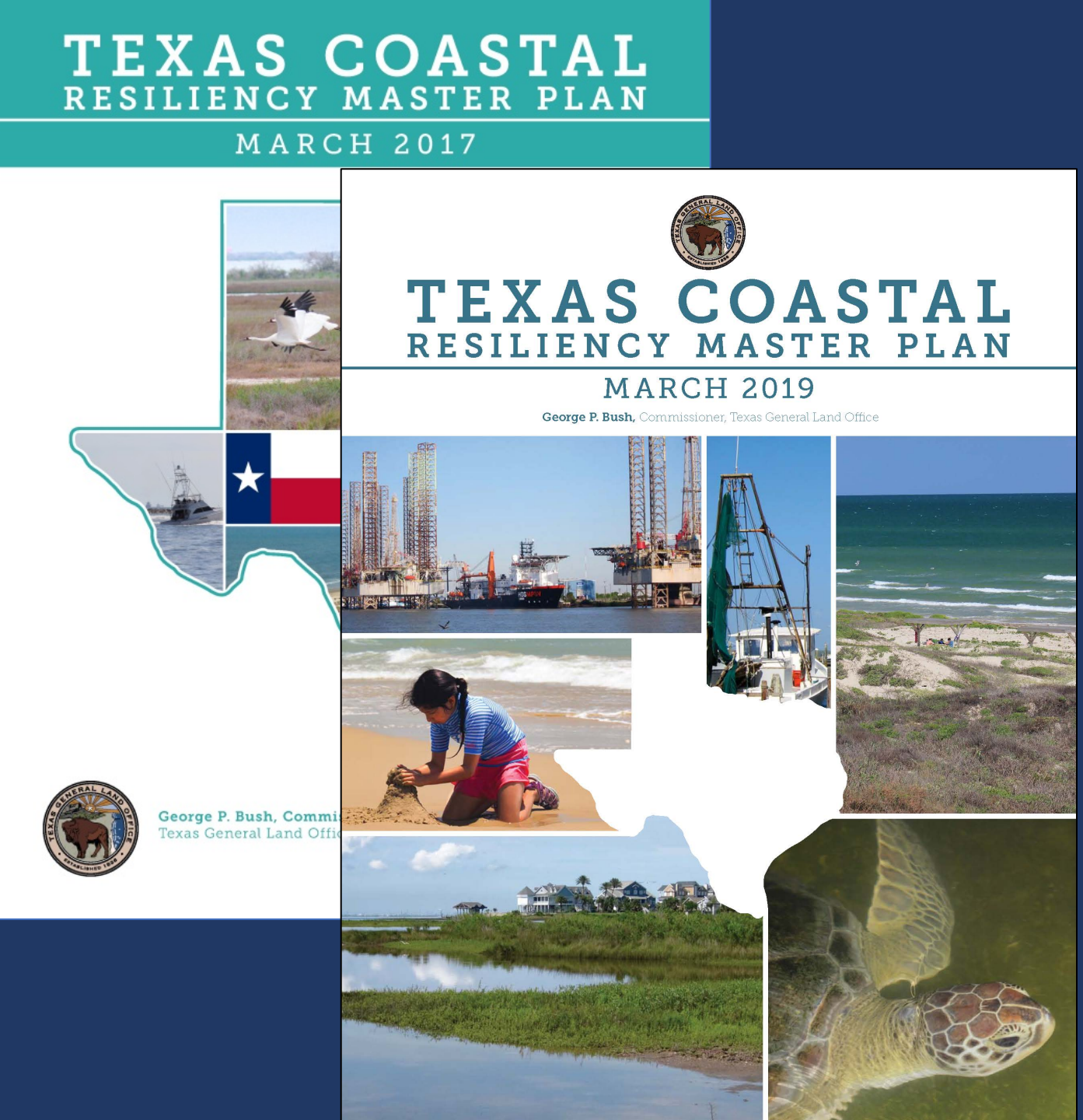
An Update on the 2023 Texas Coastal Resiliency Master Plan

USACE Stakeholder Partnering Forum

Galveston, TX

Joshua Oyer, Coastal Planner



Overview

- A vision to protect coastal communities, infrastructure, and ecological assets from coastal hazards
- The Plan offers nature-based as well as structural and non-structural solutions
- Building on the 2017 and 2019 TCRMP, the 2023 TCRMP will engage, educate, and empower

Goals and Objectives

1. Identify, select, and fund projects that address the coastal vulnerabilities and restore, enhance, and protect the Texas coast.

