LOUISIANA IS FACING A COASTAL CRISIS

Historic Land-Water Change from 1932-2010
Approx. 1,900 sq. mi.
Couvillion et al (USGS), 2011

Land Loss

Land Gain
LOOKING FORWARD….
FUTURE WITHOUT ACTION - YEAR 10
LOOKING FORWARD…
FUTURE WITHOUT ACTION - YEAR 20
LOOKING FORWARD....
FUTURE WITHOUT ACTION - YEAR 30

[Map showing land gain and land loss]
LOOKING FORWARD…
FUTURE WITHOUT ACTION - YEAR 40

2017 Coastal Master Plan
LOOKING FORWARD....
FUTURE WITHOUT ACTION - YEAR 50
PREDICTED FLOOD DEPTHS
INITIAL CONDITION
100-YEAR EVENT

Flood Depths

- Blue: 1-3 ft
- Yellow: 7-9 ft
- Red: 13-15 ft
- Green: 4-6 ft
- Orange: 10-12 ft
- Purple: Over 15 ft

Miles
PREDICTED FLOOD DEPTHS
FUTURE WITHOUT ACTION
YEAR 10, 100-YEAR EVENT

Flood Depths

- **1-3 ft**
- **7-9 ft**
- **13-15 ft**
- **4-6 ft**
- **10-12 ft**
- **Over 15 ft**

2017 Coastal Master Plan
PREDICTED FLOOD DEPTHS
FUTURE WITHOUT ACTION
YEAR 25, 100-YEAR EVENT

Flood Depths

- **1-3 ft**
- **7-9 ft**
- **13-15 ft**
- **4-6 ft**
- **10-12 ft**
- **Over 15 ft**

2017 Coastal Master Plan
WHAT’S AT STAKE?

OUR HOMES

OUR JOBS

OUR CULTURE

1,800 – 4,200 additional square miles of land

Storm protection

Louisiana’s economy, commerce, infrastructure, and culture

United States economy – navigation, energy production, and seafood production
Single state entity with authority to articulate a clear statement of priorities to achieve comprehensive coastal protection and restoration for Louisiana.

Mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration master plan.
RESPONDING TO THE CRISIS:
LOUISIANA’S COASTAL PROGRAM SINCE 2007

$20 BILLION SECURED FOR PROTECTION & RESTORATION PROJECTS IN 20 PARISHES

120 MILLION CUBIC YARDS OF FILL UTILIZED

36,161 ACRES OF LAND BENEFITED

282 MILES OF LEVEE IMPROVEMENT

60 MILES OF BARRIER ISLANDS & BERMS CONSTRUCTED OR UNDER CONSTRUCTION
WE ARE TURNING DIRT TODAY...
AND THERE’S MORE IN THE PIPELINE
OBJECTIVES OF THE COASTAL MASTER PLAN

- Flood Protection
- Natural Processes
- Coastal Habitats
- Cultural Heritage
- Working Coast
SO WHY ANOTHER PLAN?

- It’s required by law to be updated every five years
- Allows the state to respond to changes on the ground and public input as well as innovations in science, engineering, and policy
- Advances a comprehensive and integrated approach to protecting and restoring the communities of Coastal Louisiana
A FRAMEWORK TO MAKE DECISIONS

THE ANALYTICAL CHALLENGE
- Complex Coastal Environment
- 50 Year Planning Horizon
- Uncertain Future Scenarios
- Multiple Project Types
- Diverse Community Needs

NO OPTIMAL SOLUTIONS
- Risk Reduction (Structural or Nonstructural) vs. Restoration
- Near-Term Benefits vs. Long-Term Sustainability
- Different Stakeholder Preferences
WHAT’S DIFFERENT ABOUT THE 2017 COASTAL MASTER PLAN?

