

EDF at the Forefront of Applying Nature Based Solutions for Coastal Resilience




Photo credit: LA Coastal Master Plan 2017


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Coastal Resilience




Organizational Perspective

- ❖ A commitment to sound science
 - ❖ Efficient, market-based solutions
 - ❖ Four focus areas: climate, oceans, ecosystems, and health
 - ❖ Team of scientists, attorneys, policymakers, business leaders, engineers, and economists
 - ❖ 500 multi-national staff in 12 offices across the world
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Presentation Outline

- ❖ EDF's work in Louisiana and Coastal Comprehensive Master Plan 2017
 - ❖ Demonstrating the applicability of the elements of EWN to build a natural infrastructure project
 - ❖ Initiatives to support Natural Infrastructure project implementation through innovative financing
 - ❖ Looking ahead to the next Master Plan 2023 and developing innovative ideas for consideration
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EDF's Goals for 2025

- ❖ EDF and Partners taking action to restore the coast.
 - ❖ Focus is on the Louisiana State Master Plan – building natural infrastructure.
 - ❖ EDF supports the bipartisan RESTORE Act funding for effective projects.
 - ❖ EDF will share costs and benefits of investing in natural infrastructure.
 - ❖ EDF will share successes and challenges with the global community.
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EDF's Coastal Resiliency work in Louisiana

- ❖ Louisiana is in the midst of a land loss crisis
- ❖ Without action, another 4,000 square miles could disappear within the next 50 years.

What's at stake?

A LIVING SANCTUARY

for some of the most productive wildlife and fishery habitats in the country

A LINE OF DEFENSE

for coastal communities

AN ECONOMIC ENGINE

that feeds and fuels our nation, and a portal connecting us to the rest of the world

HOME

to Louisiana's citizens



State of Louisiana
The Honorable John Bel Edwards, Governor



Louisiana's Comprehensive
Master Plan for a Sustainable Coast

committed to **our coast**

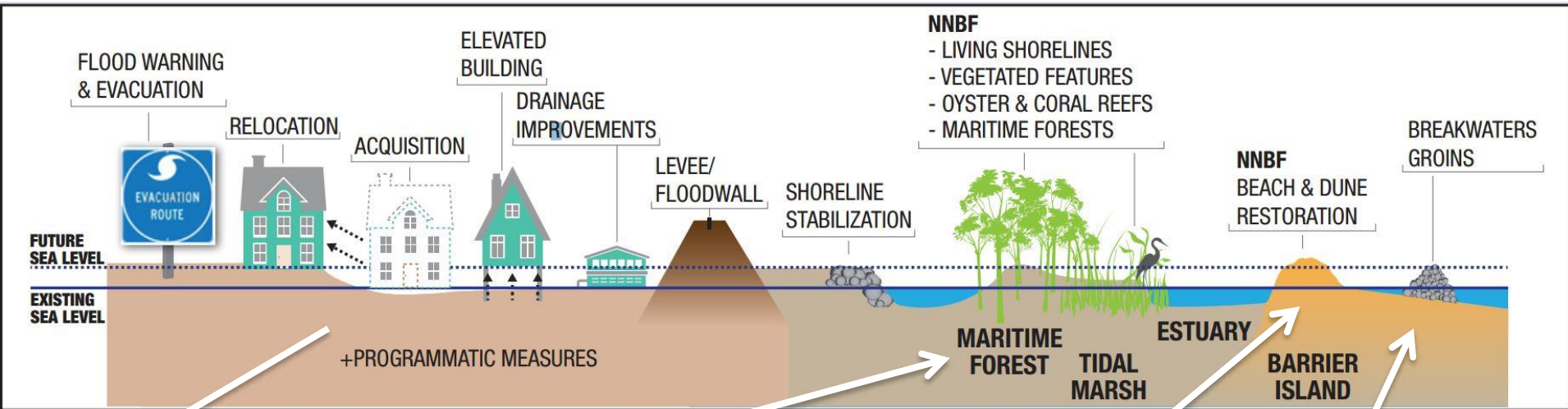
- ❖ **Multiple Lines of Defense approach”**
- ❖ **Comprehensive Nonstructural Program**



