Explore more on CPRA's website.
https://coastal.la.gov/our-plan/2023-coastal-master-plan/

LAND CHANGE

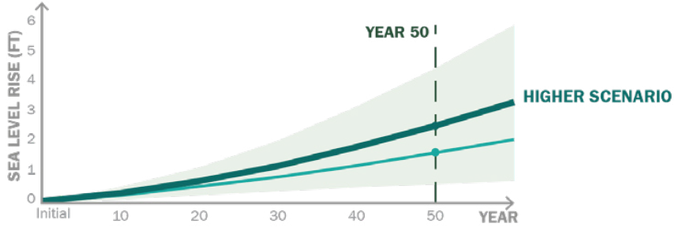
FUTURE WITHOUT ACTION | HIGHER SCENARIO | YEAR 50

Planning under uncertainty requires considering multiple possible future environmental scenarios to understand the range of possible outcomes that the master plan may need to address. Land change projections for the master plan's higher environmental scenario after 50 years are shown above. Under this possible environmental scenario, coastal Louisiana would experience severe climate change impacts, including sea level rise of up to 2.5 ft over the next 50 years. Without the projects selected for the 2023 Coastal Master Plan, the higher scenario ICM outputs predict extensive land loss of 3,000 sq mi over that same time period, with every region of the coast affected.

Due to uncertainty around future climate conditions, both scenarios are used in the development of the 2023 Coastal Master Plan to represent a range of future landscapes and to select robust projects that can provide benefits for the coast for whatever future conditions transpire.

>>> Go to **Chapter 5: Take Action** to read about how CPRA addresses these anticipated challenges through protection and restoration projects.

P 73

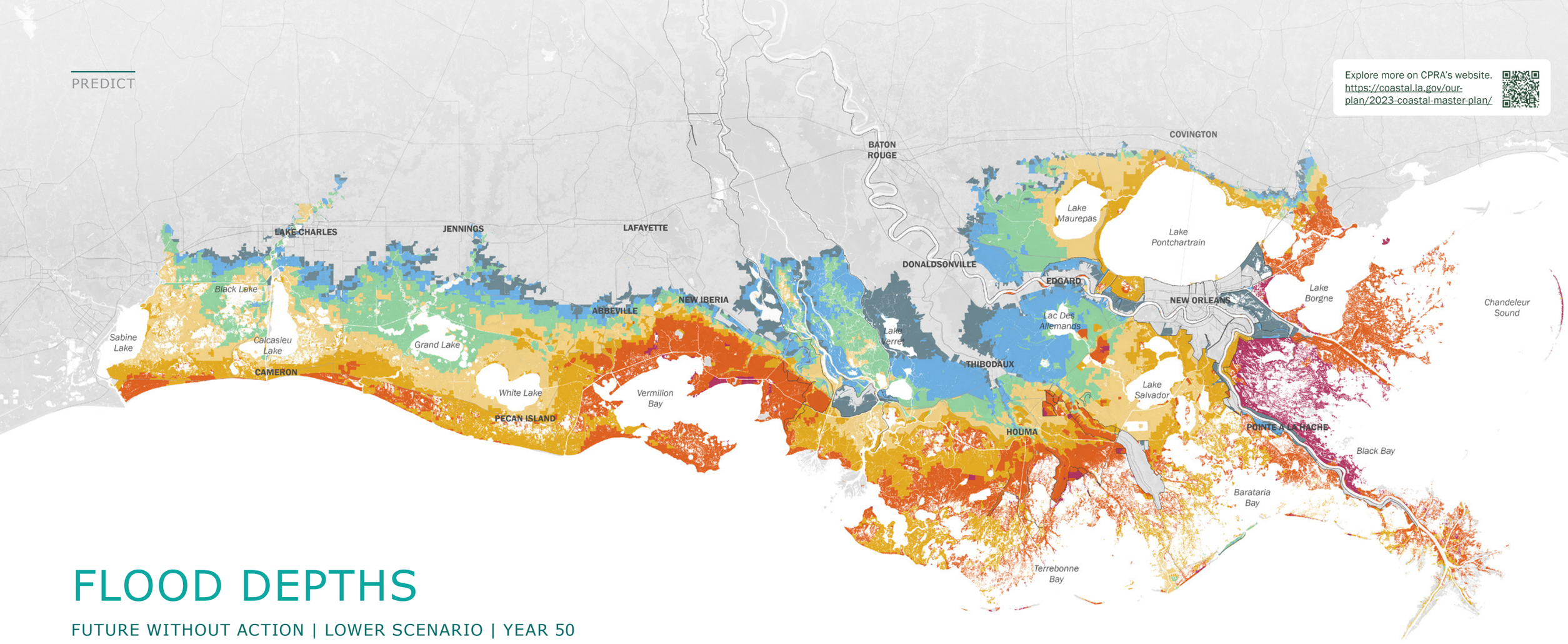


Land Gained
Land Lost

Map 3.2: Land Change, Future Without Action, Higher Scenario, Year 50.

N
0 5 10 20
MILES

Explore more on CPRA's website.
https://coastal.la.gov/our-plan/2023-coastal-master-plan/

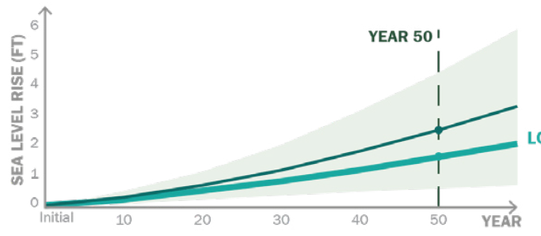


FLOOD DEPTHS

FUTURE WITHOUT ACTION | LOWER SCENARIO | YEAR 50

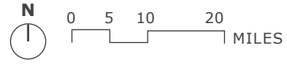
Storm surge-based flood depths are projected to increase in the future as more intense storms interact with higher sea levels, lower land, and with the continued degradation of coastal wetlands that can act as natural defenses. Under the lower environmental scenario, an additional 1.6 ft of sea level rise is expected over the next 50 years, adding height to already damaging storm surge levels. As a result of climate change, hurricanes are assumed to increase in intensity by 5% over the same period, exacerbating the risk posed by storm surge. Lower scenario projections of storm surge-based flood depths at locations across the coast with a flood depth of 1% Annual Exceedance Probability (AEP) are displayed above. That means that every year there is a 1% chance that these flood depths will be met or exceeded. These projections are for a future without the structural risk reduction projects selected for the 2023 Coastal Master Plan and show significant risk of flooding in communities across the coast.

>>> Go to **Chapter 5: Take Action** to read about how CPRA addresses these anticipated challenges through protection and restoration projects.
P 73

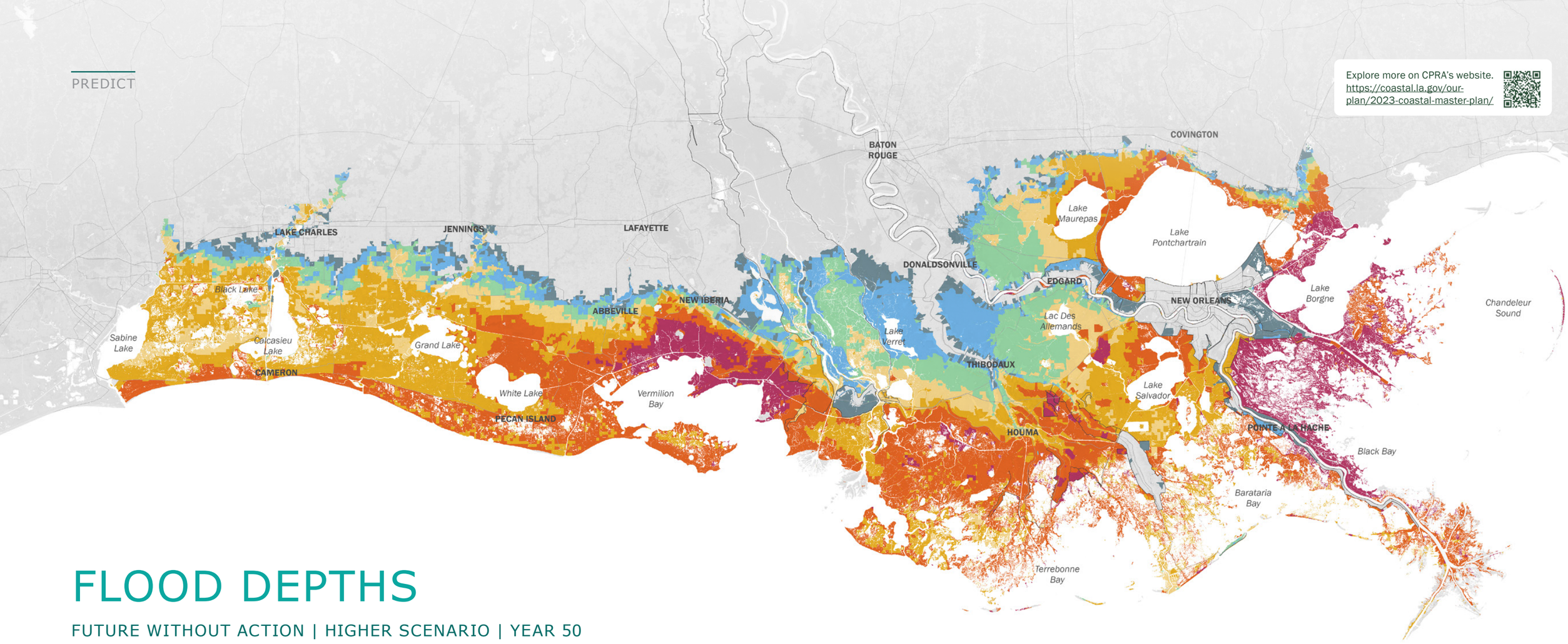


1 to <4 feet
4 to <7 feet
7 to <10 feet
10 to <13 feet
13 to <16 feet
16 to <21 feet
21+ feet

Map 3.3: Flood Depths,
1% Annual Exceedance Probability,
Future Without Action, Lower Scenario, Year 50.



