Louisiana's 2012 Comprehensive Master Plan for a Sustainable Coast

committed to **our coast**

The Future of Coastal Louisiana:
Expected Outcomes of Implementing the 2012 Coastal Master Plan

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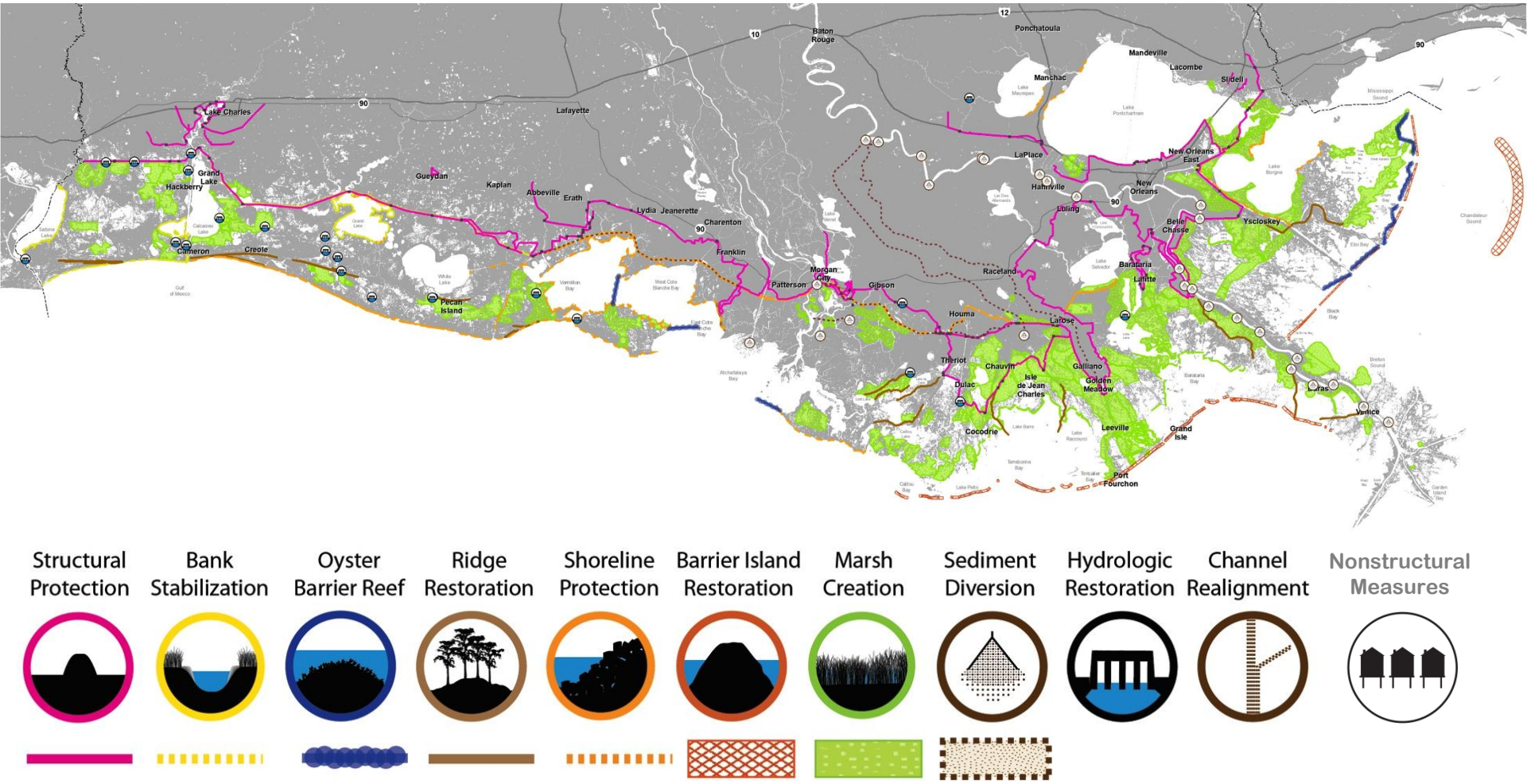
Team Effort


Over 30 Federal, State, NGO, Academic, Community, and Industry Organizations

2012 Coastal Master Plan Objectives

Flood Protection	Reduce economic losses from storm-based flooding
Natural Processes	Promote a sustainable coastal ecosystem by harnessing the processes of the natural system
Coastal Habitats	Provide habitats suitable to support an array of commercial and recreational activities coast wide
Cultural Heritage	Sustain Louisiana's unique heritage and culture
Working Coast	Provide a viable working coast to support industry

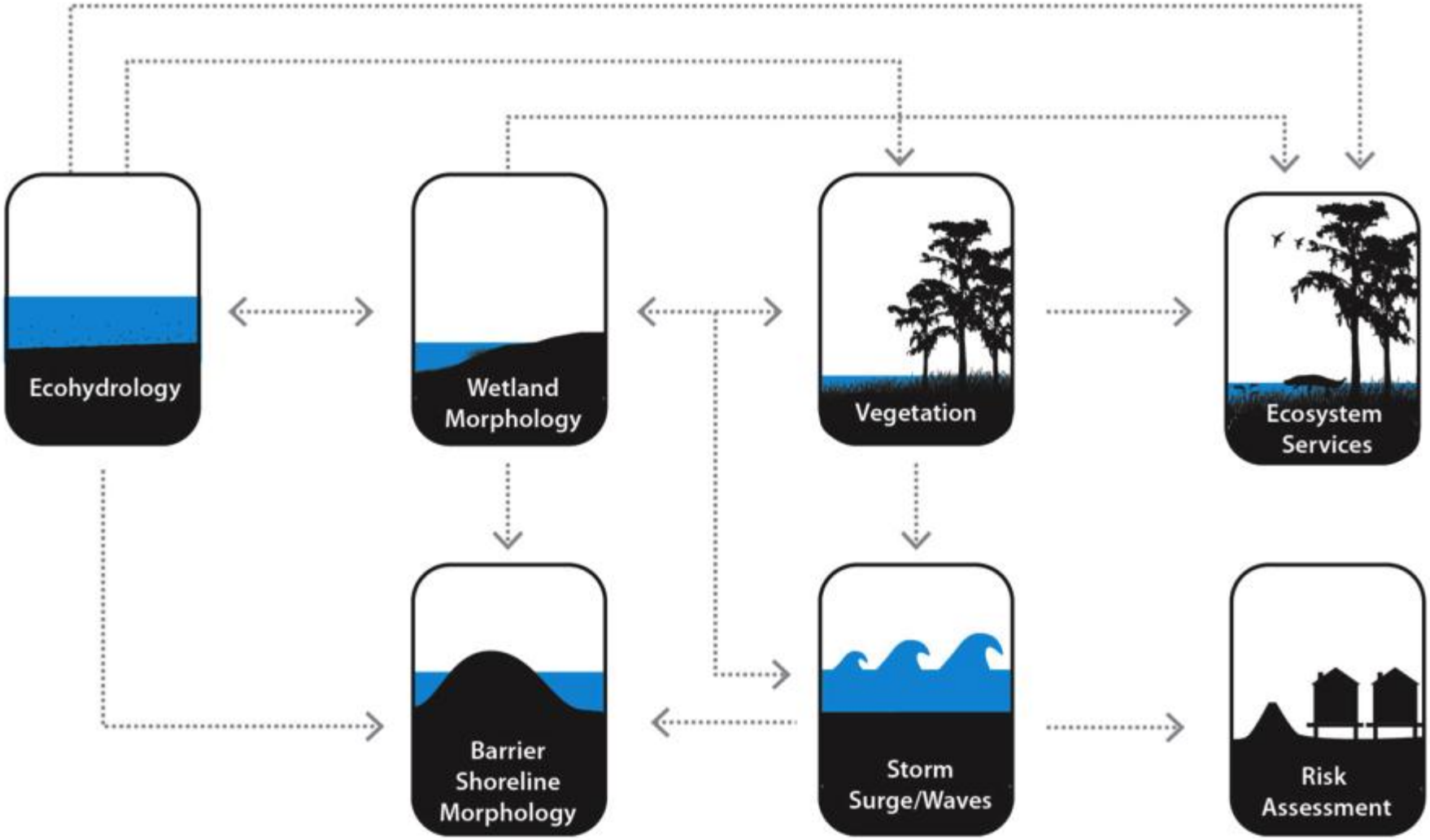
Evaluation of Hundreds of Existing Projects