2. Develop an adaptable Master Plan that accommodates changing coastal conditions.

3. Communicate the environmental and economic value of the Texas coast to state and national audiences.

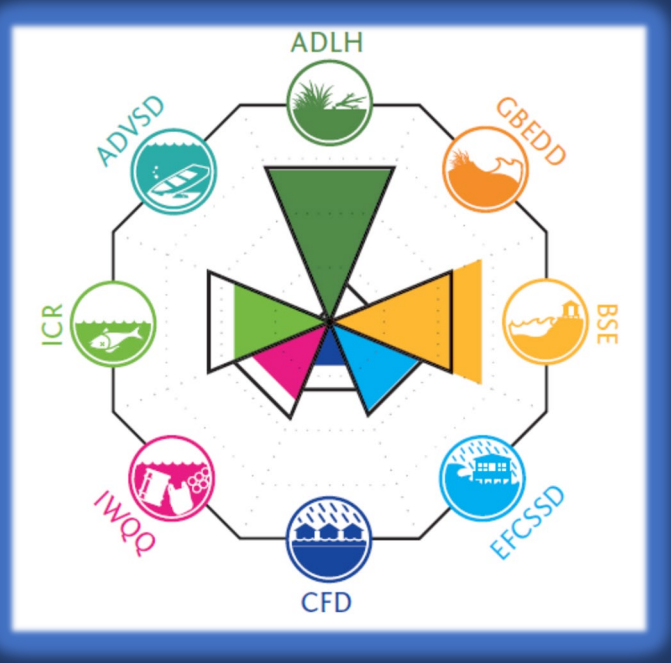
Vulnerabilities

Land Change	 Degraded or Lost Habitat	 Gulf Shoreline Change	 Bay Shoreline Change
Flooding	 Inland Flooding	 Storm Surge	 Tidal Flooding
Degraded Water Resources	 Degraded Water Quality	 Degraded Water Quantity	

Stakeholder Involvement

- State & federal agencies
- Universities
- Local governments
- Non-profits
- Engineering firms
- Port representatives
- Regional trusts, foundations & partnerships

Technical Advisory Committee (TAC)



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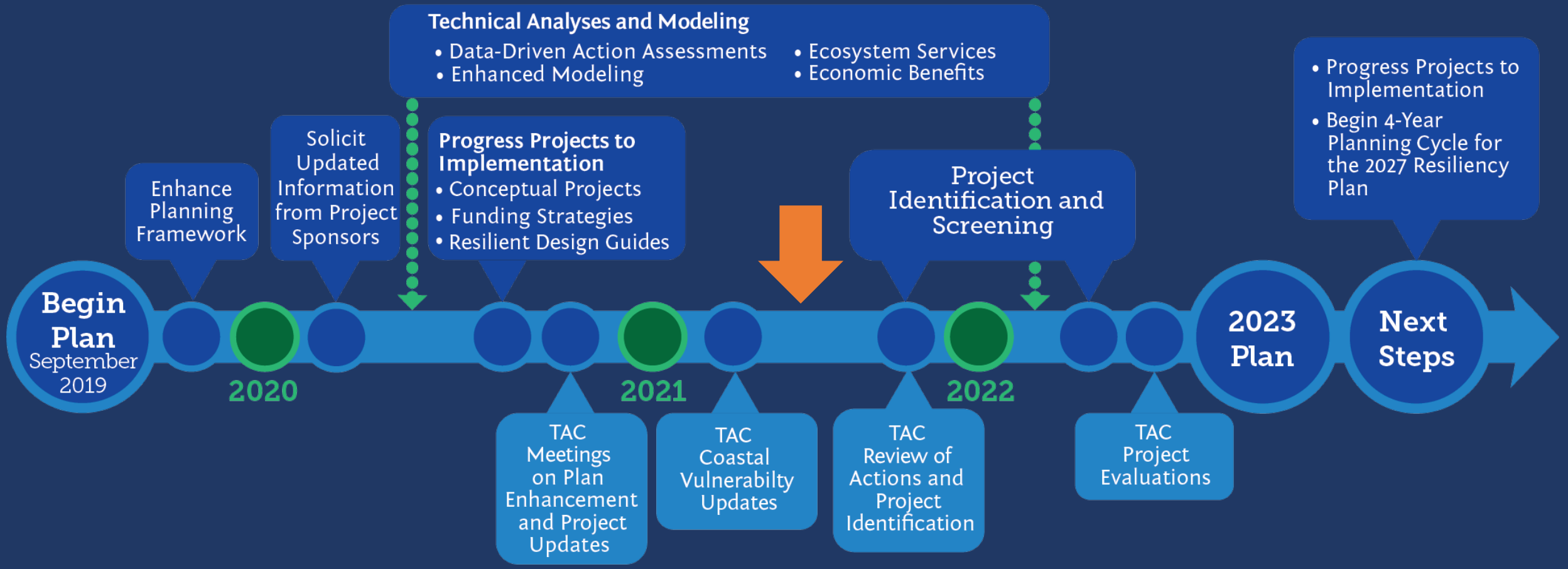
2023 Plan Timeline