Explore more on CPRA's website.
https://coastal.la.gov/our-plan/2023-coastal-master-plan/



FLOOD DEPTHS

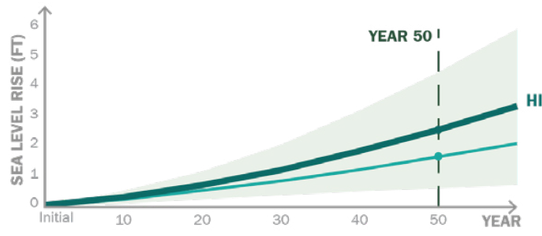
FUTURE WITHOUT ACTION | HIGHER SCENARIO | YEAR 50

Higher scenario projections of storm surge-based flood depths at locations across the coast with a flood depth of a 1% AEP are illustrated above. When compared to the lower scenario, it is clear that more severe climate change impacts — such as sea level rise of up to 2.5 ft and increased storm intensity of up to 10% at Year 50 — combined with higher subsidence have a significant impact on the potential depth of storm surge-based flooding. The northward migration of the storm surge-impact and the expansion of areas projected to experience the largest storm surge heights (more than 21 ft in some areas) can be seen under the higher scenario without the implementation of 2023 Coastal Master Plan projects.

Due to uncertainty around future climate conditions, both the lower and higher environmental scenarios are used in the development of the 2023 Coastal Master Plan to represent a range of future landscapes and to plan robust projects that can provide benefits for the coast under any plausible future condition.

>>> Go to **Chapter 5: Take Action** to read about how CPRA addresses these anticipated challenges through protection and restoration projects.

P 73



1 to <4 feet
4 to <7 feet
7 to <10 feet
10 to <13 feet
13 to <16 feet
16 to <21 feet
21+ feet

Map 3.4: Flood Depths, 1% Annual Exceedance Probability, Future Without Action, Higher Scenario, Year 50.

N
0 5 10 20
MILES

BY THE NUMBERS

A FUTURE WITHOUT THE 2023 COASTAL MASTER PLAN

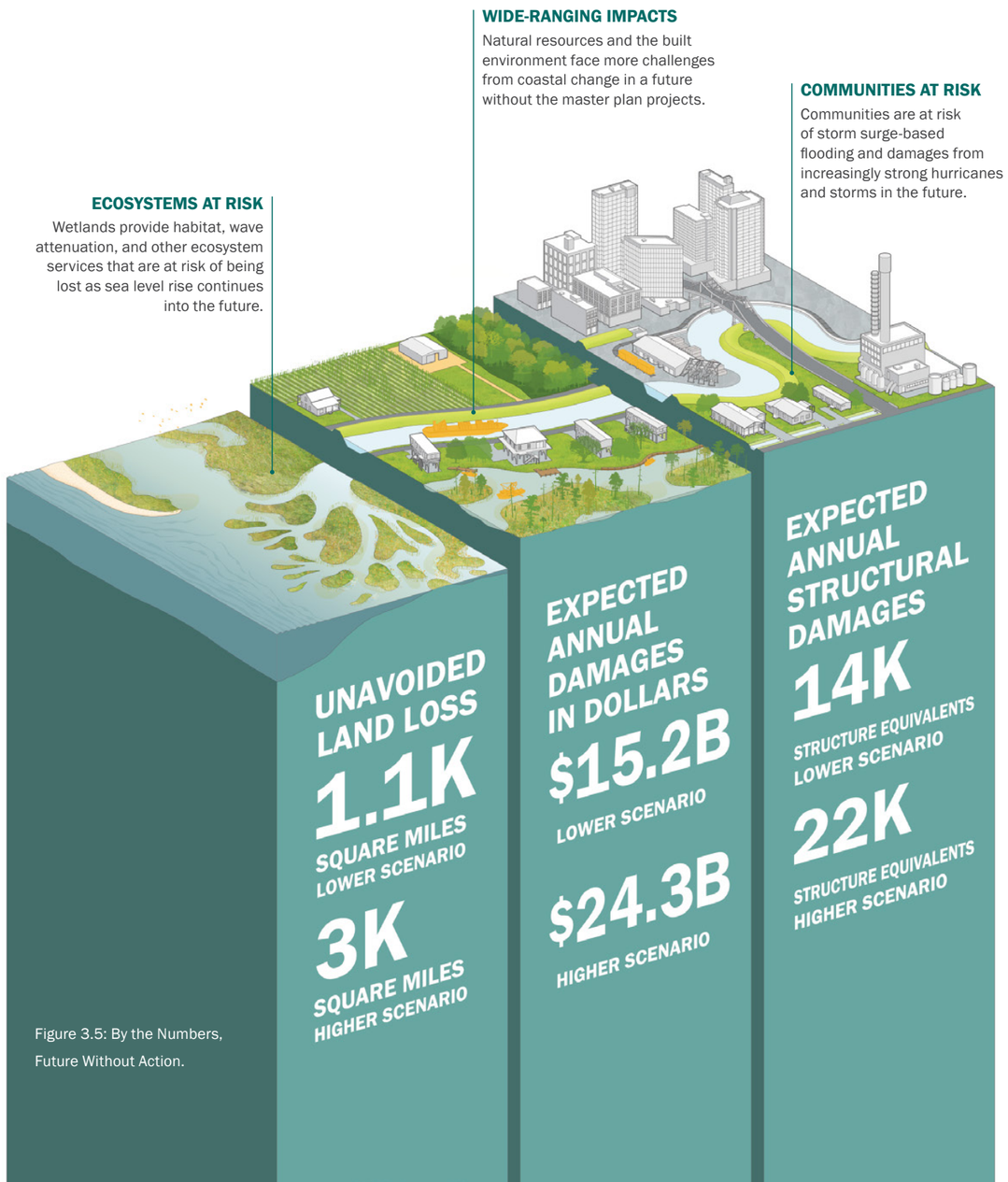


Figure 3.5: By the Numbers, Future Without Action.

FREQUENTLY ASKED QUESTIONS

Two different maps are shown for land change – how do I know which one is right? The maps are based on different assumptions about the future, so neither is right nor wrong. Rather, they show us where land could be lost, where it could be built, and how much change could occur. If an area of land is lost – or built – in both maps, then we are more certain that type of change is going to occur. Both maps make assumptions about future climate and river conditions as well as how projects and structures, such as locks, are operated. If these assumptions do not play out exactly as predicted, the coastal map could be different from those presented.

I've always heard about flooding from a "100 year storm", but the master plan doesn't use this term – why? What is used instead? The master plan does not focus on recurrence intervals (e.g., 100-year storm), as those descriptions are based on long-term averages. As Louisianans have experienced, we can have a 100-year storm two years in a row. Instead, the maps show flood depths that have an AEP of 1% — that means every year there is a 1% chance that these flood depths will be met or exceeded. The depths and probabilities are calculated using flood depths associated with a set of storms that statistically reflect historical storm characteristics and the probability of those storms occurring in coastal Louisiana.

The land change maps show my community at risk of significant land loss through the model period – how should I use this information? The change shown in some areas is dramatic and is clearly concerning. Remember, however, that FWOA is used as a baseline to select restoration and risk reduction projects. Compare these maps with those shown later to see what difference the master plan can make in your area. You can use that information to advocate for construction of projects in the plan or to work with officials on other projects that could be included in future master plans to alleviate the loss and mitigate risk.

HAVE MORE QUESTIONS?
Visit us online at coastal.la.gov or contact us directly at masterplan@la.gov.

CHAPTER 4

EVALUATE

To evaluate the potential impact of restoration and risk reduction projects on future outcomes, we solicit and model candidate project concepts. Project performance is evaluated in the Planning Tool, alongside considerations such as cost and available sediment, resulting in a prioritized list of projects for state investment.

Image: Pointe-aux-Chênes Floodgate, 2020 (CPRA)

PROJECT SELECTION

SETTING PARAMETERS FOR PLANNING

Selecting projects for inclusion in the master plan is a complex endeavor, because the process needs to be guided by real-world considerations, such as funding, resource constraints, and environmental change. It is also important to consider how projects may interact and the impact of the full plan on different aspects of the coast. In the end, the projects included in the master plan represent a suite of solutions to address a variety of coastal issues Louisianans face now and into the future.

DECISION DRIVERS

As discussed in Chapter 2, the projects evaluated in the master plan process are compared based upon their performance with regard to two decision drivers: land area built and maintained and reduction of flood risk. While many of the projects included in the 2023 Coastal Master Plan have additional important benefits (e.g., supporting habitat and ecosystems, maintaining salinity gradients, supporting resource-based industry, etc.), the evaluation process is based upon project performance with regard to the two decision drivers.