Effective June 2, 2017

Credit: Louisiana's Coastal Master Plan 2017

Multiple Lines of Defense



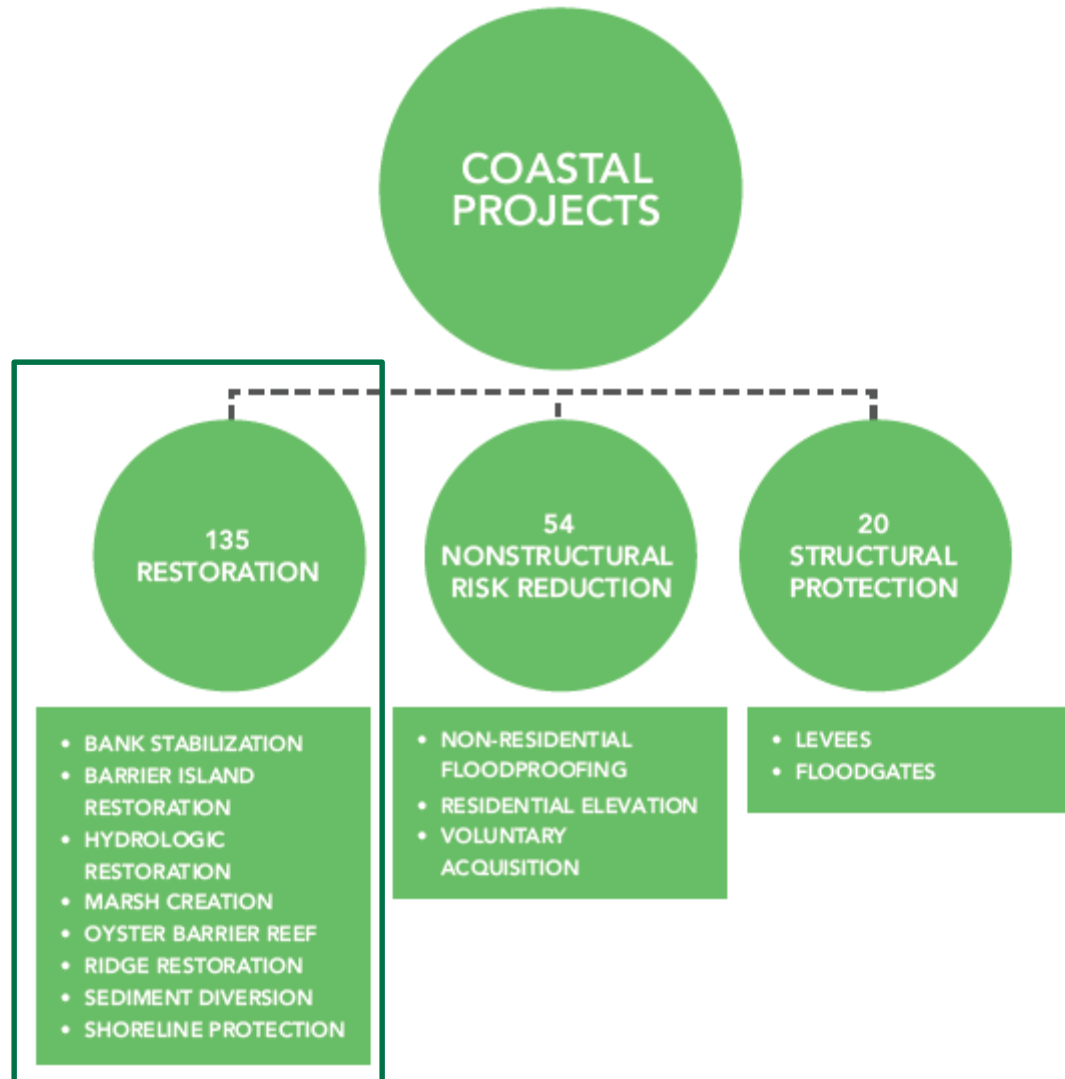
Drainage,
elevation,
retention
systems,
relocation

Maritime forests
reduce wave & wind
energy, capture
debris; wetlands can
attenuate waves.