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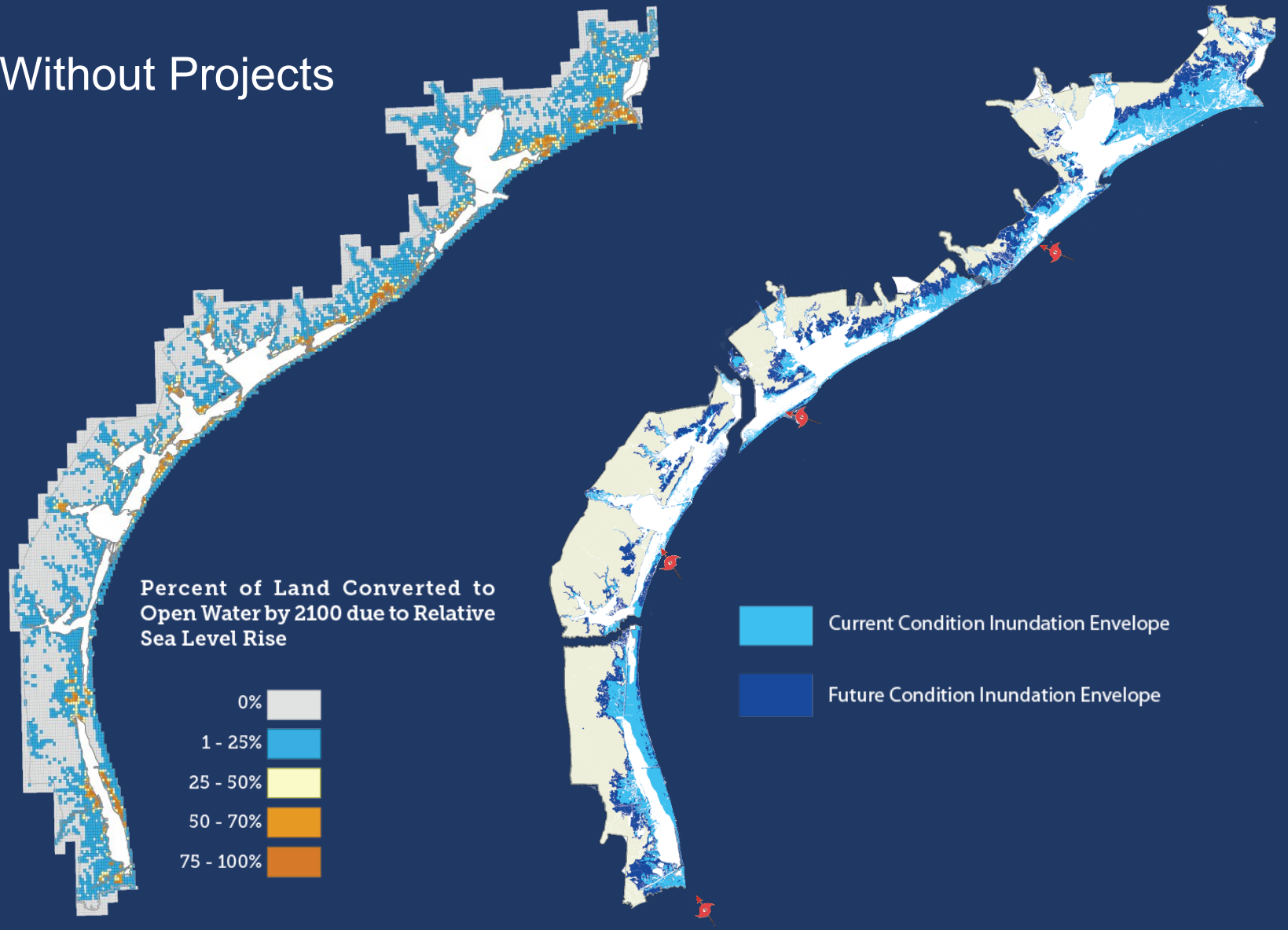