Land Loss Reduction

Storm Surge Risk Reduction

PLANNING HORIZON

When planning, it is important to define the planning horizon — how far in the future will projects continue to yield results? In the master plan process, a 50-year planning horizon has been selected for a variety of reasons. Assessing project benefits over several decades allows long-term effects to be considered as well as near-term outcomes, and over 50 years the plan provides benefits for multiple generations.

Additionally, with the uncertainty inherent in the master plan process regarding both funding and climate change, a 50-year planning horizon is considered to be as far into the future as we can reasonably project those considerations with an acceptable level of confidence. The further into the future projections are made, the less certain we are about them.

Finally, 50 years is thought to be a sufficiently long planning horizon to be separated from political cycles at local, state, and federal levels and instead encourage “big picture” thinking and decision-making.

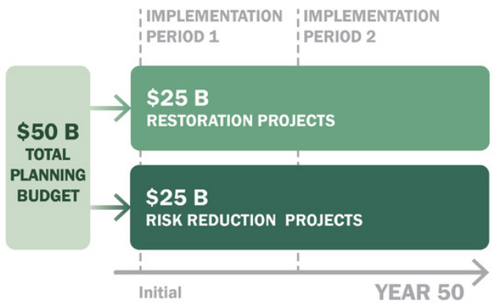


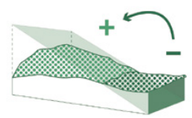
Image: Caminada Headlands Restoration Project, 2016 (CPRA)

CONSTRAINTS

The 2023 Coastal Master Plan was developed using two fundamental constraints. First, a $50 billion total planning budget for a 50-year period was selected with the funds divided evenly between restoration projects and risk reduction measures. This represents an aspirational but potentially achievable level of investment. While the State of Louisiana has budgeted more than $1 billion annually for the coastal program in recent years (as documented in the CPRA Fiscal Year 2023 Annual Plan), that level of funding has not been secured for the full 50 years considered in the master plan. Because funding for the coastal program is not guaranteed, the master plan is also divided into two implementation periods (IP1 [Years 1-20] and IP2 [Years 21-50]), with the most beneficial projects identified for near-term construction in the first 20 years of the plan with a budget of $25 billion. More information on funding and implementation periods can be found in Chapter 5.

The second constraint considered is sediment availability. Restoring, creating, or maintaining wetlands often requires sediment. The master plan recommends marsh creation projects that require a source of sediment to create wetlands. For the 2023 Coastal Master Plan, the sediment needed for marsh creation and landbridges is calculated and matched against how much sediment is available in potential borrow areas. This constraint, due to the variable cost of accessing different sediment sources and transporting material to project sites, also impacts project costs and, thus, which projects can be selected under the budget constraints discussed above.

Funding



Sediment Availability

PROJECT TYPES

ONE COAST, MANY SOLUTIONS

To address coastal land loss and storm surge-based flood risk, 131 candidate projects (113 restoration and 18 structural risk reduction projects) were considered for selection in the 2023 Coastal Master Plan. Programmatic projects that address locally important issues and concerns were not specifically evaluated and remain consistent with the master plan.

A LONG-TERM, COASTWIDE PLAN FOR RESTORATION AND RISK REDUCTION

The projects included in the master plan are based on scientific and engineering concepts and our understanding of the coastal landscape. The modeling shows they each provide benefit over the 50-year planning horizon. The $50 billion planning budget accommodates a variety of project types that are consistent with the goals and objectives of the 2023 Coastal Master Plan.

FOCUS ON ADDRESSING REGIONAL CONCERNS

Not every part of the coast will change in the same way due to climate change and other local factors; therefore, some project types are better-suited to address the issues in a specific location than in others. Projects need to address the concerns experienced both today and into the future.

>>> For more information, see **Appendix F: Project Concepts** and **Appendix C: Use of Predictive Models in the 2023 Coastal Master Plan** to learn more about the design and the performance of projects.

SUPPORTS MASTER PLAN OBJECTIVES

Beyond their individual benefits, the suite of master plan projects should collectively support master plan objectives (see Chapter 1 for more details). This is tracked through a series of metrics that consider whether the master plan as a whole supports the lives, livelihoods, and cultures of coastal Louisianans.

See the following pages for more information on the project types considered in the master plan analyses as well as examples of programmatic project types.

RISK REDUCTION PROJECTS

Structural Risk Reduction

One effective means to address storm surge-based flood risk in coastal Louisiana is through the implementation of structural risk reduction projects. This project type encompasses new and improved levees, flood gates, storm surge barriers, and other structural elements that reduce flooding.

Nonstructural Risk Reduction

Risk reduction can also be successfully achieved through nonstructural mitigation measures. For the 2023 Coastal Master Plan, nonstructural measures, including elevating residences, commercial floodproofing, and voluntary acquisition, are considered to be applicable across all coastal communities. More information on implementing nonstructural risk reduction can be found in Chapter 5.

RESTORATION PROJECTS

Restoration projects utilize varied approaches to restore, create, and sustain land. Projects using a single approach were considered for selection alongside integrated projects, which combine features from multiple project types into one integrated concept. In the end, a suite of restoration projects is planned and operated together to maximize their effectiveness and benefits over time, and surpass the benefits of any single project or project type.

- Ridge Restoration
- Marsh Creation
- Landbridge
- Diversion
- Hydrologic Restoration
- Integrated Projects

PROGRAMMATIC RESTORATION PROJECTS

CPRA implements several types of projects that are not individually identified in the master plan. With the exception of barrier island maintenance, these projects are often smaller scale, designed to address site-specific issues, and typically provide highly localized benefits. While these types of projects are not explicitly listed in the plan, they are consistent with the master plan. More information on programmatic restoration projects can be found on p. 64.

- Barrier Island Maintenance
- Oyster Reef Restoration
- Shoreline Protection
- Bank Stabilization
- Programmatic Restoration

Structural Risk Reduction

Structural Risk Reduction projects protect people and property with earthen levees, concrete T-walls, floodgates, and other structural components. They reduce the risk of storm surge flooding and damage within the protected area.

Image: Plaquemines Levee (CPRA)

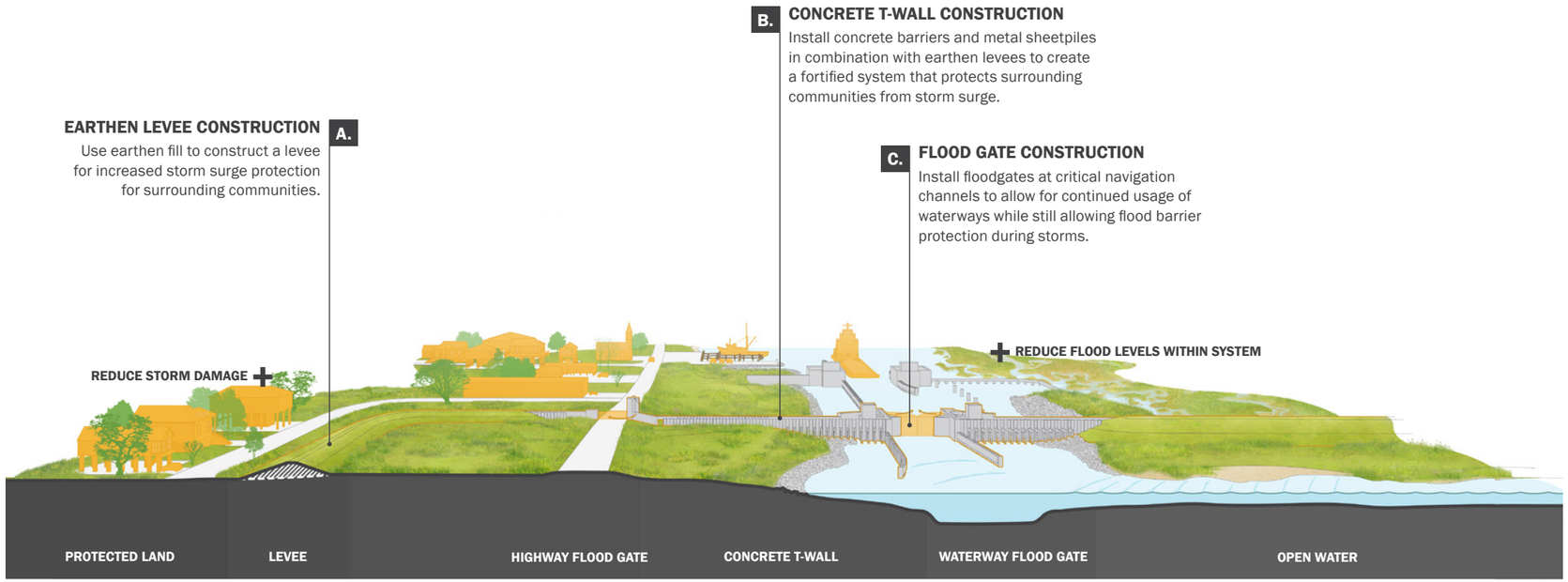


Figure 4.1: Structural Risk Reduction Project Type Visualization.

PROGRAMMATIC

Nonstructural Risk Reduction

Nonstructural Risk Reduction measures include the floodproofing, elevation, or acquisition of at-risk properties depending on projected flood depths. Nonstructural Risk Reduction measures are entirely voluntary and are undertaken in close collaboration with local residents and property owners.