• Improved science and technical analysis  
• New ideas and information  
• Focus on flood risk reduction and resilience  
• Emphasis on communities  
• Expanded outreach and public engagement  
• Earlier funding
DEVELOPING THE COASTAL MASTER PLAN

COASTAL PROJECTS
- Identify Candidate Projects

PREDICTIVE MODELS
- Model Projects
- Model Alternatives

PLANNING TOOL
- Compare Projects & Develop Alternatives
- Develop Draft & Final Plan

OUTREACH & ENGAGEMENT

2017 Coastal Master Plan
DEVELOPING THE COASTAL MASTER PLAN

COASTAL PROJECTS

PREDICTIVE MODELS

PLANNING TOOL

IDENTIFY CANDIDATE PROJECTS

COMPARE PROJECTS & DEVELOP ALTERNATIVES

MODEL PROJECTS

COMPARE ALTERNATIVES

MODEL ALTERNATIVES

DEVELOP DRAFT & FINAL PLAN

O U T R E A C H & E N G A G E M E N T

2017 Coastal Master Plan
OVER $150 BILLION OF PROJECTS CONSIDERED
RESTORATION PROJECTS
OVER $150 BILLION OF PROJECTS CONSIDERED NONSTRUCTURAL RISK REDUCTION PROJECTS
OVER $150 BILLION OF PROJECTS CONSIDERED
STRUCTURAL PROTECTION (LEVEES, FLOOD WALLS)
DEVELOPING THE COASTAL MASTER PLAN

COASTAL PROJECTS
IDENTIFY CANDIDATE PROJECTS

PREDICTIVE MODELS
MODEL PROJECTS
MODEL ALTERNATIVES

PLANNING TOOL
COMPARE PROJECTS & DEVELOP ALTERNATIVES
COMPARE ALTERNATIVES
DEVELOP DRAFT & FINAL PLAN

OUTREACH & ENGAGEMENT
ENVISIONING OUR FUTURE COAST

PREDICTIVE MODELS

INTEGRATED COMPARTMENT MODEL

ECO-HYDROLOGY  BARRIER ISLAND MORPHOLOGY  WETLAND MORPHOLOGY  VEGETATION  ECOSYSTEM OUTCOMES

ENVIRONMENTAL AND RISK SCENARIOS

PRECIPITATION  EVAPOTRANSPIRATION  SUBSIDENCE

SEA LEVEL RISE  STORM FREQUENCY  STORM INTENSITY

SURGE/WAVES AND RISK ASSESSMENT MODEL

STORM SURGE/ WAVES

RISK ASSESSMENT

2017 Coastal Master Plan
PLANNING FOR AN UNCERTAIN FUTURE
ENVIRONMENTAL SCENARIOS CONSIDERED

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(FEET/50 YEARS)

2017 COASTAL MASTER PLAN
PREDICTED LAND CHANGE
FUTURE WITHOUT ACTION - YEAR 50, LOW SCENARIO

2017 Coastal Master Plan
PREDICTED LAND CHANGE
FUTURE WITHOUT ACTION - YEAR 50, MEDIUM SCENARIO
PREDICTED LAND CHANGE
FUTURE WITHOUT ACTION - YEAR 50, HIGH SCENARIO
DEVELOPING THE COASTAL MASTER PLAN

COASTAL PROJECTS
- IDENTIFY CANDIDATE PROJECTS

PREDICTIVE MODELS
- MODEL PROJECTS
- MODEL ALTERNATIVES

PLANNING TOOL
- COMPARE PROJECTS & DEVELOP ALTERNATIVES
- DEVELOP DRAFT & FINAL PLAN

OUTREACH & ENGAGEMENT
DECISION DRIVERS FOR PROJECT SELECTION

REDUCING FLOOD RISK

BUILDING/MAINTAINING LAND

2017 Coastal Master Plan
A PLAN BUILT ON THE BEST AVAILABLE SCIENCE...

PLANNING TOOL

DECISION DRIVERS

REDUCING FLOOD RISK
BUILDING/MAINTAINING LAND

METRICS

COMMUNITY METRICS

AGRICULTURAL COMMUNITIES
FLOOD PROTECTION OF STRATEGIC ASSETS
OIL & GAS COMMUNITIES
SOCIAL VULNERABILITY

FLOOD PROTECTION OF HISTORIC PROPERTIES
NAVIGATION
TRADITIONAL FISHING COMMUNITIES

ENVIRONMENTAL METRICS

ALLIGATOR
CRAWFISH
SALTWATER FISHERIES
USE OF NATURAL PROCESSES

BLUE CRAB
FRESHWATER FISHERIES
SHRIMP
WATERFOWL

BROWN PELICAN
OYSTERS
SUSTAINABILITY OF LAND

CONSTRAINTS

SEDIMENT
FUNDING

2017 Coastal Master Plan
...BUT RESPONSIVE TO THE NEEDS OF OUR COMMUNITIES

INPUT FROM CITIZENS, KEY STAKEHOLDERS, AND LOCAL/NATIONAL EXPERTS
UNPRECEDENTED OUTREACH
BEFORE AND DURING THE DRAFT PLAN