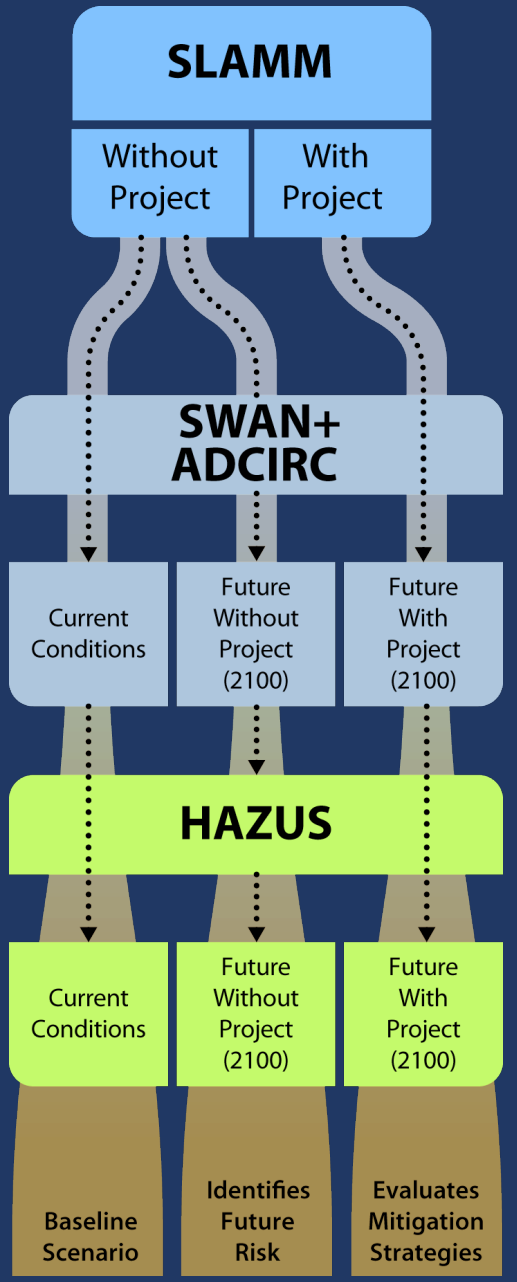
Land Cover Change and Inundation Impacts