Image: Elevated Houses on Grand Isle (Lindsey Janies)

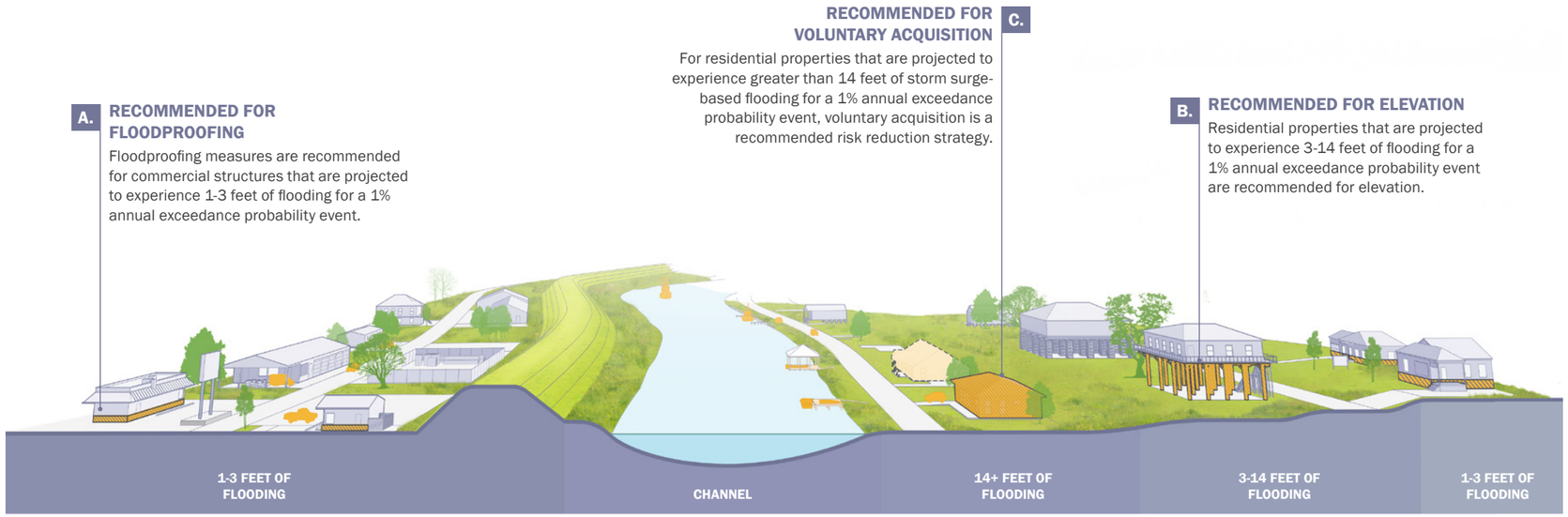


Figure 4.2: Nonstructural Risk Reduction Project Type Visualization.

Ridge Restoration

Ridge Restoration projects re-establish historic coastal ridges and forested maritime habitat through sediment placement and new plantings. Restored ridges are high points during storm events, providing refuge for animals and potentially reducing storm surge.

Image: Barataria Basin Ridge And Marsh Creation Spanish Pass Increment, 2022 (CPRA)

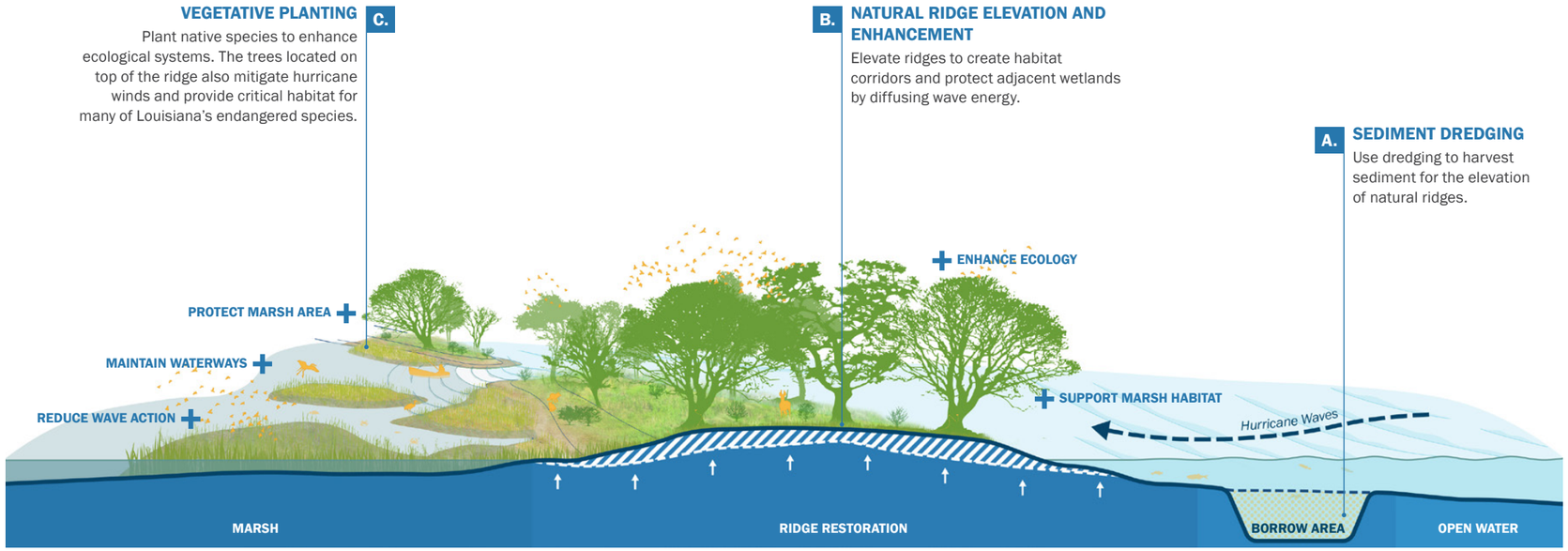


Figure 4.3: Ridge Restoration Project Type Visualization.

Marsh Creation

Marsh Creation projects restore landscape and ecosystem processes, enhance habitat, and provide additional storm surge attenuation. Wetlands are created through placement of dredged material and plantings in shallow open water or areas with deteriorated marsh.

Image: Lake Borgne Marsh Creation, 2022 (CPRA)

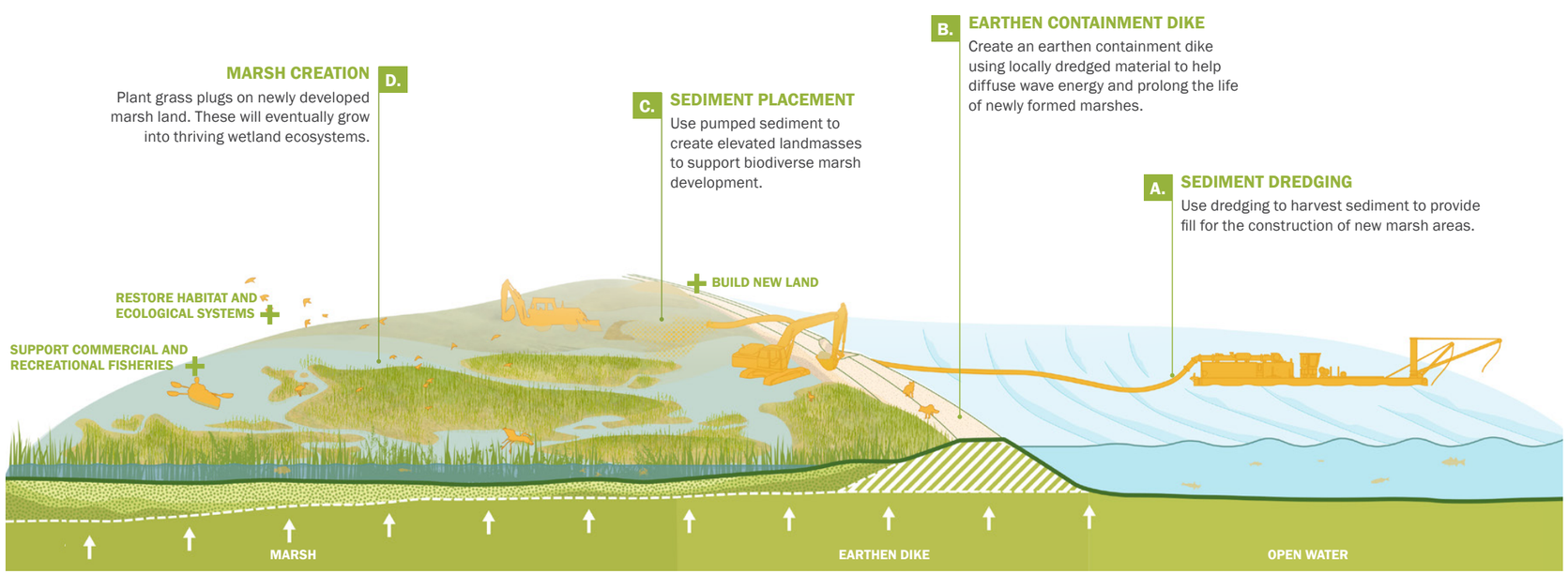


Figure 4.4: Marsh Creation Project Type Visualization.

Landbridge

Landbridges are linear tracts of constructed marshes oriented across coastal basins which provide important habitat and help attenuates waves. They include additional features to plug or constrain channels which help restore basin hydrology.