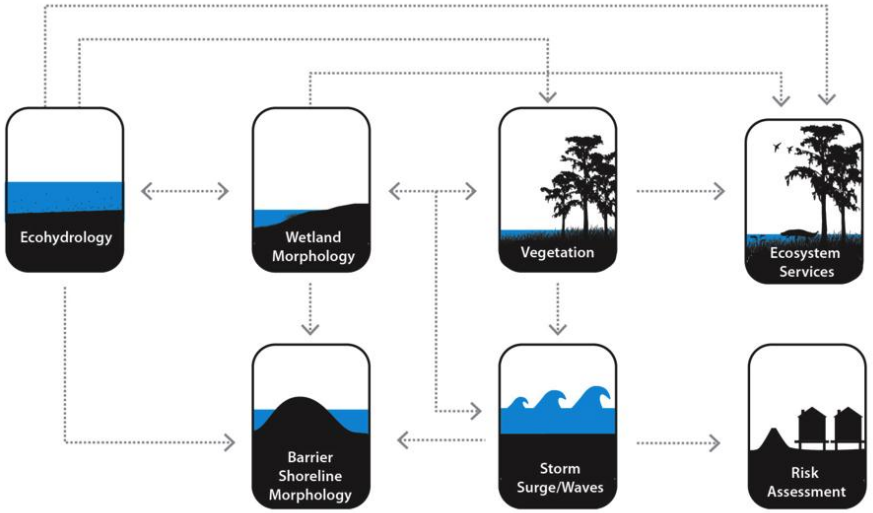


Structural Protection | Bank Stabilization | Oyster Barrier Reef | Ridge Restoration | Shoreline Protection | Barrier Island Restoration | Marsh Creation | Sediment Diversion | Hydrologic Restoration | Channel Realignment | Nonstructural Measures

Nearly 400 Projects Evaluated Across the Coast

Using New Tools, Breaking New Ground





Constraints

Water

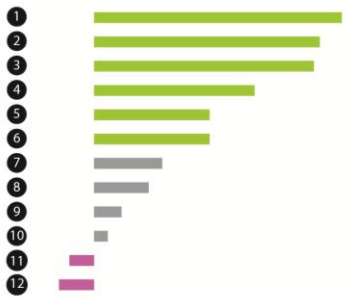
Sediment

Funding

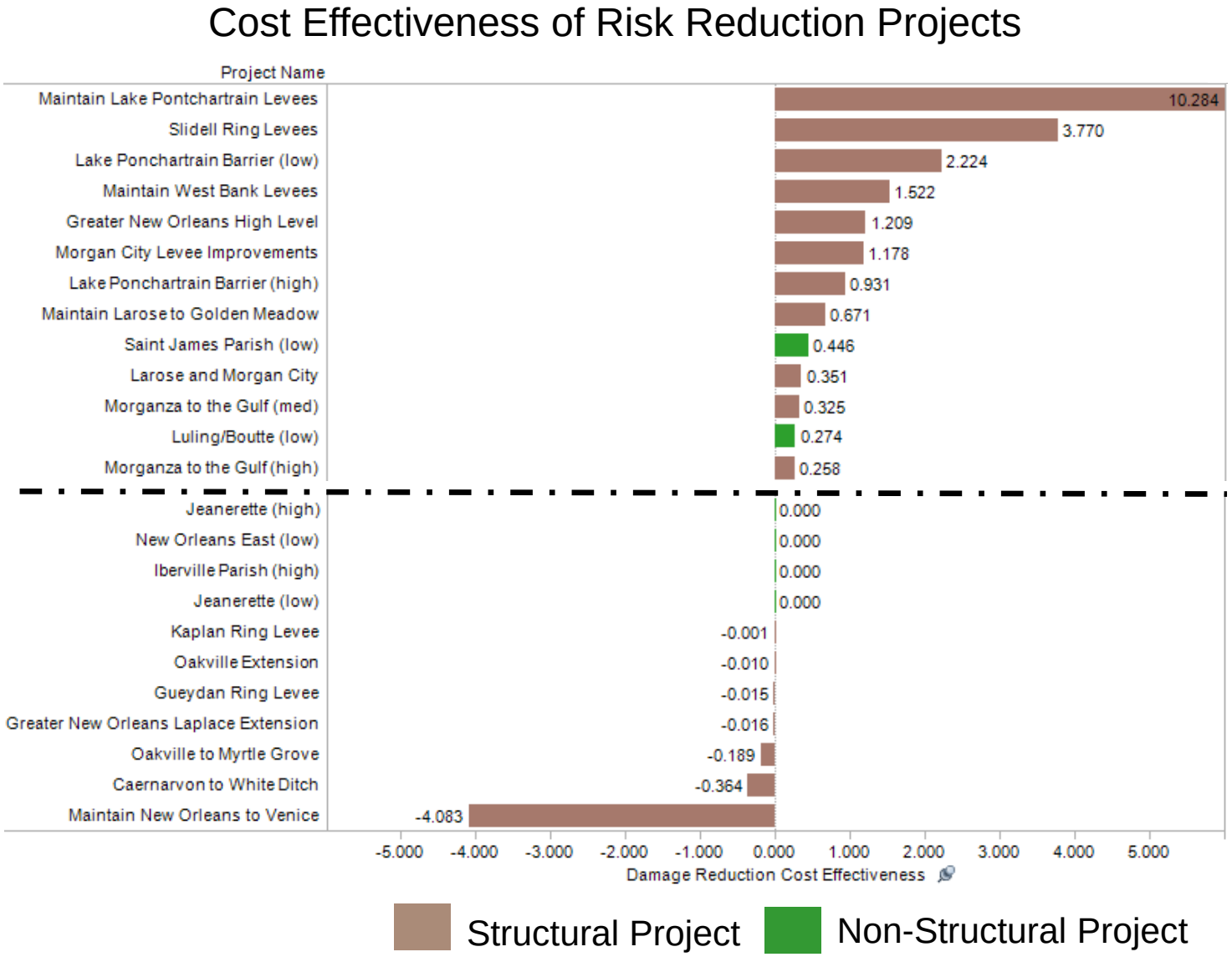
RAND

Planning Tool

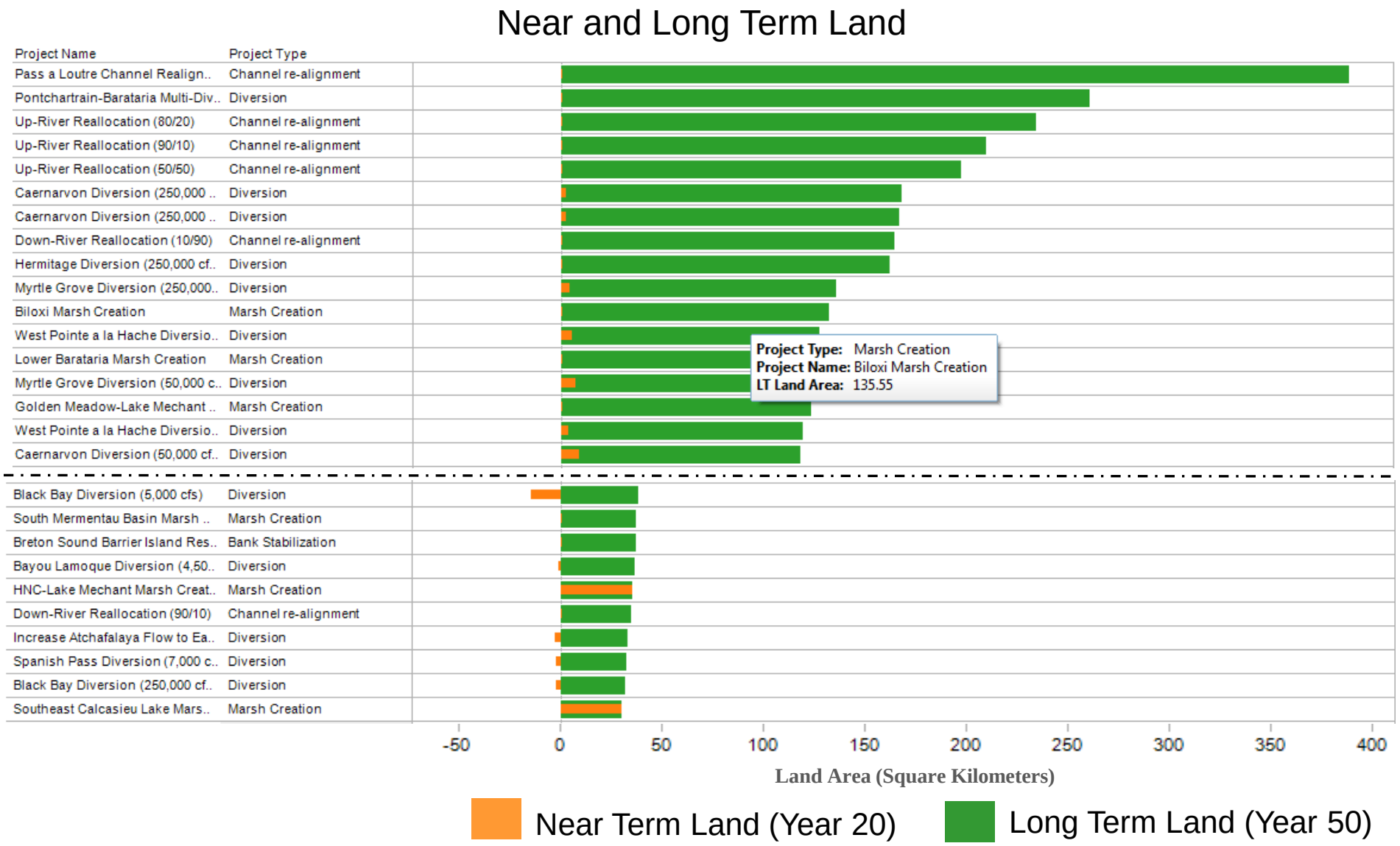
- Computer-based decision support tool
- Allowed for easy comparison and ranking of individual projects modeling results
- Formulated groups of projects based on specifications while accounting for constraints