* Without Projects





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Actions + Projects

"Green"

"Gray"

	Project Type	Project Subtypes
Nature-Based	Hydrologic Connectivity	• Freshwater Inflow • Hydrologic Restoration
	Habitat Creation & Restoration	• Estuarine Wetlands • Freshwater Wetlands • Oyster Reef • Barrier Islands • Coastal Uplands • Coastal Prairies • Rookery Islands • Dredge Placement Islands • Seagrasses • Tidal Flats • Fisheries
	Beach Nourishment	• Bay • Gulf
	Dune Restoration	• Dune
	Shoreline Stabilization	• Living Shoreline • Breakwater • Misc. Wave Break • Seawall • Bulkhead • Revetment • Jetty • Groin
	Land Acquisitions	• Acquisitions • Conservation Easements • Fee Simple
Infrastructure-Based	Structure/Debris Removal	• Structures on Public Easement • Abandoned Oil and Gas Wells • Abandoned Boats • Dock Pilings • Post Storm Cleanup
	Public Access & Improvements	• ADA Accessibility • Walkovers • Piers, Boat Ramps
	Flood Risk Reduction	• Levees • Flood Wall • Storm Surge Barrier
	Community Infrastructure	• Drainage • Utilities • Roadway/Bridge Repair • Roadway/Bridge Elevation • Critical Facilities • Structure Raising

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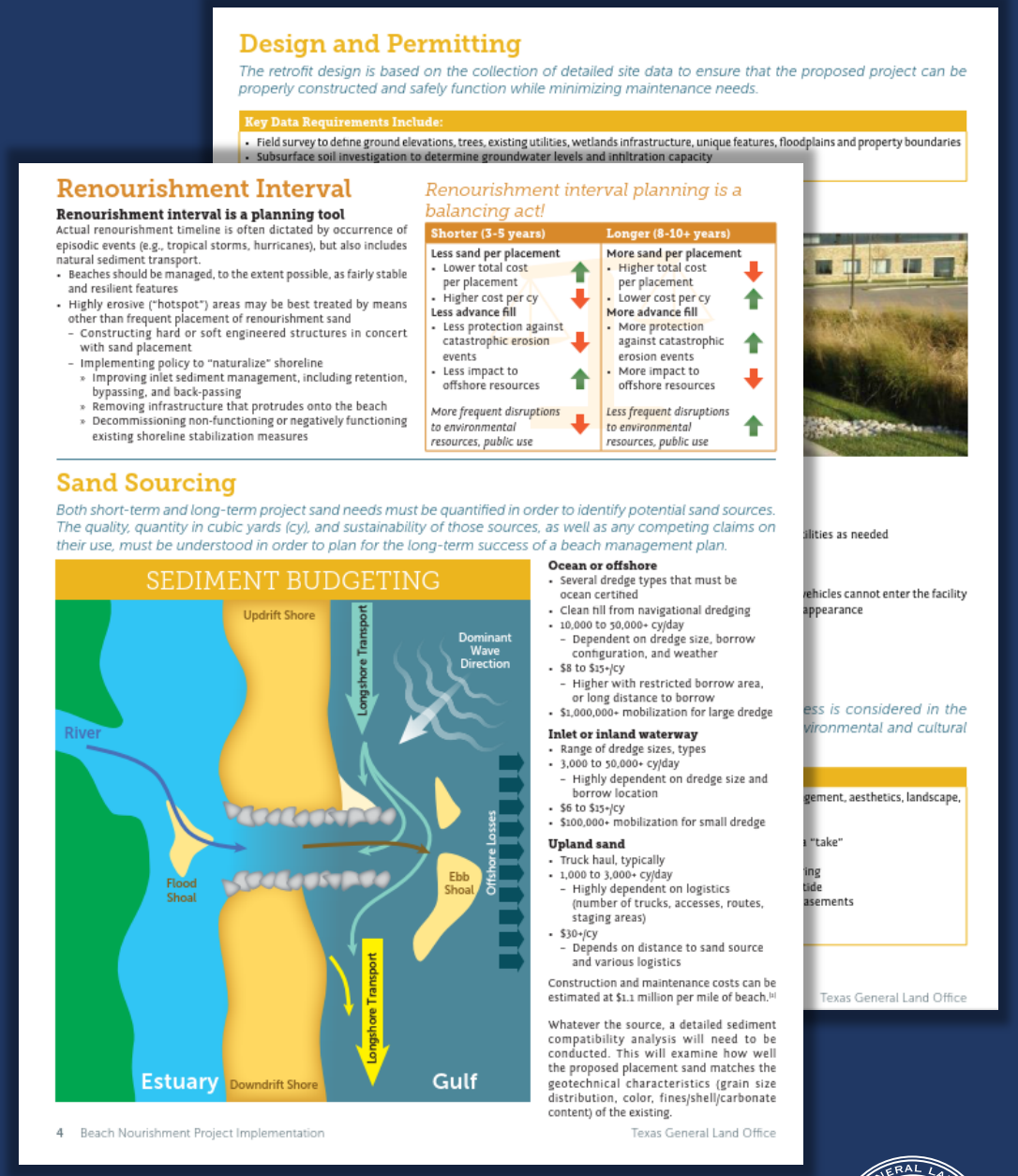
Planning Enhancements