Image: Project Construction (Lindsey Janies)

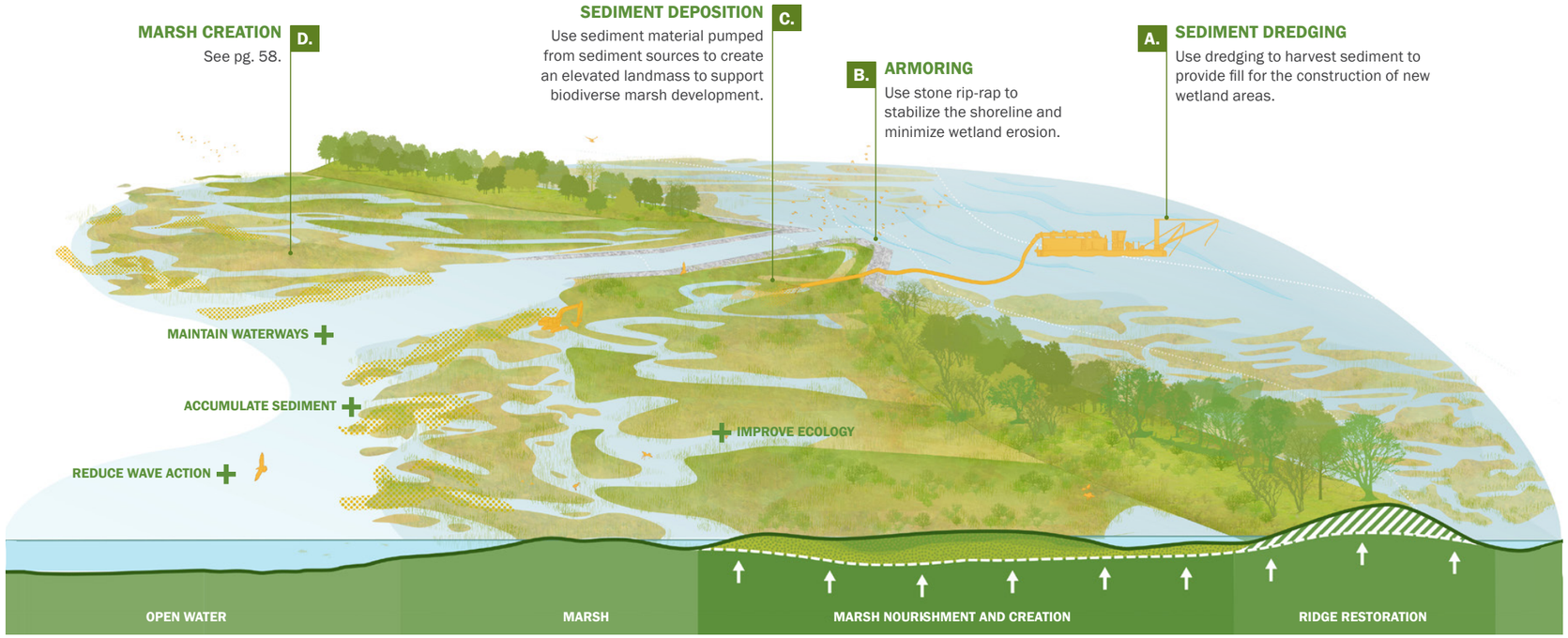


Figure 4.5: Landbridge Project Type Visualization.

Diversion

Diversions convey freshwater and sediment from rivers into adjacent wetland basins. These projects restore historic deltaic processes, build new land, nourish existing wetlands, and prevent saltwater incursion into the estuary.

Image: Caernarvon Freshwater Diversion, 2021 (CPRA)

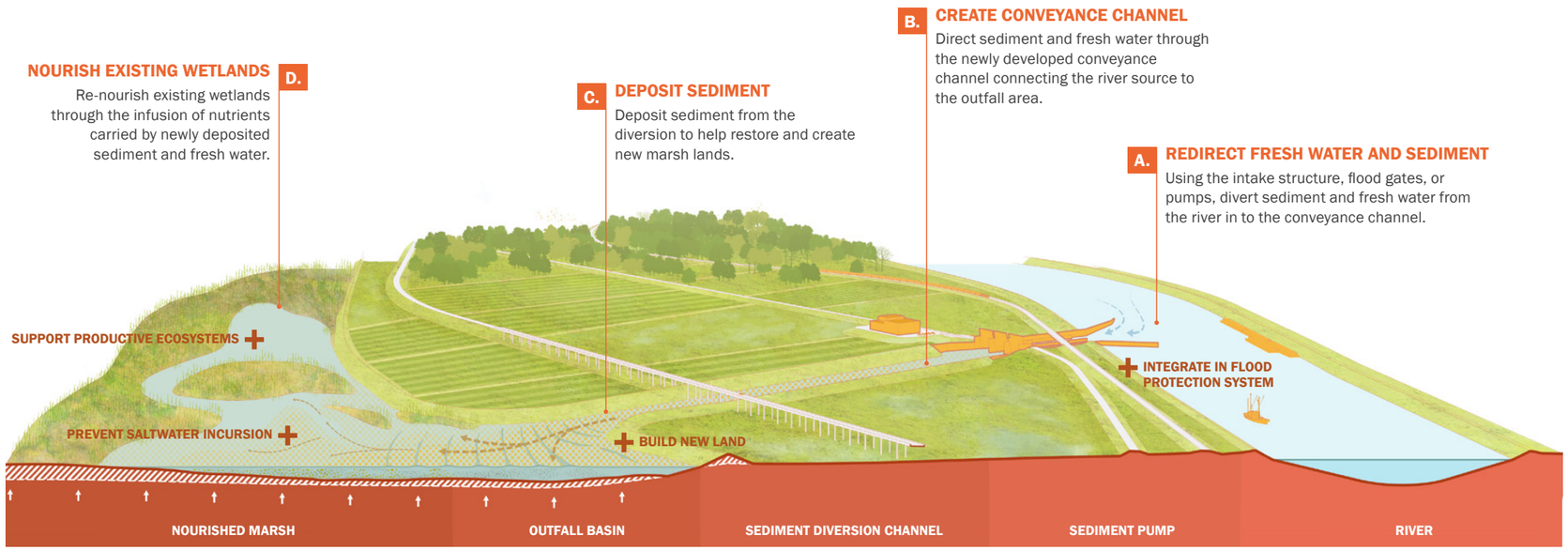


Figure 4.6: Diversion Project Type Visualization.

Hydrologic Restoration

These projects use techniques to ensure water movement across the landscape supports a healthy ecosystem at a basin or sub-basin scale. Small-scale hydrologic restoration focusing on restoring more localized hydrologic patterns (e.g., utilizing plugs and control structures, canal backfilling, channel cleanout) are considered programmatically consistent with the master plan.

Image: Cameron-Creole Maintenance Structure (CPRA)

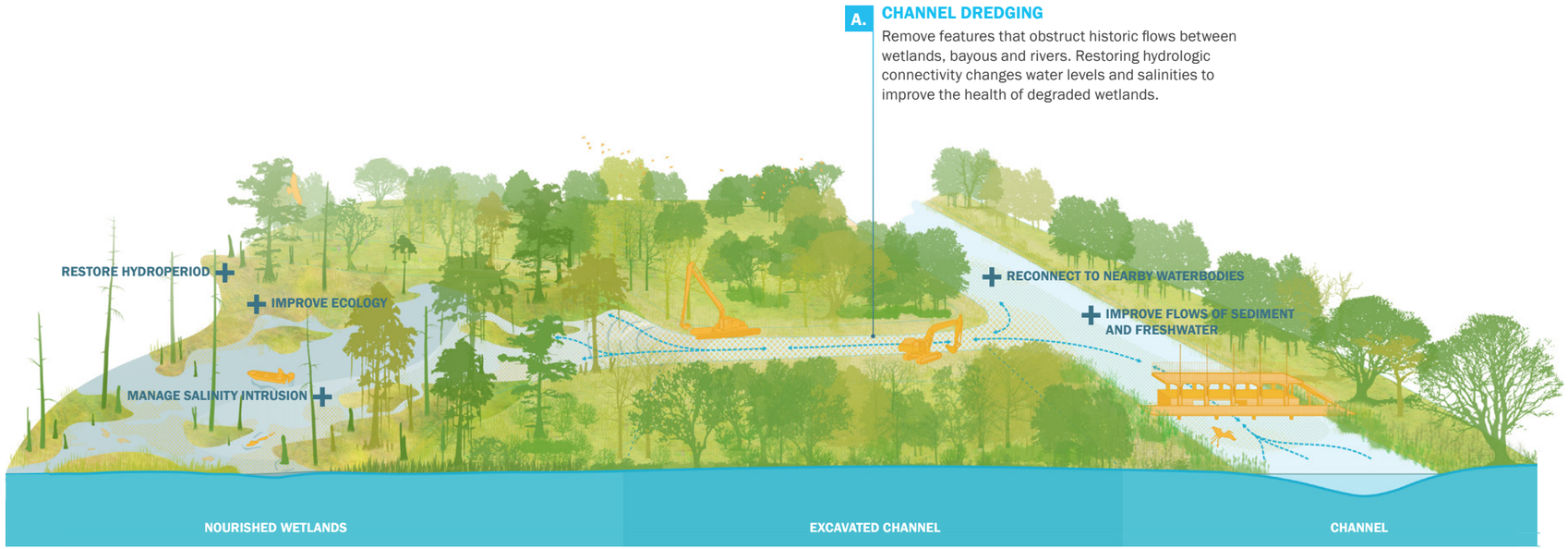


Figure 4.7: Hydrologic Restoration Project Type Visualization.