Vegetated dunes
better withstand
waves & provide
attractive habitat

Shellfish & coral reefs
= low breakwaters.

Types of Projects in the Master Plan



The Four EWN Elements: Applied to Long Distance Sediment Pipeline Project

Producing Efficiencies



Cost and time savings on mobilization and demobilization

Using Natural Processes



This project harnessed the river and its sediment

Broadening Benefits



Reducing risk, supported fisheries and hunting among many others.

Promoting Collaboration



LDSP project was created using collaborative processes





Photo credit: www.weeksmarine.com

13 miles of Long Distance Sediment Pipeline Corridor



Patrick M. Quigley
www.gulfcoastairphoto.com
Slidell, LA 985.788.3458
A SOAIV owned small business.

Bayou Dupont-2 Project: One of the three built concurrently to save costs

EDF's Innovative Efforts in Louisiana to Support the Master Plan

- ❖ A New Tool for Financing Natural Infrastructure projects**
 - ❖ Adding Innovation to the Coastal Masterplan 2023**
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Challenges

- ❖ Coastal Master Plan: \$50B-\$90B over the next 50 years
- ❖ Projects get more expensive over time as seas continue to rise and land erodes

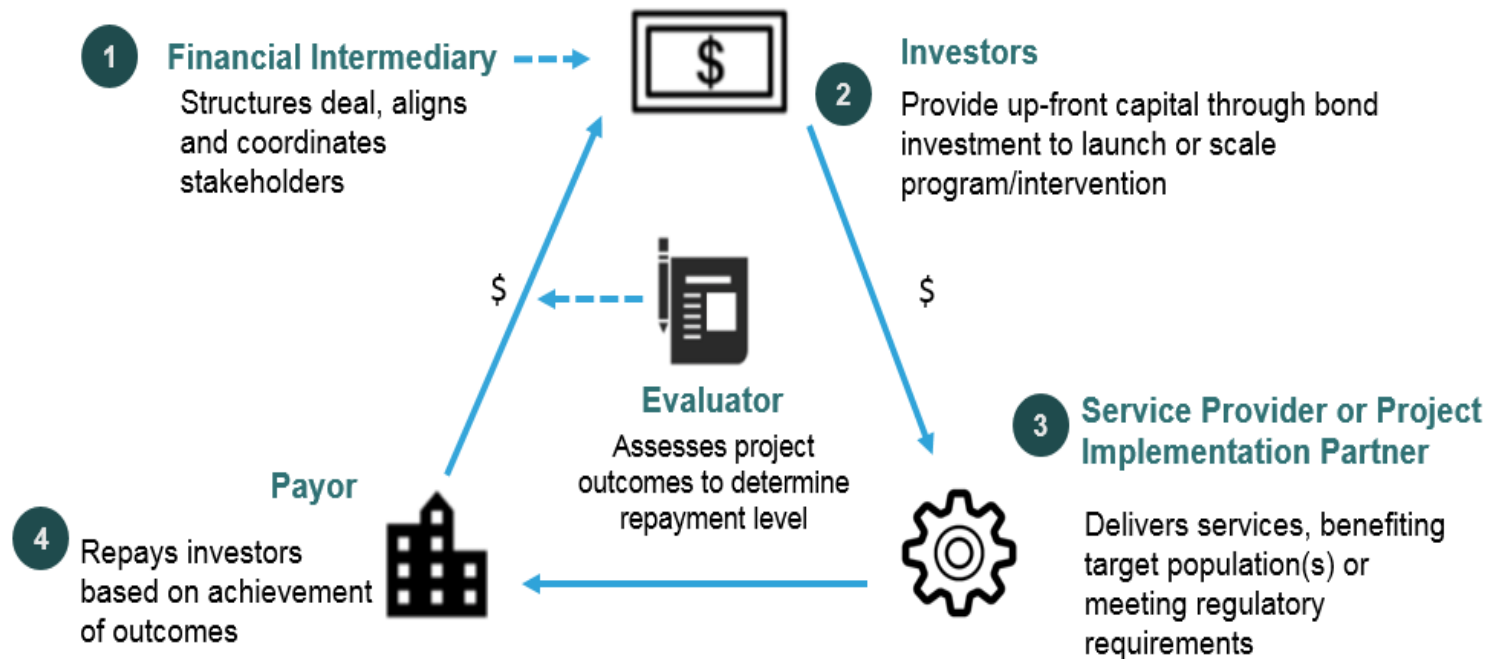
Solutions

- ❖ Access to “up-front” capital to start restoration sooner
- ❖ New sources of capital for restoration

Project Goals

- ❖ Fiscal efficiency
 - ❖ A scalable and replicable model
 - ❖ Financially attractive to all parties