- Data-Driven Actions
  - Collaborating with TAMU-CC Harte Research Institute Bay Report Card effort
- Focus on Implementation
  - Targeted stakeholder meetings to push forward on refining conceptual projects
  - Local jurisdiction outreach meetings held in April 2021
  - Planned communications with key resource agencies to align planning efforts
- Technical Tasks
  - Resiliency Design Guides
  - Hazard Mitigation Funding Opportunity Approach for Coastal Resilience Projects with Ecosystem Services
  - Development of sediment volume estimates for different beach areas to show renourishment needs



Design and Permitting

The retrofit design is based on the collection of detailed site data to ensure that the proposed project can be properly constructed and safely function while minimizing maintenance needs.

Key Data Requirements Include:

- Field survey to define ground elevations, trees, existing utilities, wetlands infrastructure, unique features, floodplains and property boundaries
- Subsurface soil investigation to determine groundwater levels and infiltration capacity

Renourishment Interval

Renourishment interval is a planning tool

Actual renourishment timeline is often dictated by occurrence of episodic events (e.g., tropical storms, hurricanes), but also includes natural sediment transport.

- Beaches should be managed, to the extent possible, as fairly stable and resilient features
- Highly erosive ("hotspot") areas may be best treated by means other than frequent placement of renourishment sand
  - Constructing hard or soft engineered structures in concert with sand placement
  - Implementing policy to "naturalize" shoreline
    - Improving inlet sediment management, including retention, bypassing, and back-passing
    - Removing infrastructure that protrudes onto the beach
    - Decommissioning non-functioning or negatively functioning existing shoreline stabilization measures

Renourishment interval planning is a balancing act!

Shorter (3-5 years)	Longer (8-10+ years)
Less sand per placement • Lower total cost per placement • Higher cost per cy	More sand per placement • Higher total cost per placement • Lower cost per cy
Less advance fill • Less protection against catastrophic erosion events • Less impact to offshore resources	More advance fill • More protection against catastrophic erosion events • More impact to offshore resources
More frequent disruptions to environmental resources, public use	*Less frequent disruptions to environmental resources, public use*

Sand Sourcing

Both short-term and long-term project sand needs must be quantified in order to identify potential sand sources. The quality, quantity in cubic yards (cy), and sustainability of those sources, as well as any competing claims on their use, must be understood in order to plan for the long-term success of a beach management plan.

Ocean or offshore

- Several dredge types that must be ocean certified
- Clean fill from navigational dredging
- 10,000 to 50,000+ cy/day
  - Dependent on dredge size, borrow configuration, and weather
- $8 to $15+/cy
  - Higher with restricted borrow area, or long distance to borrow
- $1,000,000+ mobilization for large dredge

Inlet or inland waterway

- Range of dredge sizes, types
- 3,000 to 50,000+ cy/day
  - Highly dependent on dredge size and borrow location
- $6 to $15+/cy
- $100,000+ mobilization for small dredge

Upland sand

- Truck haul, typically
- 1,000 to 3,000+ cy/day
  - Highly dependent on logistics (number of trucks, accesses, routes, staging areas)
- $30+/cy
  - Depends on distance to sand source and various logistics

Construction and maintenance costs can be estimated at $1.1 million per mile of beach.[h]

Whatever the source, a detailed sediment compatibility analysis will need to be conducted. This will examine how well the proposed placement sand matches the geotechnical characteristics (grain size distribution, color, fines/shell/carbonate content) of the existing.