PROGRAMMATIC

Barrier Island Maintenance

Barrier Island Maintenance projects use dredged sediment to rebuild and strengthen the beaches, dunes, and backbarrier marshes of degrading barrier islands in response to damage from storms. This work enhances natural storm surge attenuation and maintains or improves critical wildlife habitat.

Image: Whiskey Island, 2009 (CPRA)

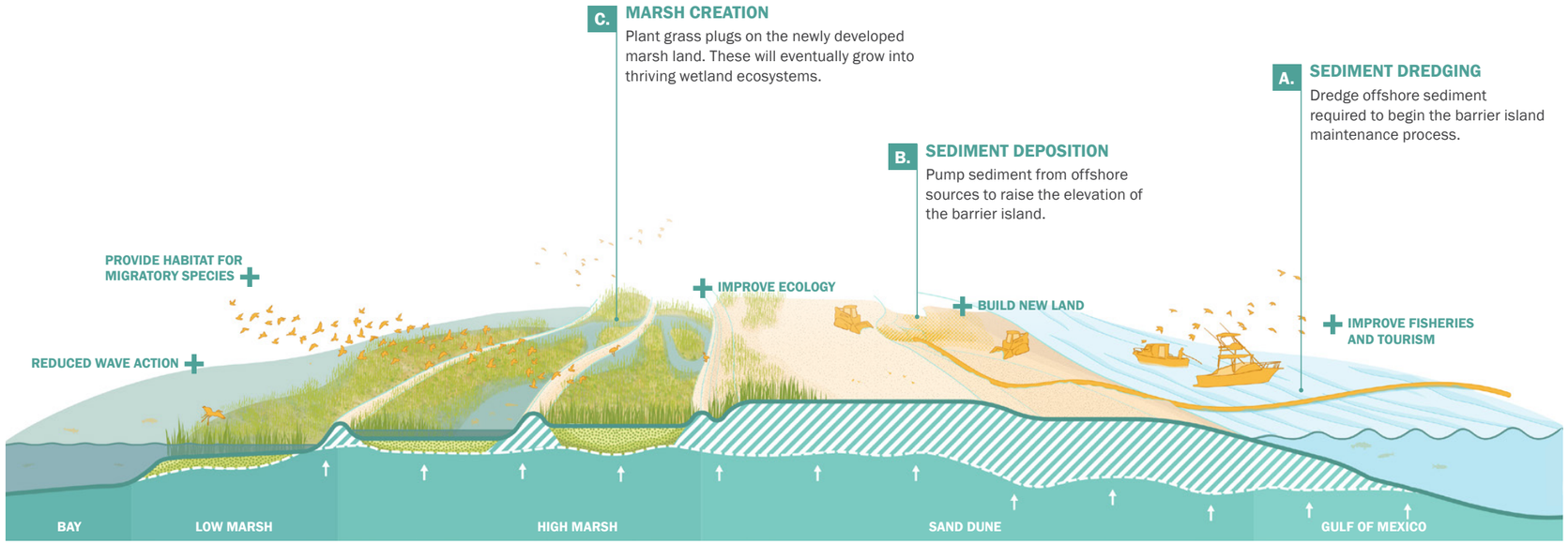


Figure 4.8: Barrier Island Maintenance Project Type Visualization.

PROGRAMMATIC

Programmatic Restoration

A comprehensive approach to coastal restoration requires the use of a variety of techniques to restore ecosystems and improve future outcomes for the coast. In addition to the project types described on the previous pages, a wide variety of additional project types are considered effective and consistent with the master plan. For example, smaller scale programmatic projects like shoreline protection, vegetative plantings, and small-scale hydrologic restoration may be pursued through programs that allow them to be evaluated on a case-by-case basis, like the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA), Revived Economies of the Gulf Coast States (RESTORE) Parish Matching Fund, and the Restoration Partnership Fund.

Image: Vegetative Planting at Elmer's Island (CPRA)

Image: Living Shoreline Demonstration Project, St Bernard Parish, 2018 (CPRA)

Image: Living Shoreline Demonstration Project, St Bernard Parish, 2018 (CPRA)

Image: Rockefeller Shoreline Protection, 2020 (CPRA)

Image: Grand Isle Oyster Hatchery (Louisiana Sea Grant College Program)

Image: Vegetative Planting in St. Bernard Parish (Louisiana Sea Grant College Program)

EVALUATE PERFORMANCE

A PLANNING TOOL TO SUPPORT DECISION-MAKING

After project effects are evaluated with predictive models, projects are selected for inclusion in the plan using the Planning Tool. This tool helps the state formulate a robust, long-term plan objectively and transparently.

The Planning Tool is a computer-based decision support system, composed of a database of predictive model results, an optimization model to define collections of projects based on decision drivers and constraints, and an interactive visualization package to support deliberations between different groups of projects (or alternatives). The models predict how the coastal landscape and associated flood risks may change over the next 50 years under different environmental scenarios, and how different restoration and risk reduction projects could change the coastal landscape and flood damages 50 years into the future.

The Planning Tool uses the model outputs to develop groups of projects to implement in IP1 and IP2 that best achieve the state's goals, subject to budget and sediment constraints. There is no correct alternative, and the Planning Tool is designed to formulate many alternatives and summarize the key differences among them. The Planning Tool is part of a deliberation-with-analysis approach to support the state's complex planning challenge.

Although the Planning Tool has been used to support the master planning process since 2012, several improvements were made for this plan to address limitations of previous analyses.

ROBUST PROJECT SELECTION

In previous master plans, projects were selected based on a single environmental scenario. The Planning Tool was updated to use a robust selection process for the 2023 Coastal Master Plan that considers both scenarios. This process first identifies high-confidence projects by formulating alternatives for each of the two scenarios – called "optimal" alternatives. Projects common to both optimal alternatives are referred to as high-confidence projects (see Figure 4.9).

The Planning Tool then iteratively increases the budgets for each optimal alternative until a set of high-confidence projects are defined that expend that original amount of funding. This process was applied for both IP1 and IP2 for restoration project selection. For structural risk reduction, fewer candidate projects were considered, and the same set of projects was chosen for each scenario for IP1.

A NEW APPROACH TO NONSTRUCTURAL PROJECTS

Risk reduction projects can be either structural or nonstructural. Previous master plans selected specific projects in both categories. For the 2023 Coastal Master Plan, the state recognizes that nonstructural damage mitigation is often carried out at the local scale through a number of different state and federal programs, and that its effectiveness is highly dependent on local participation that may not be well characterized in the predictive models. With this in mind, nonstructural projects are considered programmatically consistent. This means that the plan does not identify individual communities as 'selected' or not selected.

However we do define and evaluate nonstructural projects for each community as a way to help prioritize structural risk reduction projects and identify how much of the total budget could cost-effectively be invested in nonstructural. In IP1, nonstructural projects were identified, defined by 1% AEP flood depths at initial conditions and a 75% participation rate, and their benefits compared to those of structural protection projects by community. The Planning Tool used these to support the selection of structural risk reduction projects in two ways. First, for a single community, the Planning Tool could select only the structural or the nonstructural project, not both. Second, a structural project for a given community must perform favorably against all potential nonstructural projects, anywhere on the coast. In other words, if any nonstructural project was higher-performing than a given structural project, the structural project would be lower priority in the Planning Tool selection process.

In IP2, the flood depths used to define nonstructural projects were adjusted to account for future conditions, and the participation rate was adjusted based on the selection of projects in IP1. For both IP1 and IP2, the Planning Tool identified the best set of projects – from both structural and nonstructural options – to reduce storm surge-based flood damages.

BENEFITS OVER TIME

As the coastal landscape changes over time and sea level rise increases, the benefits of restoration and risk reduction projects change over the 50-year period of analysis. In previous master plans, specific points in time were averaged to characterize project benefits: 20 and 50 years for restoration projects and 25 and 50 years for risk reduction projects. While the objective was to ensure that both nearer- and longer-term benefits were considered, the approach penalized projects with benefits that rapidly declined in the last few years or those with higher benefits that were delayed in time. For the 2023 Coastal Master Plan, the state's goals are represented by equally weighting annual damage reduction and annual land building across all 50 years of the plan period. For risk reduction projects, EASD (a term that captures how many structures are impacted by flooding and to what degree) is equally weighted with EADD to better reflect equity in damage reduction investments.

PROJECT INTERACTIONS

Another important modification to the project selection process is the addition of an intermediate modeling step in which restoration projects selected for IP1 are assumed to be already constructed in the evaluation of the remaining projects for IP2. The restoration projects identified for IP1, are included when the predictive models are run to evaluate the effects of the remaining candidate projects. The candidate projects interact with the IP1 projects and the resulting benefits are used in the selection of projects for IP2.

This approach assumes that remaining candidate projects are only eligible to be selected for IP2, and the new project evaluations are used to determine which remaining projects to select.