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Environmental Impact Bond Structure



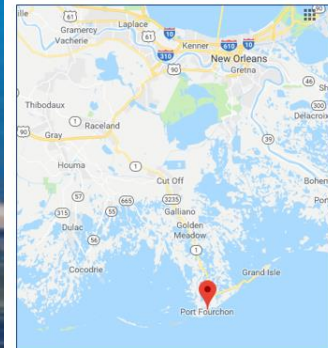
EIB is Feasible and Provides Broad Benefits

Entity	Benefits
CPRA	<ul style="list-style-type: none">• Start projects sooner• Attract additional payors• Incentivize sustainable wetland construction
Asset owner “partner payors”	<ul style="list-style-type: none">• Benefit sooner from protections to assets provided by wetlands• Reduce business disruptions• Reduce long-term vulnerability• Use philanthropic dollars effectively
Investors	<ul style="list-style-type: none">• Invest in projects that support communities and coastlines• View measurable impact of investments• Receive a bonus performance payment if project over-performs
Wetland contractors	<ul style="list-style-type: none">• Receive compensation for sustainable wetland construction
Communities	<ul style="list-style-type: none">• Reduce economic impacts from coastal land loss• Protect jobs linked to critical on-shore and off-shore assets & activities


Marsh Restoration Near Port Fourchon



Photo credit: Greater Lafourche Port Commission



Adding Innovation to the Coastal Master Plan 2023

- ❖ Ecosystem restoration planning - desire to restore a system to some historic condition**
 - ❖ We often look back at what the system once was and try to replicate it.**
 - ❖ A paradigm shift is needed**
 - ❖ An effort to improve the future performance of coastal restoration projects**
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CPRA Coastal Master Plan Model Simulation for 2067