- 20 Community Conversations
- 115 General Presentation Briefings
- 55 Meetings with Advisory Groups
- 11K Facebook Views
- 4 Public Hearings
- 800 Attendees
- 5300 Views
- 1300 Public Comments

2017 Coastal Master Plan
UNPRECEDENTED OUTREACH
OFFICIAL PUBLIC HEARINGS

HOUMA

LAKE CHARLES

MANDEVILLE

NEW ORLEANS
KEY DECISION POINTS

• **Overall Funding:** $50 Billion, front-load dollars
• **Funding Split:** An equal split of $25 billion each for restoration and risk reduction
• **Scenario:** Plan for the worst conditions (High) and hope for the best
• **Near-term/Long-term Results:** Equal emphasis was placed on the near term and the long term
• **Public Input:** Changes to the draft plan were made based on the feedback received

A Plan Based on Science, But Responsive to the Needs of Our Communities
LOUISIANA’S 2017 DRAFT COASTAL MASTER PLAN

124 PROJECTS

FLOOD DAMAGES REDUCED BY

$150B

802 SQUARE MILES OF LAND CREATED
A CLOSER LOOK: WEST

Small scale hydrologic restoration and oyster reef/living shoreline projects are included programmatically in the 2017 Coastal Master Plan. Consistency of individual projects will be determined on a case-by-case basis.
A CLOSER LOOK: CENTRAL

PROJECT TYPES

Small scale hydrologic restoration and oyster reef/living shoreline projects are included programmatically in the 2017 Coastal Master Plan. Consistency of individual projects will be determined on a case-by-case basis.
A CLOSER LOOK: EAST

PROJECT TYPES

Small scale hydrologic restoration and oyster reef/living shoreline projects are included programmatically in the 2017 Coastal Master Plan. Consistency of individual projects will be determined on a case-by-case basis.
FUNDING BY PROJECT TYPE

TOTAL FUNDING $50 BILLION

BILLIONS

- $1.5B RESTORATION
- $0.4B HYDROLOGIC RESTORATION
- $17.8B MARSH CREATION
- $0.1B RIDGE RESTORATION
- $5.1B SEDIMENT DIVERSION
- $0.9B SHORELINE PROTECTION
- $19B STRUCTURAL
- $6B NONSTRUCTURAL

RESTORATION $25B
RISK REDUCTION $25B
FUTURE WITHOUT ACTION
MEDIUM SCENARIO | YEAR 30

2017 Coastal Master Plan
WHAT THE PLAN DELIVERS: LAND CHANGE
MEDIUM SCENARIO | YEAR 30
FUTURE WITHOUT ACTION
MEDIUM SCENARIO | YEAR 50

[Map showing land gain and loss in the coastal area]
WHAT THE PLAN DELIVERS: LAND CHANGE
MEDIUM SCENARIO | YEAR 50

2017 Coastal Master Plan
WHAT THE PLAN DELIVERS
LAND GAINED/SUSTAINED

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<th>YEAR</th>
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</table>

POTENTIAL LAND GAINED/SUSTAINED OVER TIME
FUTURE WITH ACTION

SCENARIO
MEDIUM
FUTURE WITHOUT ACTION: FLOOD DEPTHS
MEDIUM SCENARIO | YEAR 25 | 100-YEAR EVENT

Flood Depths
- 1-3 ft
- 4-6 ft
- 7-9 ft
- 10-12 ft
- 13-15 ft
- Over 15 ft

2017 Coastal Master Plan
WHAT THE PLAN DELIVERS: FLOOD DEPTHS
MEDIUM SCENARIO | YEAR 25 | 100-YEAR EVENT

Flood Depths
- 1-3 ft
- 4-6 ft
- 7-9 ft
- 10-12 ft
- 13-15 ft
- Over 15 ft

0 5 10 20 Miles

2017 Coastal Master Plan
WHAT THE PLAN DELIVERS: FLOOD DEPTH DIFFERENCE
MEDIUM SCENARIO | YEAR 25 | 100-YEAR EVENT

Flood Depth Difference

- < -9 ft
- -6 to -3 ft
- -3 to -1 ft
- 1 to 3 ft
- > 3 ft

Structural Protection

2017 Coastal Master Plan
FUTURE WITHOUT ACTION: FLOOD DEPTHS
MEDIUM SCENARIO | YEAR 50 | 100-YEAR EVENT

Flood Depths
- Blue: 1-3 ft
- Yellow: 7-9 ft
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- Orange: 10-12 ft
- Purple: Over 15 ft