Individual Project Comparisons



Individual Project Comparisons



Individual Project Comparisons

Ecosystem Services (Example: Upper Breton Diversion 250,000 cfs)

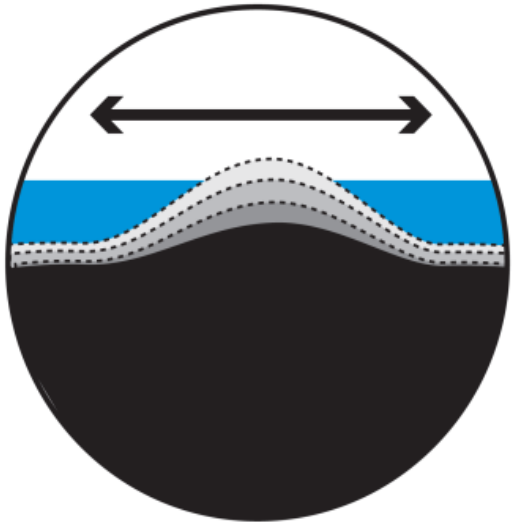
	Alligator	Carbon Sequestration	Coastal Wildlife	Freshwater Availability	Freshwater Fisheries	Nature Based Tourism	Oysters	Saltwater Fisheries	Shrimp	Storm Surge/ Waves	Waterfowl	Crawfish
Upper Pontchartrain												
Mid Pontchartrain												
Lower Pontchartrain												
Upper Barataria												
Lower Barataria												
Birdsfoot Delta												

Formulating the Master Plan: Decision Drivers

Risk Reduction

Expected Annual Damages

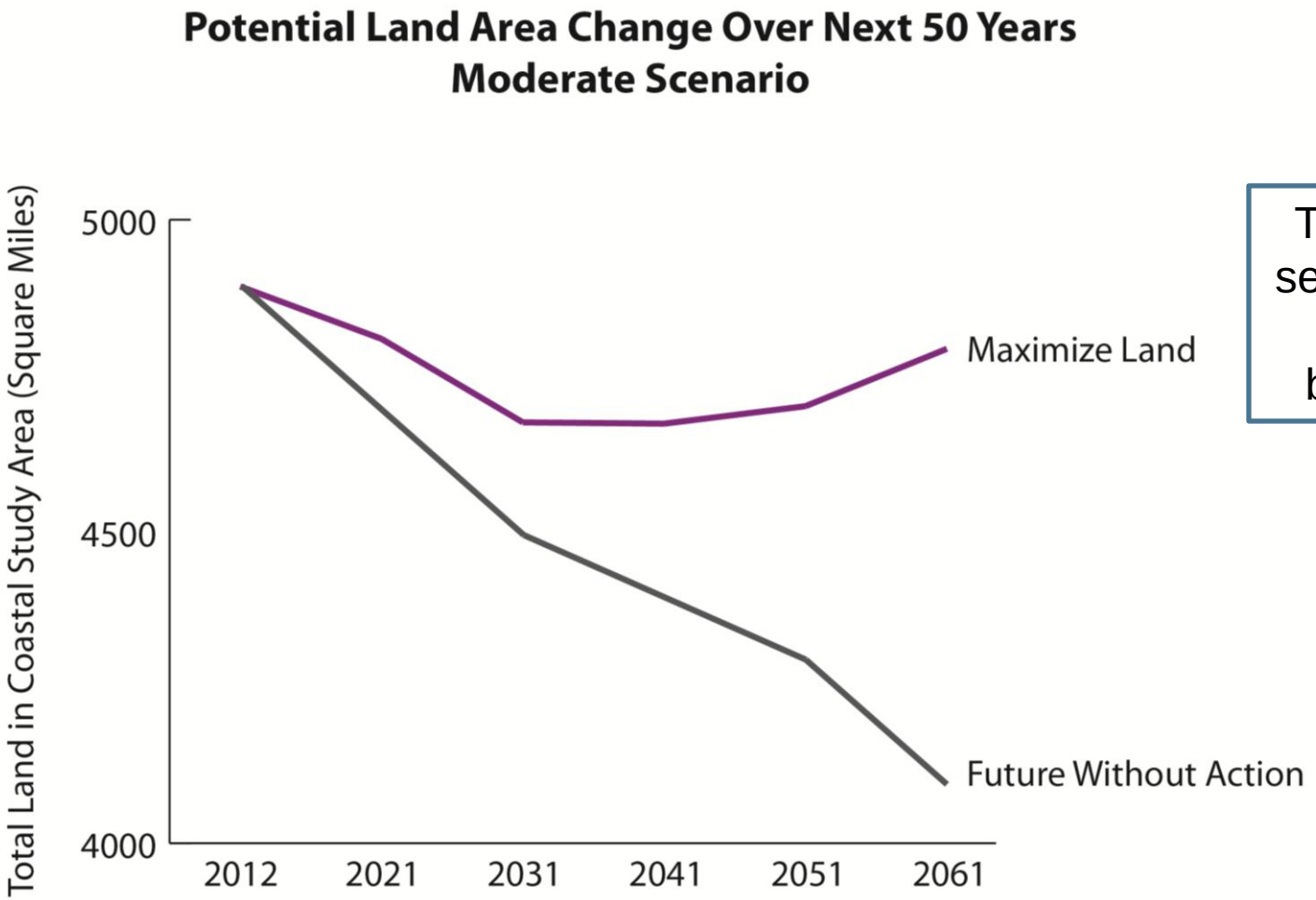
Restoration



Land Area

Planning Tool selects combinations of projects to maximize land building and storm surge risk reduction.

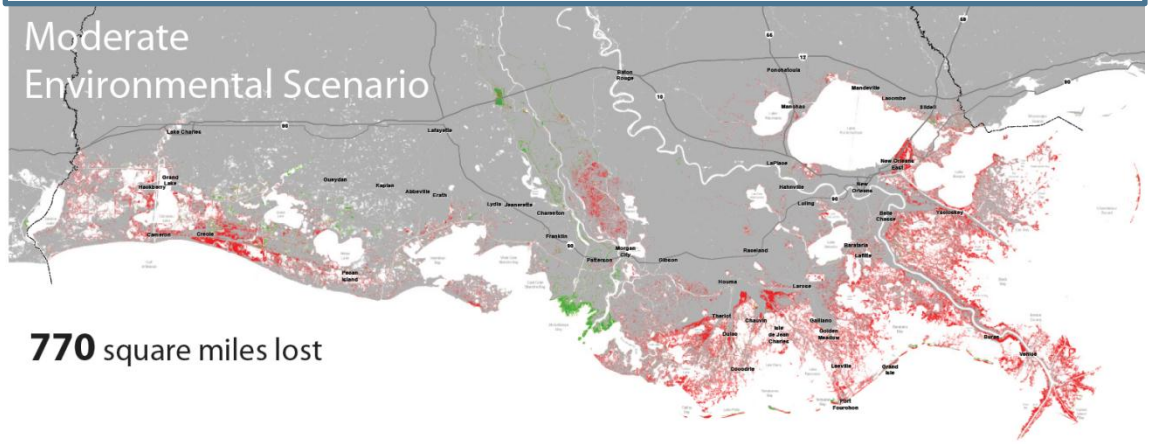
Formulating the Master Plan: Maximum Potential