4 Beach Nourishment Project Implementation Texas General Land Office

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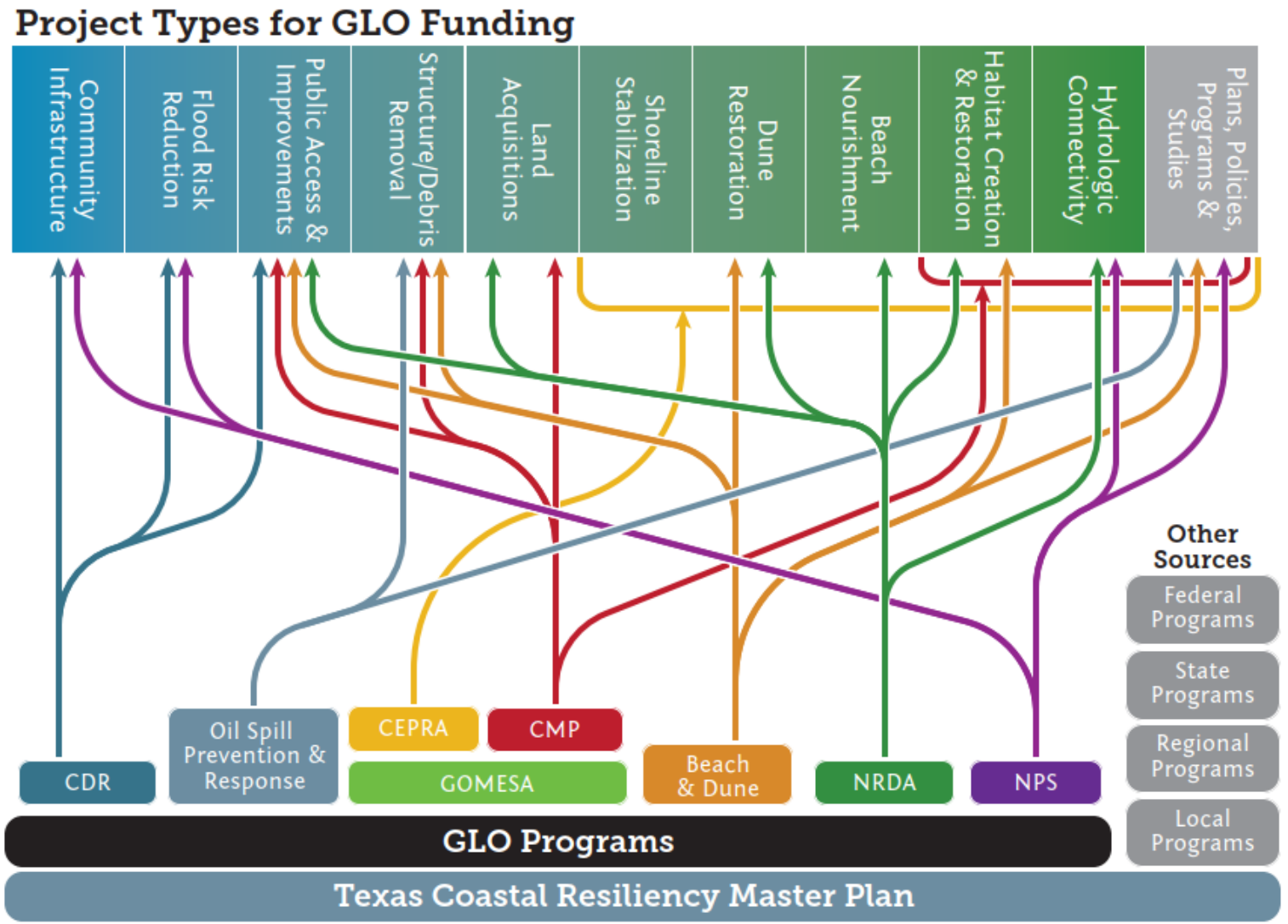
Funding Opportunities at the GLO