FUTURE WITHOUT ACTION | YEAR 50 | MEDIUM SCENARIO | 100-YEAR FLOOD

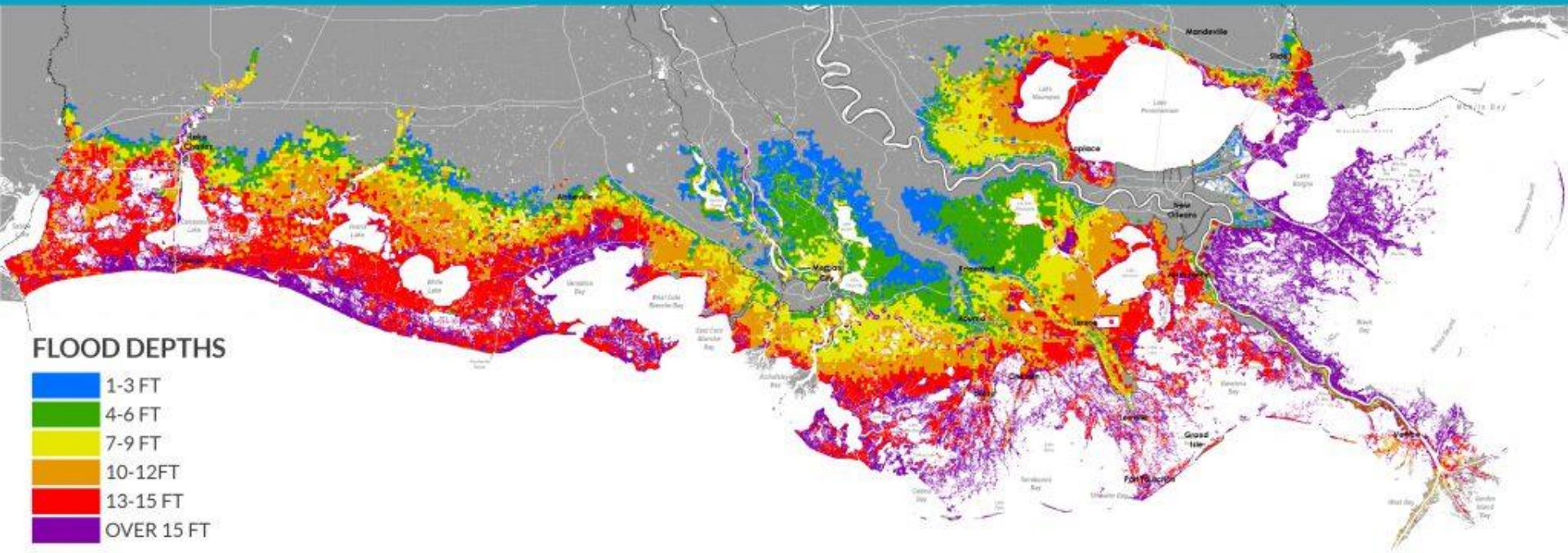
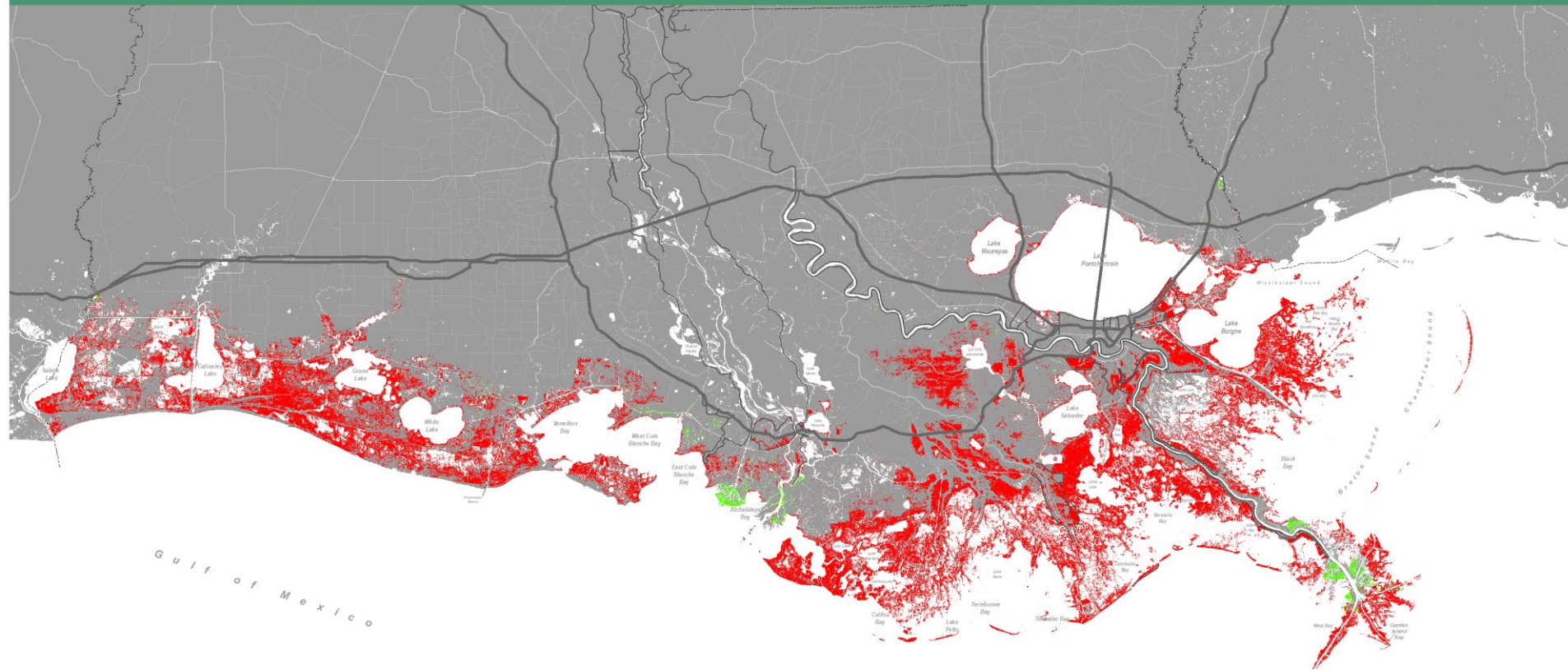