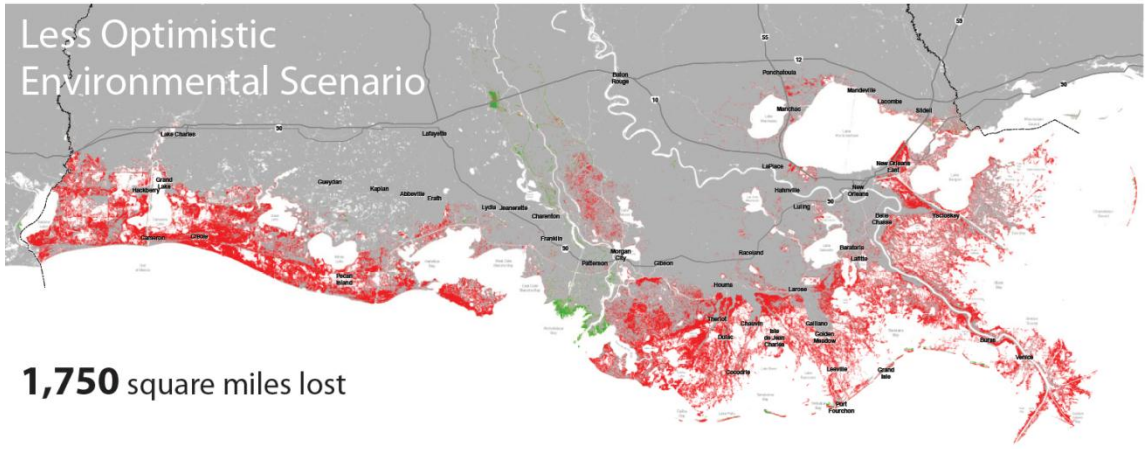


The Planning Tool selects projects that maximize land building potential

Formulating the Master Plan: Evaluating Future Scenarios

The projects selected varied based on future uncertainty scenarios





<u>Moderate Scenario</u>
More projects and larger diversions selected lower in the system

Projects performed well under Moderate conditions, but did not perform well under Less Optimistic

<u>Less Optimistic Scenario</u>
More projects and larger diversions selected higher in the system

Projects performed relatively well in both Moderate and Less Optimistic conditions

PLAN FOR THE WORST AND HOPE FOR THE BEST

Formulating the Master Plan: Other Key Factors

The Planning Tool evaluates how each group of projects effects key uses and resources across the coast

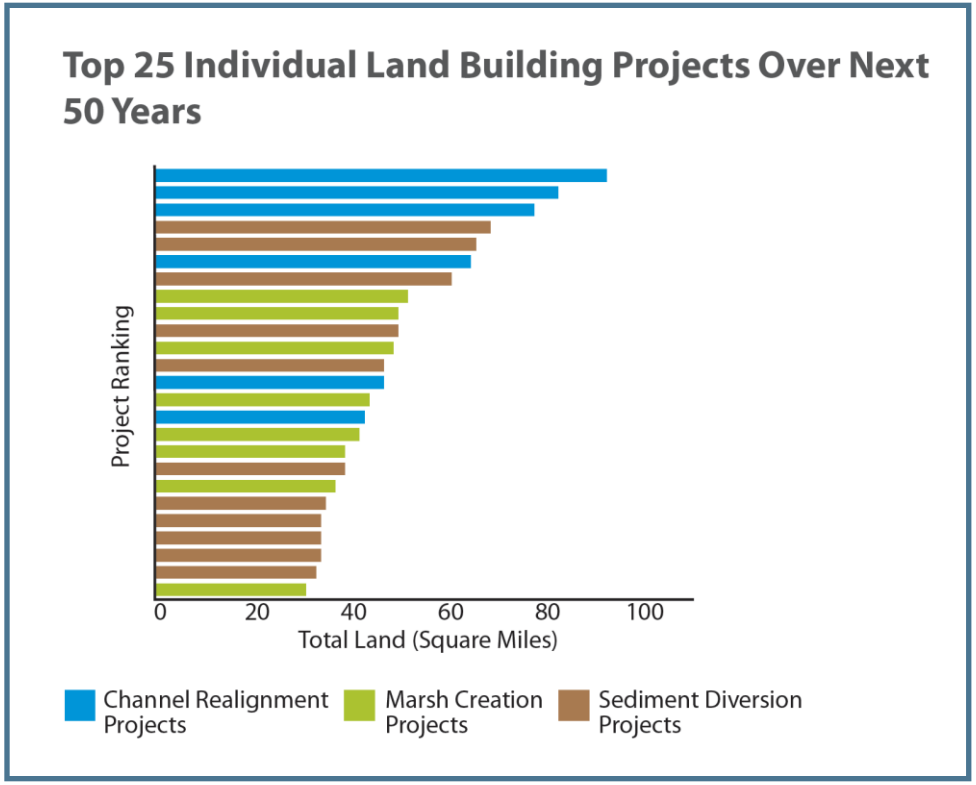
The Planning Tool can select projects based on preferences for these other key factors

Decision Criteria and Ecosystem Services

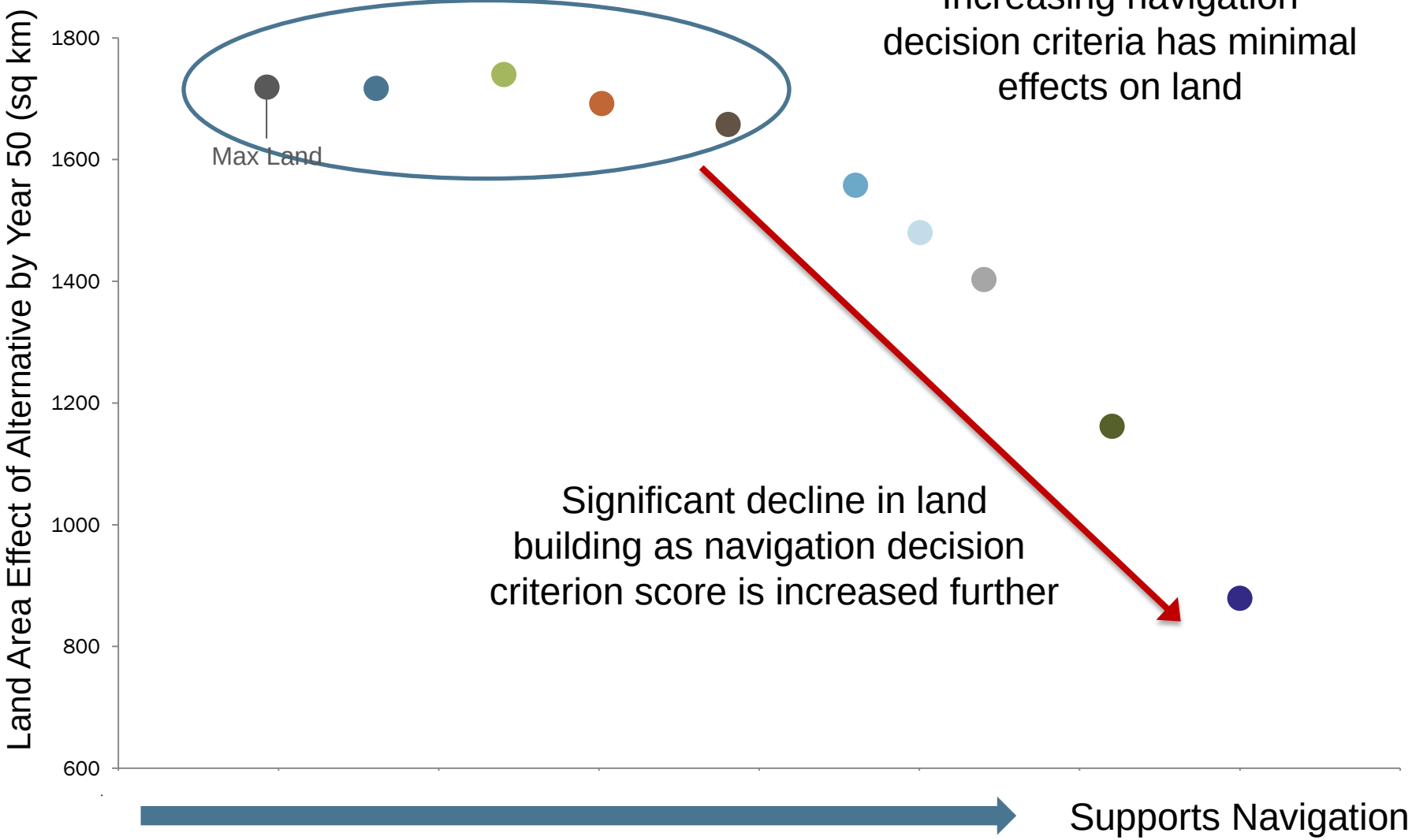
- Distribution of flood risk across socioeconomic groups
- Flood protection of historic properties
- Flood protection of strategic assets
- Operation and maintenance costs
- Sustainability
- Support for navigation
- Use of natural processes
- Support for cultural heritage
- Support for oil & gas
- Oyster
- Shrimp
- Freshwater Availability
- Alligator
- Waterfowl
- Saltwater Fisheries
- Freshwater Fisheries
- Carbon Sequestration
- Nitrogen Removal
- Agriculture/Aquaculture
- Other Coastal Wildlife
- Nature-Based Tourism