METRICS

In addition to the decision drivers and constraints used in the Planning Tool, we developed metrics based on model outputs and used community characteristics, such as demographic information

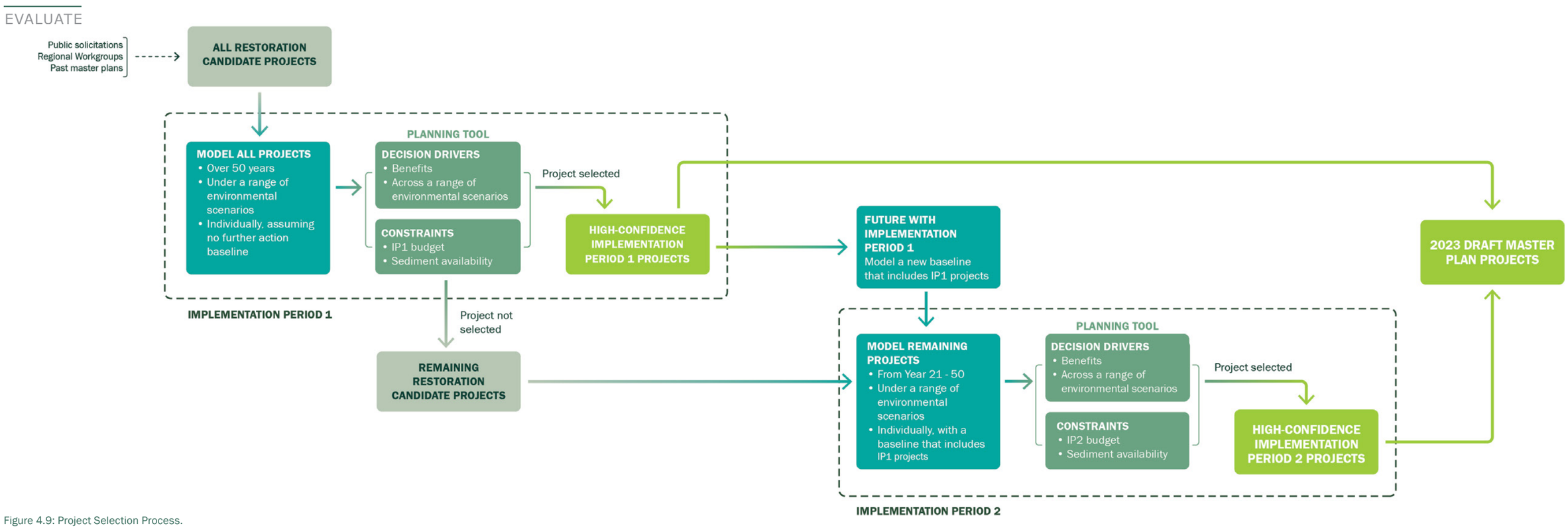


Figure 4.9: Project Selection Process.

and major industries, to better understand how the changing coast and the projects being evaluated impact different communities and resources.

Ecosystem metrics help us consider the ability of projects to create or maintain suitable habitat for various species. Community metrics combine ecosystem outputs and risk outputs to help us characterize how certain communities, like those associated with traditional fishing or agriculture, may be impacted.

Demographic data helps us understand how structural risk reduction projects impact more vulnerable communities. During the project selection process, these can be used as a check on the Planning Tool optimization to make sure we are directly addressing questions of equity and resilience and not selecting suites of projects that disproportionately impact certain communities.

SEDIMENT BORROW SOURCES

Sediment is an important resource for some types of restoration projects, and cost-effective sources in coastal Louisiana are limited. In previous master plans, each project requiring sediment was associated with a specific borrow area and sediment availability was a constraint. For the 2023 Coastal Master Plan, the Planning Tool was configured to allow an individual project or project element to borrow from more than one source, if cost efficient to do so. Thus, sediment availability is now a factor in the cost of a project and is reflected in the budget constraint, rather than being a separate constraint. For the 2023 analysis, 41 individual sediment sources were defined. For sources that are not within the Mississippi River channel, a single amount of sediment was specified that can be drawn upon until exhausted. For Mississippi River-based sources, sediment is considered renewable. These sources were assigned a 10-year renewable fill volume available at any time in those 10 years.

PROJECT SELECTION

The Planning Tool uses the outputs from the predictive models summarized by 25 geographic areas (or ecoregions) for restoration outcomes and 374 communities for damage reduction outcomes. Each selected project begins accruing engineering and design costs in the first year of IP1. Construction costs are incurred immediately following engineering and design, and operation and maintenance continues through the end of the 50-year planning horizon. For both restoration and risk reduction projects, the procedure first selects projects to implement in IP1. The Planning Tool assumes that these projects are implemented in the first year and that cost (and sediment requirements for restoration projects) for the first 20 years of each project must be met by IP1 funding and sediment sources. For some projects, construction costs and sediment requirements extend beyond the first 20 years. In this case, the Planning Tool ensures that sufficient budget and sediment are available in IP2. When projects are selected for IP2, the requirements for the projects selected in IP1 must be satisfied before the Planning Tool selects projects to implement in IP2. Any project not selected in IP1 is a candidate for selection. These projects are assumed to begin engineering and design in the first year of IP2 and accrue costs from that year forward. The Planning Tool again ensures that all funding and sediment requirements are met.

Throughout this process, the visualization component of the Planning Tool was used to compare different alternatives and consider the coastwide distribution of projects and their benefits, while considering varying budgets.

>>> For more information on the Planning Tool, see **Appendix G: Decision-Making**.

COMMUNICATING THE PLAN

REACHING STAKEHOLDERS

The 2023 Coastal Master Plan identifies the projects our state should implement and provides important information about how that translates to land created or maintained. The plan also provides details about which communities will be most vulnerable to flooding in future years and how structural and nonstructural risk reduction projects can address that risk. We cannot predict exactly how our coast will change, but based on what we know today, the projects in this plan will allow us to build land in crucial areas and reduce current and future storm surge-based flood risk. Because this information is critical to individuals and communities, a key part of the master plan development process is communicating the possible future landscape and projects that can mitigate land loss and reduce storm surge-based flood risk. Conversations with stakeholders and advisory groups take place throughout the master plan update cycle, and emphasis is placed on producing materials and tools to facilitate that communication.

As the 2023 Coastal Master Plan is drafted, work begins on communicating the project list and what the plan delivers. This includes posting a digital version of the master plan document on the CPRA website along with technical appendices and attachments that document the development process and provide details on models, outputs, and other topics. These resources are hosted on the website alongside outreach resources, such as technical webinars and corresponding presentation slides.

The Master Plan Data Viewer was updated, and a Guided Tour feature will help first-time users understand the nature of the coastal crisis and what implementation of this plan would accomplish. An Explore feature allows users to dive deeper into data from across the coast, including maps of the FWOA coast and the effects of the 2023 Coastal Master Plan. New features of the data viewer include a map export function to facilitate easy printing of master plan-related maps and expanded data download capabilities to ensure master plan-generated data is available for researchers and interested audiences.

Print materials were also developed to supplement technical documentation and presentations at outreach meetings. Four different types of fact sheets were developed to provide quick overviews of key master plan information. These fact sheets provide data at levels ranging from the individual project to regional overviews.

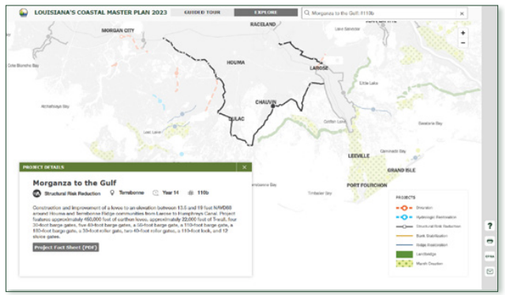


Figure 4.10: Project Information in the Data Viewer Desktop View.

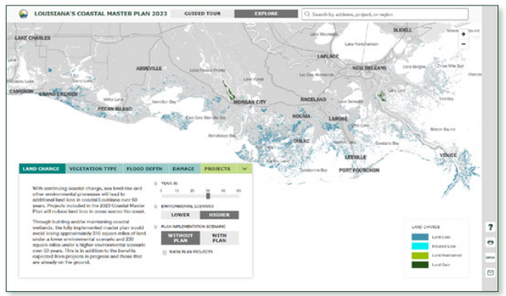


Figure 4.11: Land Change Data in the Data Viewer Desktop View.

FREQUENTLY ASKED QUESTIONS

Which type of project is best at restoring the coast? Different project types perform best in different circumstances. Projects that restore hydrology or increase delivery of freshwater and sediment may perform well where saltwater intrusion and a lack of sediment contributes to land loss. Marsh creation projects do well in fragmented marsh areas; this is accomplished by filling shallow water areas and elevating the marsh surface. In some cases, integrated projects are needed to address multiple issues.

Why does CPRA use the Planning Tool to select restoration projects? If funding were the only constraint, ranking projects based on cost-effectiveness might be a reasonable approach to project selection. However, we recognize that sources of sediment near project sites are limited. The Planning Tool allows both funding and sediment to be considered simultaneously, allowing CPRA to choose robust project sets. It also enables the evaluation of how the master plan may benefit or impact other things that are important to Louisianans, such as habitat creation, navigation, and the working coast.

What are expected annual damages? Our analysis considers storms of different intensity and tracks, and their expected probability of occurring in any one year. The flood depths resulting from those storms change over time as the coast degrades and sea level rise increases water levels. Rather than selecting a single probability of flooding or a single time period, the Planning Tool combines the total damage from all possible flood events considered and the likelihood of each event occurring, or expected annual damages. The change in expected annual damage due to a project being built is used to summarize the benefits of projects over time, considering different types of storms that could occur. This damage is reported both in dollars and based on reductions in the number of structures damaged and the degree of damage experienced.

Why are different implementation periods used? The state recognizes that we need to address the coastal crisis as soon as possible and that we need to build projects that will continue to provide benefits to future generations, but that the funds we need will not all be available right away. Therefore, the state wants to identify the best performing projects for implementation. Projects are evaluated over the entire 50 years, and those that perform best in terms of maintaining/building land or reducing expected annual damage, based on a set amount of funding, are assigned to IP1. The remaining projects are evaluated on their benefits over the last 30 years (i.e., IP2) of the 50-year planning horizon. Using two implementation periods ensures the master plan is making reasonable assumptions about project funding streams while maximizing the timing and benefits the projects provide.