Photo credit: Coastal Protection and Restoration Authority

Medium Scenario (2.07 feet) at Year 50

2017 Coastal Master Plan Land Change Map

S04, G300, Year 50



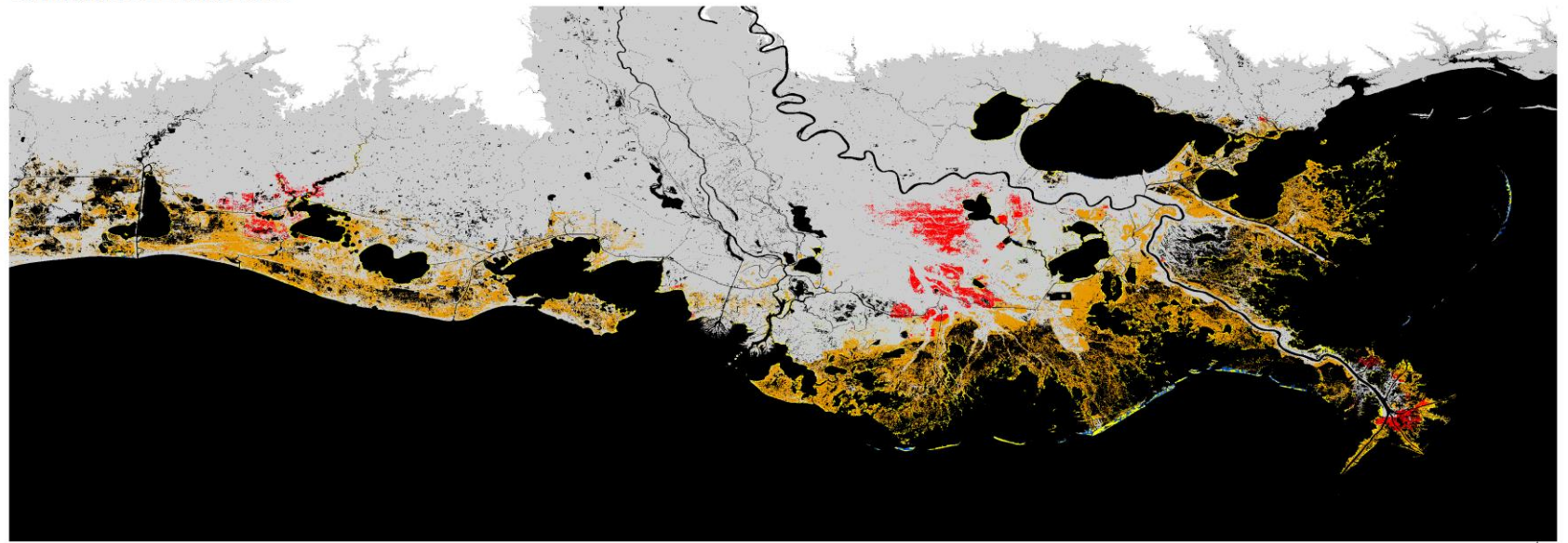
 Land Gain

 Land Loss

A north arrow pointing upwards and a scale bar labeled 'Miles' with markings at 0, 5, 10, and 20.



