvements	\$400,000
		\$886,250





City of Hollywood



Marina/Boat ramp





na
woods

NO SPEED
NO WAKE

STATE OF FLORIDA
MARINA
SUNSHINE BEACH





Coordination



Coastal Resilience Forum

<https://floridadep.gov/rcp/florida-resilient-coastlines-program/content/quarterly-resilience-forum>

- ACOE
- AECOM
- American Planning Association
- Apalachee RPC
- Apalachicola Riverkeeper
- ARPC
- Audubon Florida
- BRACE
- Brevard County
- Brizaga/Sea Level Rise Ready
- Broward County
- Broward MPO
- Calusa Waterkeeper
- CFRPC
- City of Cape Coral
- City of Clearwater
- City of Crystal River
- City of Fernandina Beach
- City of Ft. Lauderdale
- City of Hallendale Beach
- City of Jacksonville
- City of Jacksonville Beach
- City of Miami
- City of Miami Beach
- City of Naples
- City of Punta Gorda
- City of Satellite Beach
- City of St. Augustine
- City of West Palm Beach
- Coastal Waterways
- Collier County
- Collier County Waterkeeper
- Conservancy of SW Florida
- Deady Law
- DEM
- DEO
- DEP
- Dewberry
- DOS
- East Central Florida Regional Planning Council
- Emerald Coastkeeper
- FAU
- FDOT
- FEMA
- FGCU
- FIND
- FIU
- FDACS
- Fla Sea Grant
- Flagler County
- Florida League of Cities
- Florida Chamber of Commerce
- Florida Climate Institute
- Florida Earth Institute
- FRCA
- FSU
- FSU Center for Ocean-Atmospheric Prediction Studies
- FSU Law
- FWC
- GCFI
- Gulf Archaeology Research Institute
- Hillsborough County
- Institute for Sustainable Communities
- IRLNEP
- Kennedy Space Center
- Lake Worth Waterkeeper
- Martin County
- Matanzas Riverkeeper
- Miami Waterkeeper
- Miami-Dade County
- Monroe County
- Nassau County
- NC Division of Coastal Management
- NCFRPC
- NEFRPC
- NOAA
- NOAA/ANERR
- NOAA/GTM
- NOAA/RBNERR
- North Florida Land Trust
- NWFWM
- Palm Beach County
- Pasco County
- Pinellas County
- RBNERR
- RWParkinson Inc
- Sanibel-Captiva Conservation Foundation
- Sarasota Estuary Program
- Sea Turtle Conservancy
- SEFRCC
- SFRPC
- Southwest Florida Community Foundation
- St. John's Riverkeeper
- Stearns Weaver
- Stetson University
- Suncoast Waterkeeper
- SWFRPC
- Tampa Bay Waterkeeper
- Taylor Engineering, Inc.
- TBEP
- TBRPC
- TCRPC
- The Nature Conservancy
- TNC
- Tortoise Island
- UF
- UF (Geology)
- UF (planner)
- UF Geoplan
- UF/IFAS Extension-Florida Sea Grant
- USACE
- USF
- WFRPC
- Youth Environmental Alliance



SEARCH...



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[Funded Projects](#)

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The Florida Department of Environmental Protection is committed to marshaling resources to prepare Florida's coastal communities and habitats for the effects of climate change, especially rising sea levels. Through the Florida Resilient Coastlines Program, DEP continues its efforts to ensure collaboration among Florida's coastal communities and to offer technical assistance and funding to coastal communities dealing with increasingly complex flooding, erosion and habitat shifts. Click [here](#) to view awarded Resilience Planning Grants.

DEP Resiliency

[Florida Resilient Coastlines Program](#)



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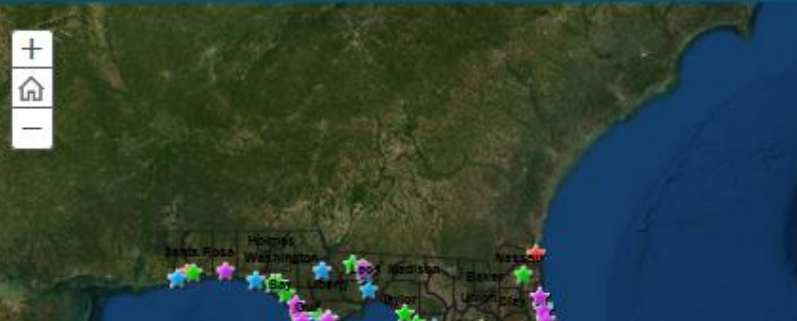
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For Florida's coastal communities, resilience is the ability to recover quickly from disasters and to adapt to future conditions such as sea level rise. The Florida Resilient Coastlines Program is DEP's effort to synergize community resilience planning, natural resource protection tools, and funding to prepare Florida's coastline for





Thank you!

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