Miles: 0 5 10 20
WHAT THE PLAN DELIVERS: FLOOD DEPTHS
MEDIUM SCENARIO | YEAR 50 | 100-YEAR EVENT

Flood Depths

- Blue: 1-3 ft
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- Red: 13-15 ft
- Green: 4-6 ft
- Orange: 10-12 ft
- Purple: Over 15 ft

Gulf of Mexico

Miles

0 5 10 20
WHAT THE PLAN DELIVERS: FLOOD DEPTH DIFFERENCE
MEDIUM SCENARIO | YEAR 50 | 100-YEAR EVENT

Flood Depth Difference

- < -9 ft
- 9 to -6 ft
- -6 to -3 ft
- -3 to -1 ft
- 1 to 3 ft
- > 3 ft

Structural Protection

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WHAT THE PLAN DELIVERS
REDUCTION IN EXPECTED ANNUAL DAMAGES

EXPECTED ANNUAL DAMAGES

BILLIONS

$2.7B
CURRENT
$5.3B
YEAR 25
$12.1B
YEAR 50

$3B REDUCED
$8.3B REDUCED

SCENARIO MEDIUM

FUTURE WITHOUT ACTION
FUTURE WITH ACTION
WHAT THE PLAN DELIVERS

- PROVIDES DIVERSITY OF PROJECTS
- BENEFITS THE ECOSYSTEM
- REDUCES RISK
- PROVIDES ECONOMIC DEVELOPMENT OPPORTUNITIES
- GIVES US TIME TO PREPARE AND ADAPT
- BUILDS/SUSTAINS LAND
2017 DRAFT Coastal Master Plan
To download a printable version click here.
To download a web version click here.

To download a brochure about the 2017 Draft Coastal Master Plan, please click here.

To download Appendix B: People and the Landscape, click here.

Appendices
To access the appendices to the 2017 DRAFT COASTAL MASTER PLAN, please click the links below. If you have any questions regarding the appendices below, please e-mail us at MasterPlan@la.gov.

Appendix A - Project Definitions
• Attachment A8: Coming Soon
• Attachment A9: Parish Fact Sheets

Appendix B - People and the Landscape

Appendix C - Modeling
Chapter 3 - Introduction
Chapter 4 - Future Scenarios
• Attachment C4-1 - Tidal Camouflage
• Attachment C4-2 - Marsh Edge Erosion
• Attachment C4-3 - Storms in the ICM Boundary Conditions
• Attachment C4-4 - Barrier Island Model Development (BIMODE)
• Attachment C4-5 - Vegetation
• Attachment C4-6 - Oyster Habitat Suitability Index Model
• Attachment C4-7 - Green-winged Teal Habitat Suitability Index Model
• Attachment C4-8 - Mottled Duck Habitat Suitability Index Model
• Attachment C4-9 - Brown Pelican Habitat Suitability Index Model
• Attachment C4-10 - Alligator Habitat Suitability Index Model
• Attachment C4-11 - Blue Crab Habitat Suitability Index Model
• Attachment C4-12 - Oyster Habitat Suitability Index Model
• Attachment C4-13 - Brown Shrimp Habitat Suitability Index Model
• Attachment C4-14 - White Shrimp Habitat Suitability Index Model
• Attachment C4-15 - Gulf Varnish Habitat Suitability Index Model
• Attachment C4-16 - Spotted Seatrout Habitat Suitability Index Model
• Attachment C4-17 - Bay Anchovy Habitat Suitability Index Model
• Attachment C4-18 - Largemouth Bass Habitat Suitability Index Model

coastal.la.gov
PARISH FACT SHEET

ST. TAMMANY PARISH

St. Tammany Parish lies to the northeast of Lake Pontchartrain, along the Mississippi River, and includes the municipalities of Abita Springs, Covington (parish seat), Friona, Mandeville, Pearl River, and Slidell. The parish is one of the fastest-growing areas in the state, and St. Tammany Parish is a multi-faceted, culturally rich, and economically diverse area and is located at the crossings of three interstates and adjacent to the shores of Lake Pontchartrain.