Example: Evaluating Use of the River

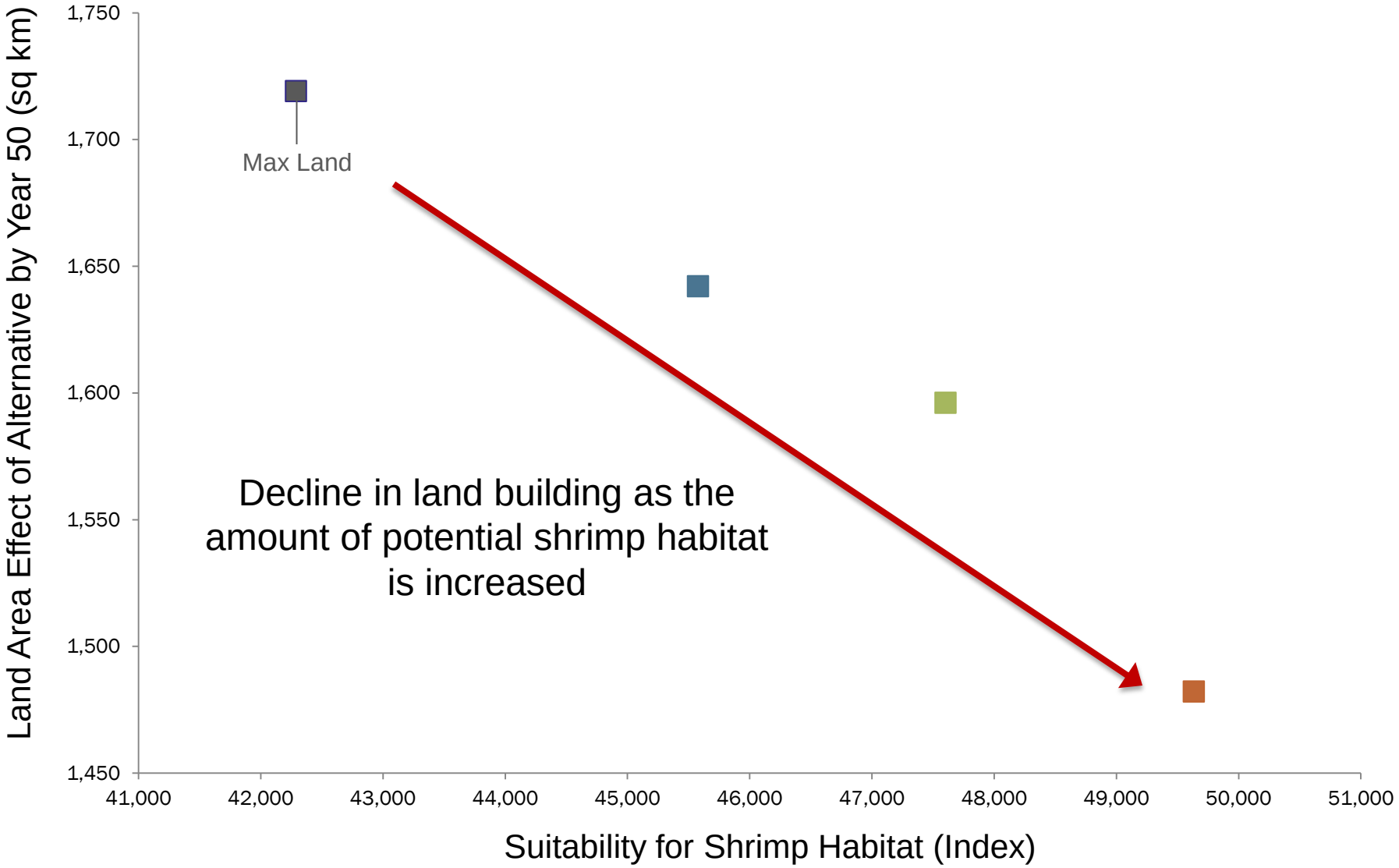
- Maximizing land selects multiple sediment diversions
- Navigation and fisheries interests are concerned about impacts from multiple and large-scale sediment diversions
- Our analysis evaluated the balance between the needs of navigation and fisheries and land building