CEPRA

- $14 Million funding last biennium

CMP

- $2 Million annually Federal

Gulf of Mexico Energy Security Act (GOMESA)

- $46 Million FY 2019 to Texas
- $76 Million FY 2020
- $54 Million FY 2021

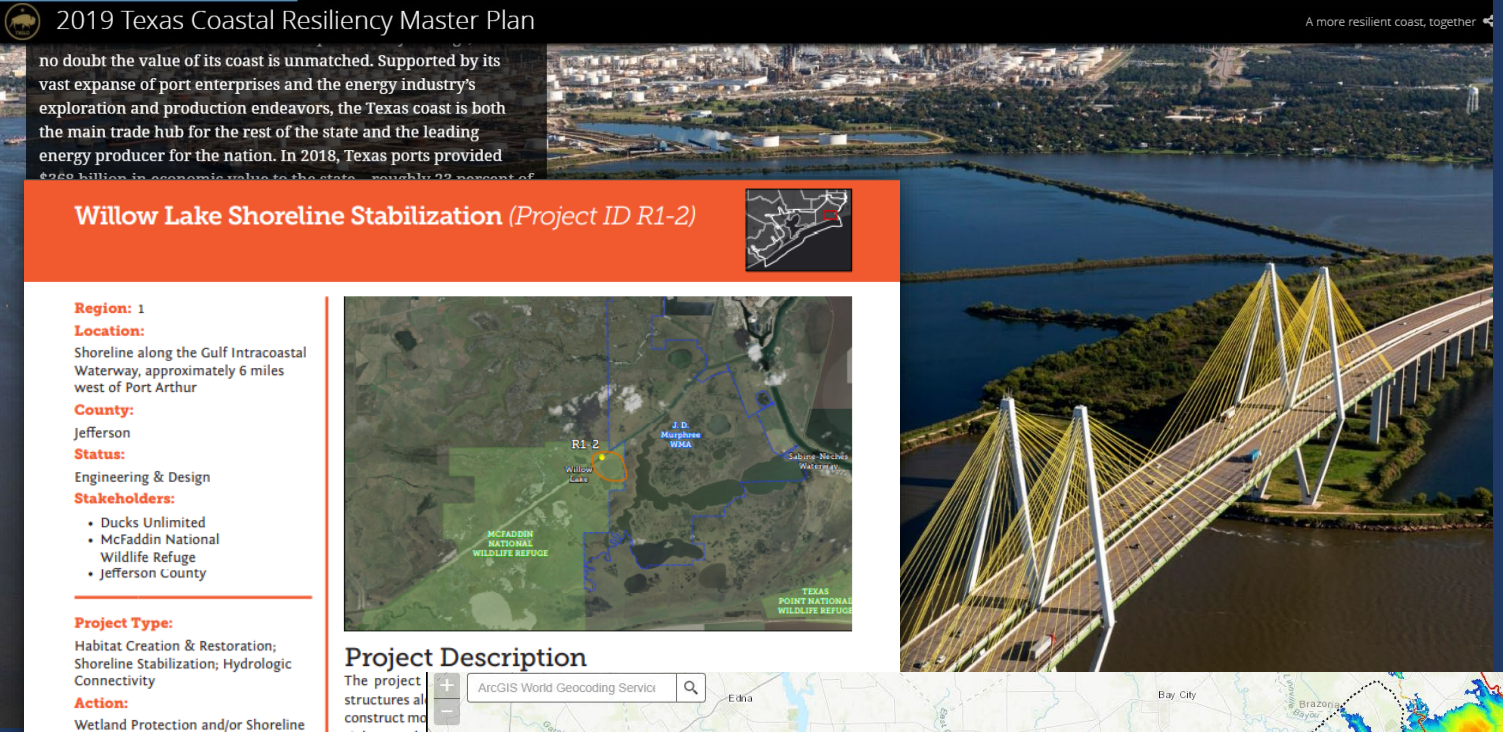
Community Development Block Grant – Mitigation Fund

- Coastal Resilience Program

Communication

- Project Summary Sheets
- Story Maps
- Modeling Data Viewers

www.glo.texas.gov/crmp



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Thank You!

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