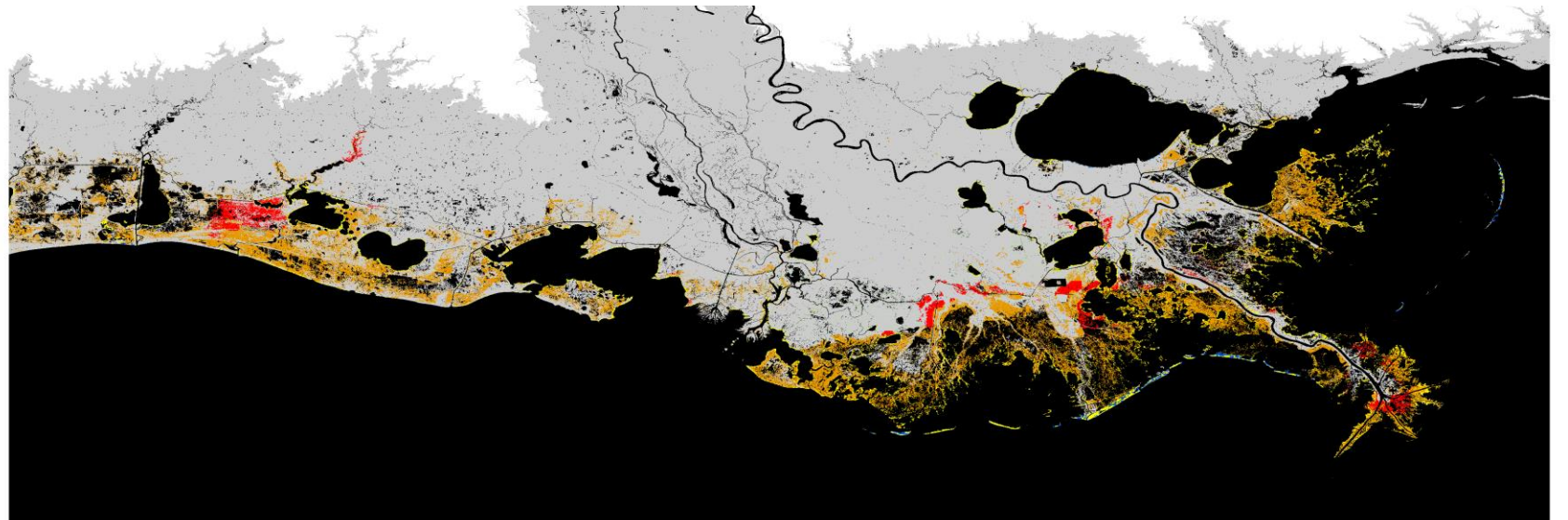
Cumulative Land Loss



- Salinity Collapse
- Inundation Collapse
- Marsh Edge Erosion
- Dead Flotant Marsh
- Bareground Collapse

**FWOA - Medium Scenario
Year 50**

0 35 70 Miles




- Salinity Collapse
- Inundation Collapse
- Marsh Edge Erosion
- Dead Flotant Marsh
- Bareground Collapse

**FWA - Medium Scenario
Year 50**

0 35 70 Miles

Adding Innovation to the Coastal Master Plan

- ❖ **Team of experts reviewed data generated from the plan's "future without action" scenario**
 - ❖ **Determine causes of land loss in the model simulations**
 - Salinity Changes, progressive inundation, storms and sea level rise
 - ❖ **Modelling and analysis of new project concepts**
 - ❖ **Making recommendations to decision makers**
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Questions?



**Caillou Lake Headlands - Barrier
Island Restoration Project**

Photo: Coastal Engineering Consultants

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