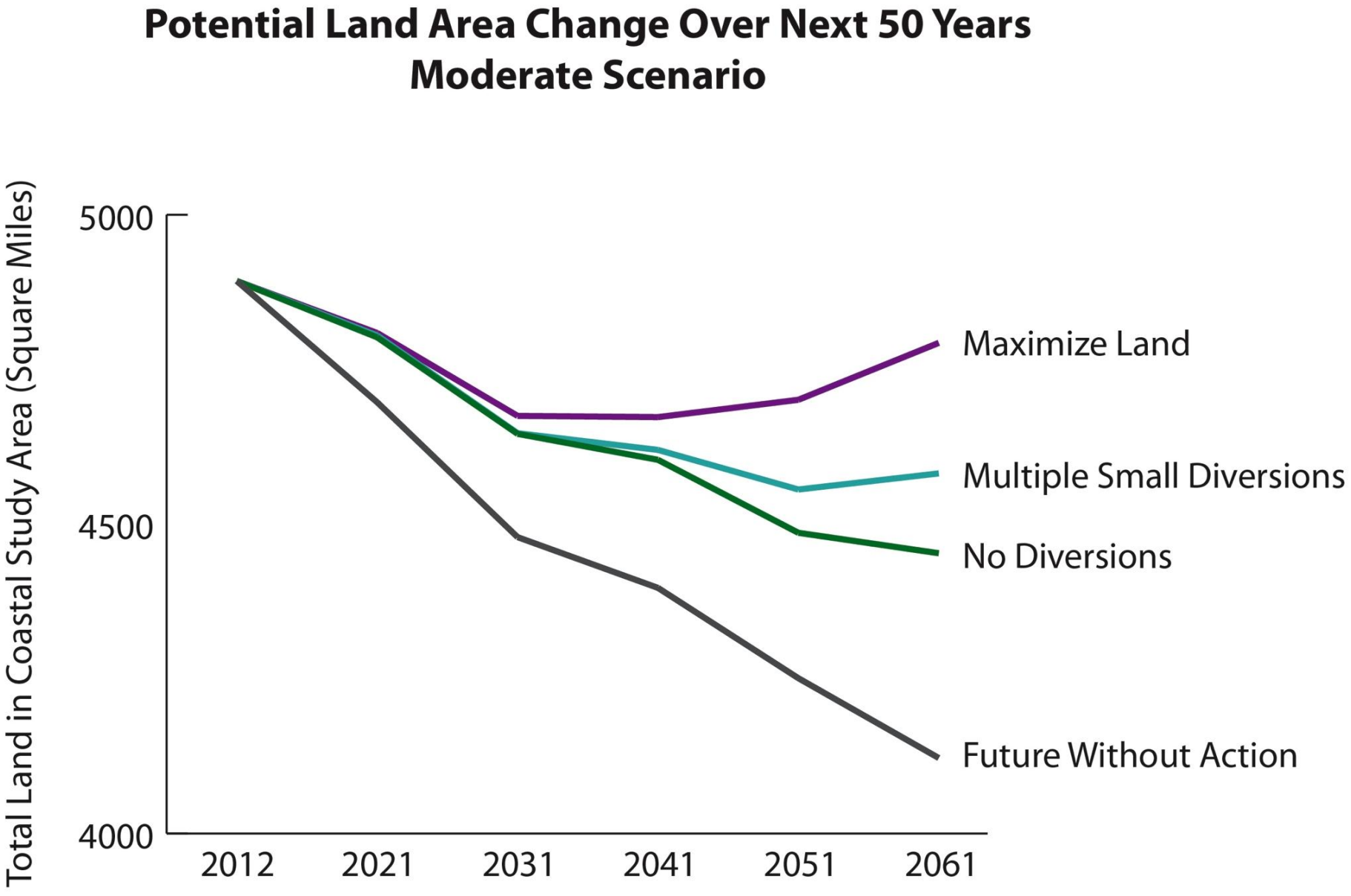
Navigation Decision Criteria



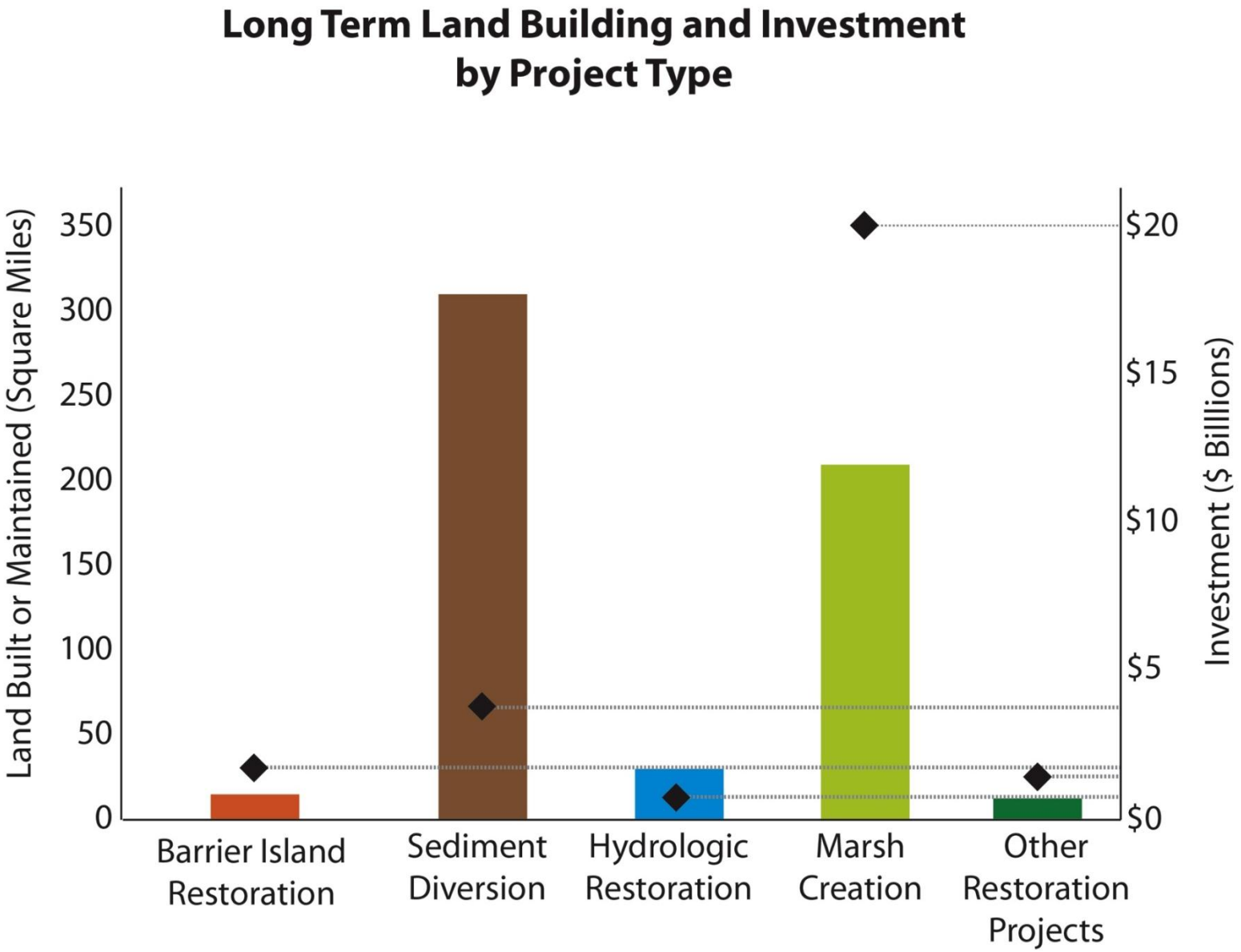
Potential Shrimp Habitat



Using Tools to Evaluate Public Preferences



Cost-Effectiveness by Technique



Keystone of the 2012 Master Plan: Reconnecting the River

Bayou Lafourche Diversion
1,000 cfs maximum

West Maurepas Diversion
5,000 cfs maximum

Central Wetland Diversion
5,000 cfs maximum

Upper-Breton Diversion
250,000 cfs maximum

Mid-Breton Diversion
5,000 cfs maximum

Lower Breton Diversion
50,000 cfs maximum

Atchafalaya River Diversion
150,000 cfs maximum

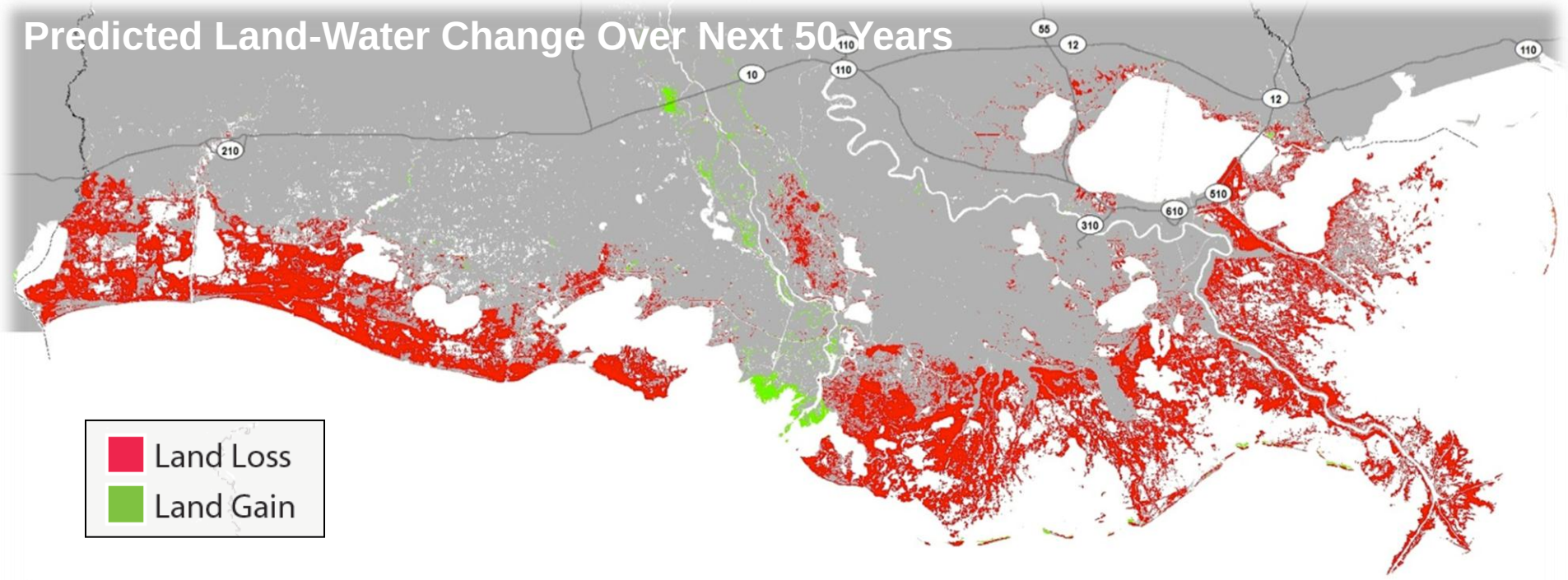
Increased Atchfalaya Flow
20,000 cfs maximum