FUTURE WITHOUT ACTION LAND LOSS AND FLOOD RISK

YEARS 50, MEDIUM ENVIRONMENTAL SCENARIO

St. Tammany Parish faces minimal potential land loss and flood risk over the next 50 years under the medium environmental scenario with no further coastal protection or restoration actions taken. However, with no future action, the southern portion of the parish faces increased future storm surge-based flood risk. Over the next 50 years (under the medium environmental scenario), 100-year flood depths increase substantially to 7-13 feet and above the Normandy Island Barrier. The town of Mandeville, Lacombe, and Slidell face increased risk.

FUTURE LAND CHANGE

CURRENT & FUTURE ECONOMIC DAMAGE FROM STORM SURGE-BASED FLOODING

St. Tammany Parish faces minimal potential land loss over the next 50 years under the medium environmental scenario with no future protection or restoration actions taken. However, with no future action, the southern portion of the parish faces increased future storm surge-based flood risk. Over the next 50 years (under the medium environmental scenario), 100-year flood depths increase substantially to 7-13 feet and above the Normandy Island Barrier. The town of Mandeville, Lacombe, and Slidell face increased risk.

WHAT’S IN THE 2017 DRAFT COASTAL MASTER PLAN FOR ST. TAMMANY PARISH?

PROJECT TYPES

2017 MASTER PLAN PROJECTS

RISK REDUCTION PROJECTS: YEAR 1-30

- 001-MC.106c: St. Tammany Nonstructural Risk Reduction

RESTORATION PROJECTS: YEAR 1-30

- 001-MC.55: New Orleans East Landbridge Restoration
- 001-MC.106d: Coast Island Marsh Creation

Note: Projects with a “C” designate the implementation of a portion of a larger marsh restoration project.

REDUCTION IN ANNUAL ECONOMIC DAMAGE

Land area (in square miles) is reduced over time in Parish with and without the 2017 Coastal Master Plan projects under the medium environmental scenario.
Project Fact Sheets

Marsh Island Marsh Creation
Marsh Creation
Project ID: 2160, MCD03

Description
Creation of approximately 11,500 acres of marsh on Marsh Island to create new wetland habitat and restore degraded marsh.

Project Site

Scale of Influence
Local
Sub-basin
Basin
Regional

Project Cost Estimate
Planning/Engineering & Design
$32,400,000

Construction
$404,900,000

Operations & Maintenance (50 yr)
$14,203,000

Total
$453,500,000

Other Nearby Projects in the Master Plan

2017 Coastal Master Plan | Project Factsheet
LEARN MORE ABOUT HOW FLOOD RISK IMPACTS COMMUNITIES TODAY AND IN THE FUTURE, AS WELL AS HOW TO MAKE YOUR COMMUNITY SAFER AND MORE RESILIENT.

VISIT THE MASTER PLAN DATA VIEWER AT: CIMS.COASTAL.LOUISIANA.GOV/MASTERPLAN

5300 VIEWS [AS OF APRIL 2017]
QUESTIONS?

coastal.la.gov
PLANNING TEAM

- Bren Haase
- Mandy Green
- Melanie Saucier
- Raynie Harlan
- Ashley Cobb
- Andrea Galinski
- Zach Rosen

SUPPORTED BY:
TECHNICAL TEAM
COLLABORATIVE TEAM OF OVER 70 EXPERTS

THE WATER INSTITUTE
OF THE GULF™

2017 Coastal Master Plan
FRAMEWORK DEVELOPMENT TEAM
FOCUS GROUPS

- Key industries or stakeholder groups that are impacted by land loss and large scale protection and restoration efforts

- Focus Groups:
  - Community
  - Energy and Industry
  - Fisheries
  - Landowners
  - Navigation
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<td>Dan Childers</td>
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<td>Margaret Davidson</td>
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<td>Sandra Knight</td>
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<td>William Fulton</td>
<td>Rice University</td>
<td>Urban Planning</td>
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TECHNICAL ADVISORY COMMITTEES

Predictive Models
- John Callaway, University of San Francisco
- Scott Hagen, Louisiana State University
- Courtney Harris, Virginia Institute of Marine Sciences
- Wim Kimmerer, San Francisco State University
- Mike Waldon, US Fish and Wildlife Services (retired)

Resiliency
- Daniel Aldrich, Northeastern University
- Diane Austin, University of Arizona
- Gavin Smith, University of North Carolina
- Dan Zarrilli, City of New York, Mayor’s Office of Recovery & Resiliency