Mid-Barataria Diversion
50,000 / 250,000 cfs maximum

Lower Barataria Diversion
50,000 cfs maximum

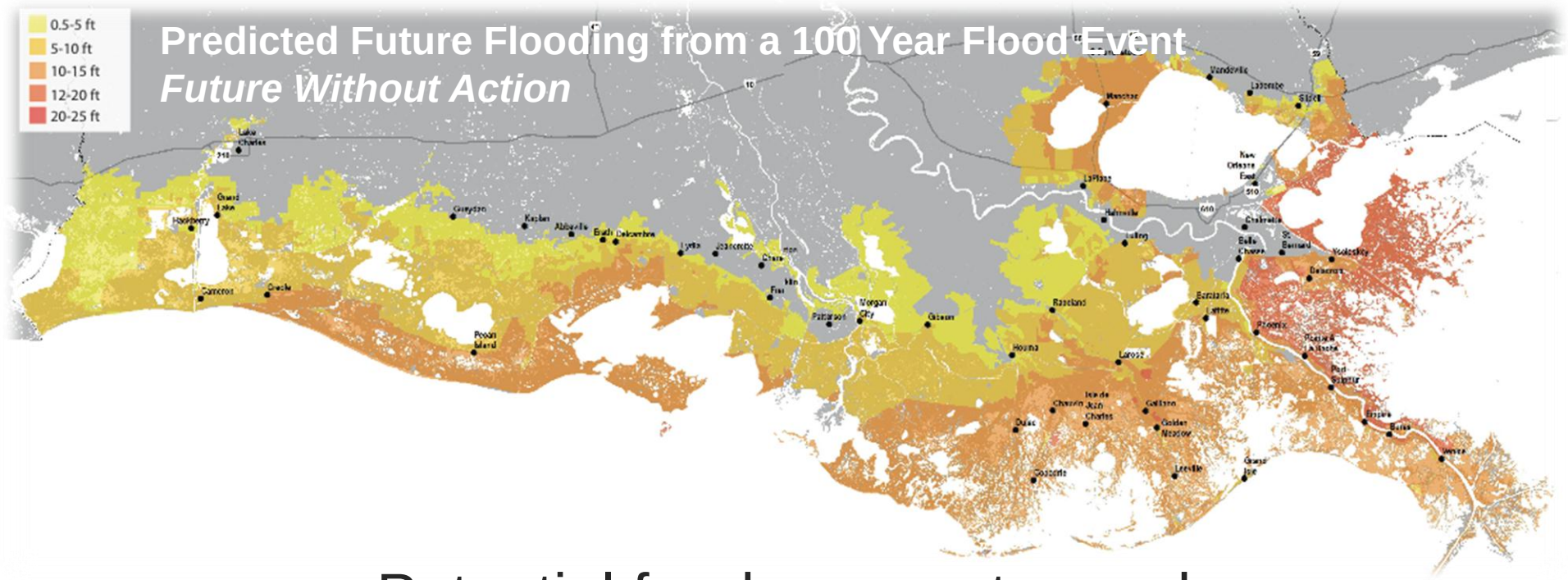
Uses up to 50% of the Mississippi River's peak flow.

This is What We Could Lose



Potential to lose up to an additional 1,750 square miles of land over the next 50 years

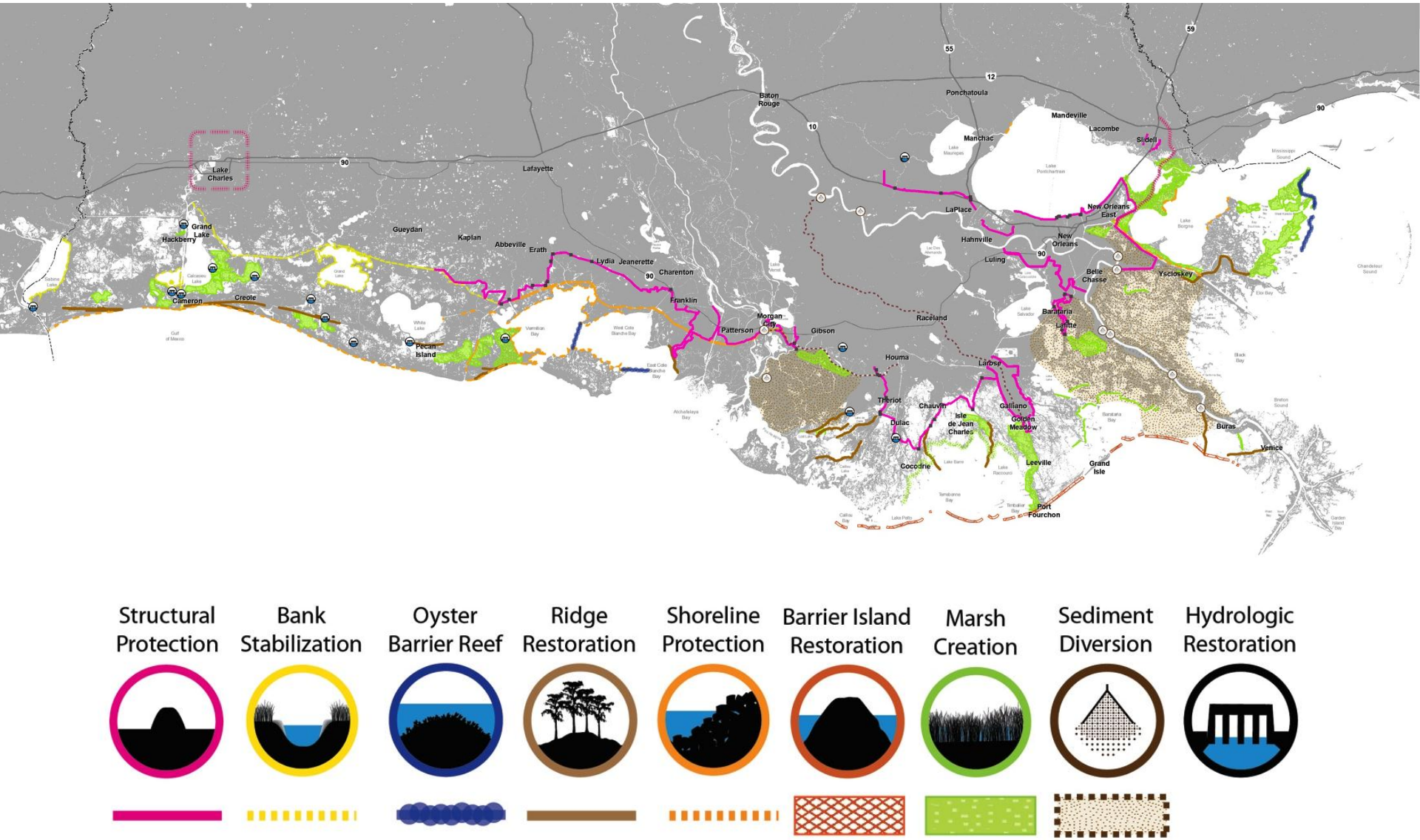
Our Communities and Livelihoods at Risk



Potential for damages to reach **$23.4 billion** annually

Increasing threats to lives, jobs, communities and the economy

2012 Coastal Master Plan



Structural Protection

Bank Stabilization

Oyster Barrier Reef

Ridge Restoration

Shoreline Protection

Barrier Island Restoration

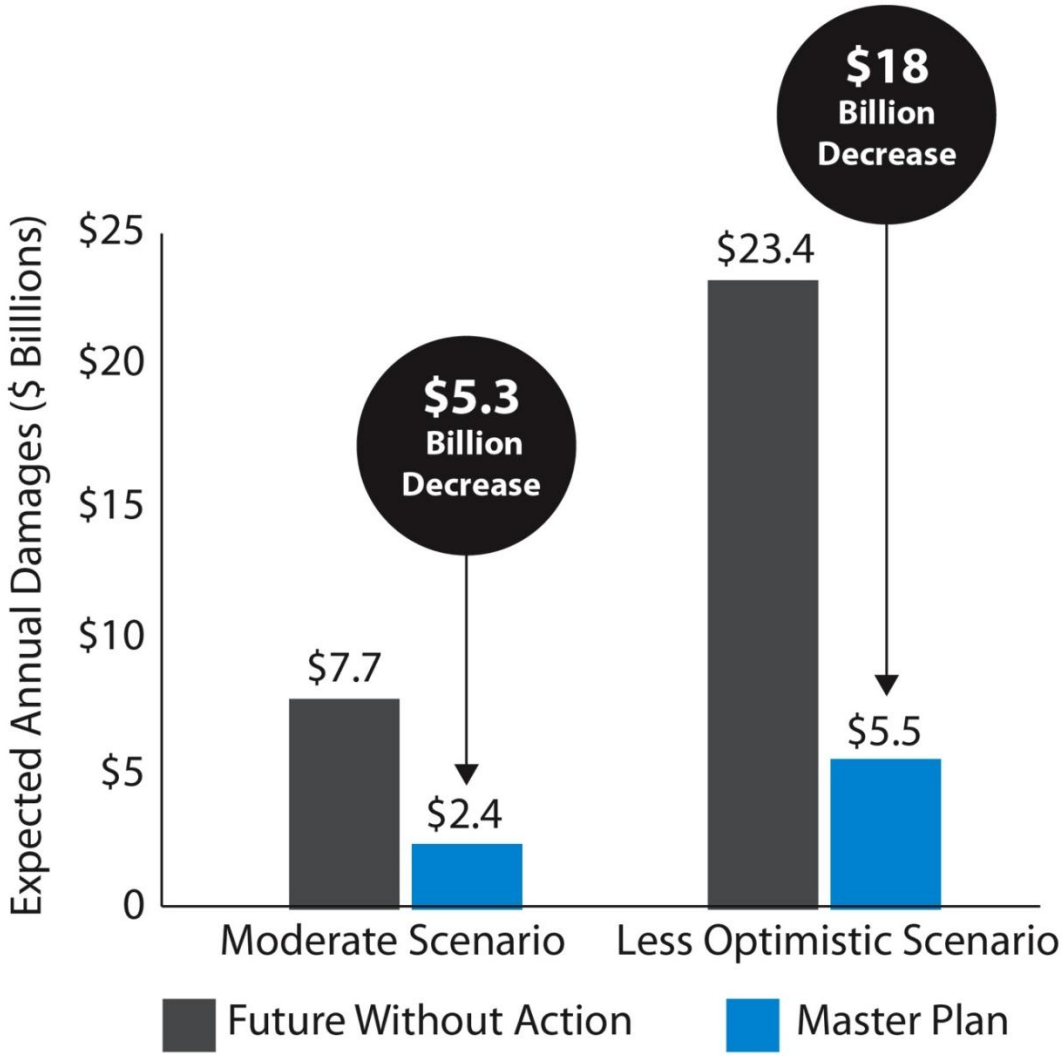
Marsh Creation

Sediment Diversion

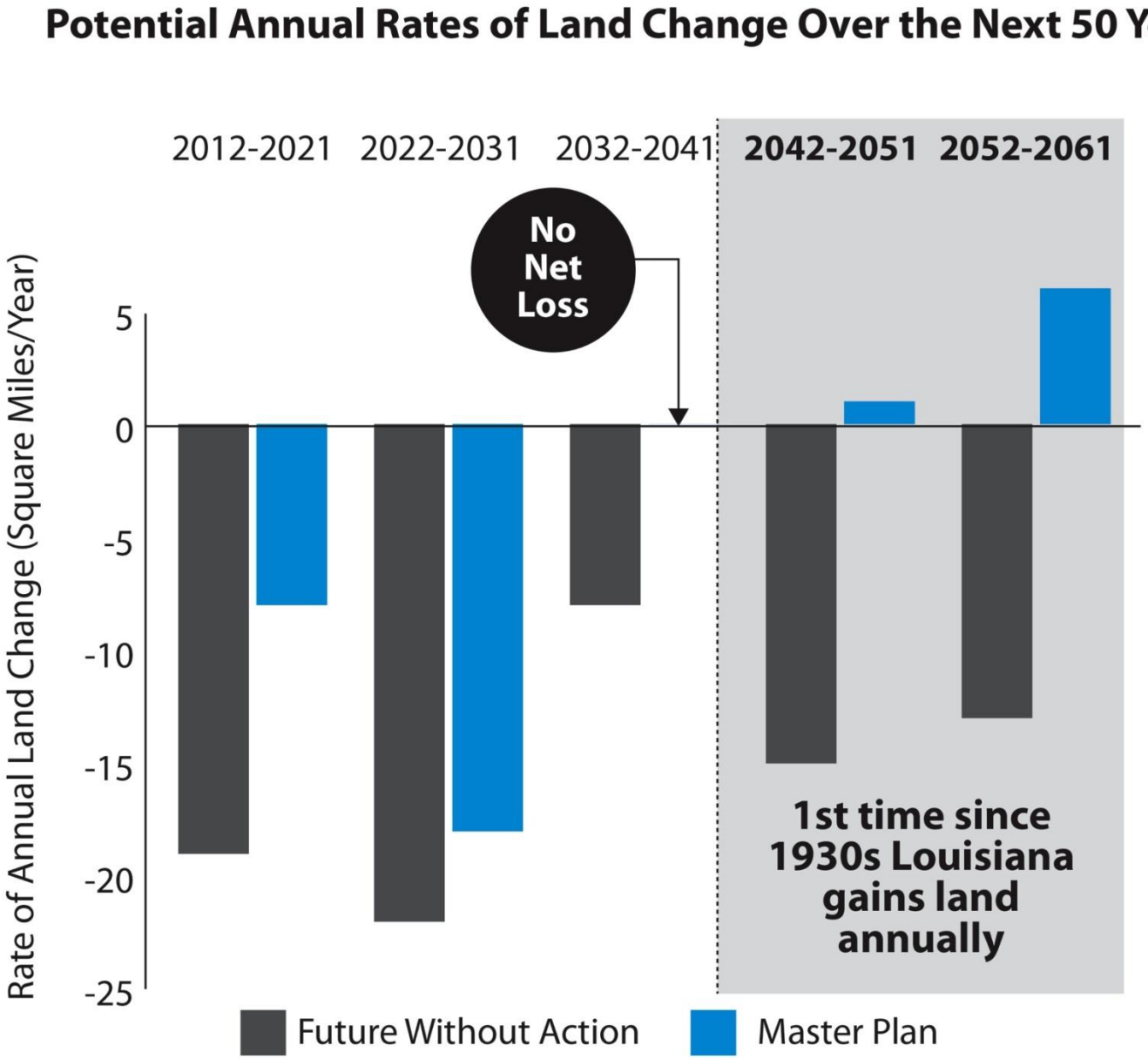
Hydrologic Restoration

What the Master Plan Delivers

Potential Expected Annual Damages from Flooding at Year 50



What the Master Plan Delivers



COMMITTED TO OUR COAST

Extra Slides

Science and Engineering Board

Ecosystem Science / Coastal Ecology

- William Dennison, PhD, University of Maryland
- Edward Houde, PhD, University of Maryland
- Katherine Ewel, PhD, University of Florida

Engineering

- Robert Dalrymple, PhD, PE, Johns Hopkins University
- Jos Dijkman, MsC, PE, Dijkman Delft

Geosciences

- Charles Groat, PhD, University of Texas at Austin

Social Science and Risk

- Greg Baecher, PhD, PE, University of Maryland
- Philip Berke, PhD, University of North Carolina – Chapel Hill

Climate Change

- Virginia Burkett, PhD, U.S. Geological Survey

Environmental/Natural Resource Economics

- Edward Barbier, PhD, University of Wyoming

Technical Advisory Committees

Predictive Models

- Steve Ashby, PhD, USACE Eng. Res. Dev. Center
- John Callaway, PhD, University of San Francisco
- Fred Sklar, PhD, South Florida Water Mgmt. District
- Si Simenstad, MS, University of Washington

Planning Tool

- John Boland, PhD, PE, John Hopkins
- Ben Hobbs, PhD, John Hopkins
- Len Shabman, PhD, Virginia Tech

Cultural Heritage

- Don Davis, PhD, Louisiana State University
- Maida Owens, LA Dept. of Culture, Recreation, and Tourism
- Carl Brasseaux, PhD, University of Louisiana Lafayette

Predictive Models Team

Predictive Model	Lead
Ecohydrology	Ehab Meselhe, PhD, PE, ULL + 9 members
Vegetation	Jenneke Visser, PhD, ULL + 8 members
Wetland Morphology	Greg Steyer, PhD, USGS + 6 members
Barrier Island Morphology	Mark Kulp, PhD, UNO + 6 members
Ecosystem Services	Andy Nyman, PhD, LSU + 8 members
Storm Surge	Joe Suhayda, PhD, Arcadis + 3 members
Storm Damage/Risk	Jordan Fischbach, PhD, RAND + 7 members
Data Integration	Craig Conzelmann and USGS team
Uncertainty Analysis	Emad Habib, PhD, ULL
Technical Advisor	Denise Reed, PhD, UNO

Extensive Public Outreach and Review

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