HAVE MORE QUESTIONS?
Visit us online at coastal.la.gov or contact us directly at masterplan@la.gov.

CHAPTER 5

TAKE ACTION

To take action toward addressing the challenges of a changing coast, a suite of 77 restoration and risk reduction projects was identified. When fully implemented, the 2023 Coastal Master Plan will provide a myriad of benefits for coastal communities and ecosystems, including reducing hundreds of square miles of land loss and reducing expected annual damage from storm surge-based flooding by billions of dollars.

Image: Construction of Barataria Basin Ridge and Marsh Creation – Spanish Pass Increment, 2021 (CPRA)

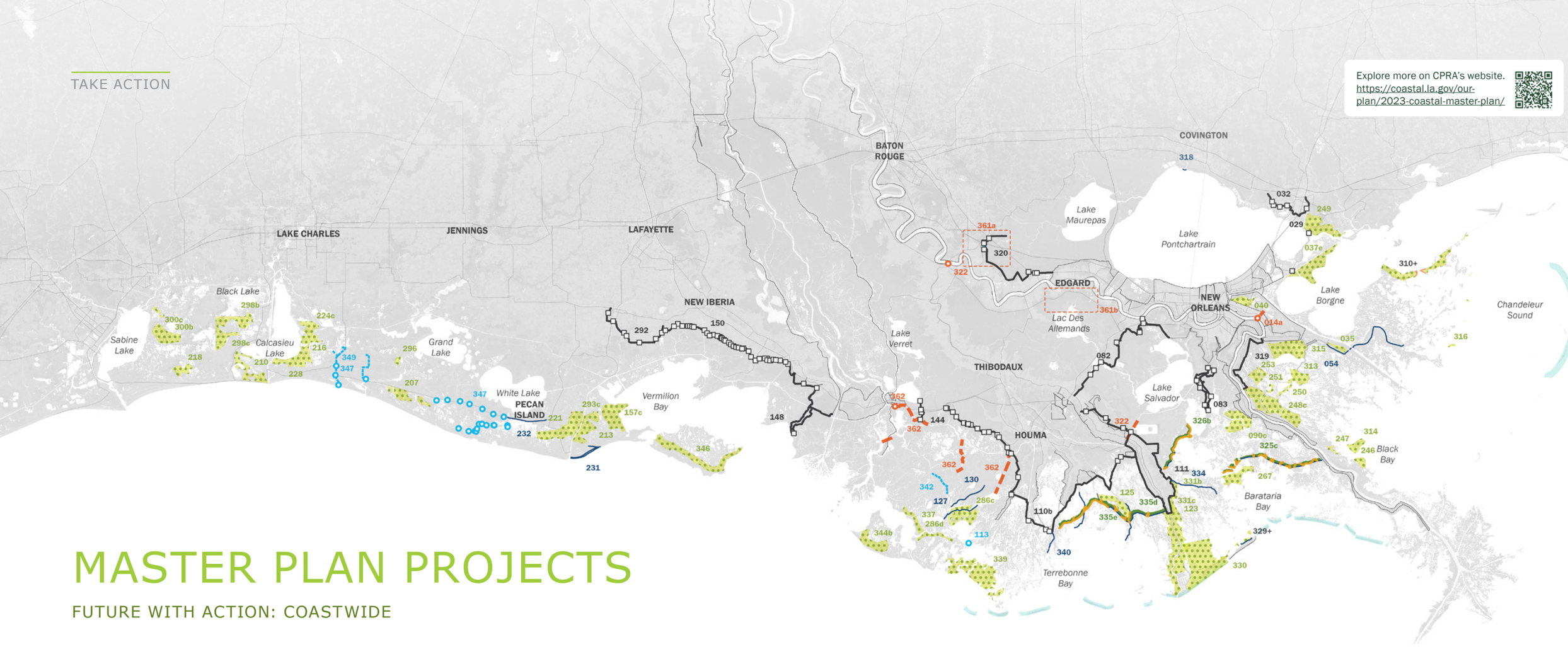
Explore more on CPRA's website.
https://coastal.la.gov/our-plan/2023-coastal-master-plan/

MASTER PLAN PROJECTS

FUTURE WITH ACTION: COASTWIDE

The 2023 Coastal Master Plan identifies projects designed to restore, create, and maintain land; reduce flood risk to citizens and communities; and sustain habitats that support a variety of recreational and commercial activities. The restoration and risk reduction projects selected perform well with respect to future conditions and reflect a comprehensive, long-term focus and continued commitment to balancing the diverse objectives of the master plan. In addition to these specific projects, $2.5 billion is allocated to programmatic restoration efforts, including barrier island maintenance and repair, small-scale hydrologic restoration, and local strategies, such as bank stabilization and oyster reef restoration. Additionally, $11.2 billion is allocated to nonstructural risk reduction activities across the coast.

Beyond the projects, the master plan acknowledges that the coastal area is dynamic, and additional adaptation will be required to continue living, working, and playing in coastal Louisiana. The plan alone is not sufficient to respond to all of the challenges the future may bring, but it is a catalyst for coordinating local, state, and federal efforts to help address our coastal land loss crisis and threats from storm surge-based flooding. The plan also highlights the need to continue to pursue the greenhouse gas reductions that are necessary to avoid the most severe impacts of climate change.



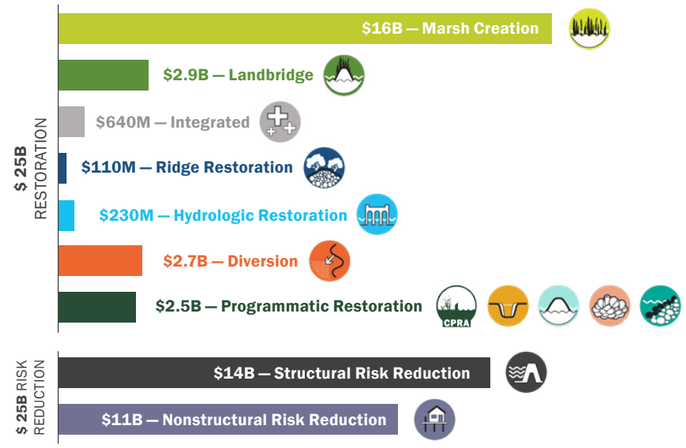


Figure 5.1: Planning Budget Allocation by Project Type in USD.

Structural Risk Reduction
Ridge Restoration
Marsh Creation
Landbridge
Diversion
Hydrologic Restoration
Barrier Island Maintenance
Bank Stabilization

Map 5.1: Projects selected as part of the 2023 Coastal Master Plan.

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0 5 10 20
MILES

CHENIER PLAIN

See page 98 for regional project map and project descriptions.

PROJECT TYPE	ID#	PROJECT NAME	IP	COST
Hydrologic Restoration	347	Mermentau Basin Hydrologic Restoration	1	$ 130M
	349	Cameron-Creole to the Gulf Hydrologic Restoration	1	$ 59M
Marsh Creation	207	South Grand Chenier Marsh Creation	1	$ 390M
	210	Mud Lake Marsh Creation	1	$ 330M
	216	Southeast Calcasieu Lake Marsh Creation	2	$ 450M
	218	Cameron Meadows Marsh Creation	1	$ 150M
	221	East Pecan Island Marsh Creation	1	$ 650M
	224c	East Calcasieu Lake Marsh Creation	1	$ 340M
	228	Calcasieu Ship Channel Marsh Creation	1	$ 83M
	293c	Freshwater Bayou North Marsh Creation	1	$ 150M
	296	Little Chenier Marsh Creation	2	$ 51M
	298b	West Brown Lake Marsh Creation - North	2	$ 410M
	298c	West Brown Lake Marsh Creation - South	1	$ 240M
	300b	West Sabine Refuge Marsh Creation	2	$ 640M
	300c	West Sabine Refuge Marsh Creation - Central	1	$ 130M
Ridge Restoration	232	Pecan Island Ridge Restoration	1	$ 20M

CENTRAL COAST

See page 110 for regional project map and project descriptions.

PROJECT TYPE	ID#	PROJECT NAME	IP	COST
Marsh Creation	157c	East Rainey Marsh Creation	1	$ 350M
	213	West Rainey Marsh Creation	1	$ 400M
	344b	Central Coast Marsh Creation - Point Au Fer	1	$ 270M
	346	Marsh Island Barrier Marsh Creation	1	$ 710M
Structural Risk Reduction	148	Franklin and Vicinity	2	$ 310M
	150	Iberia/St. Mary Upland Levee	1	$ 1.7B
	292	Abbeville and Vicinity	2	$ 610M
Ridge Restoration	231	Cheniere au Tigre Ridge Restoration	1	$ 26M

TERREBONNE

See page 122 for regional project map and project descriptions.

PROJECT TYPE	ID#	PROJECT NAME	IP	COST
Hydrologic Restoration	113	Central Terrebonne Hydrologic Restoration	1	$ 16M
	342	Western Terrebonne Hydrologic Restoration	1	$ 22M
Landbridge	335d	Eastern Terrebonne Landbridge - East	1	$ 460M
	335e	Eastern Terrebonne Landbridge - West and Central	2	$ 1.0B
Marsh Creation	123	Belle Pass-Golden Meadow Marsh Creation	1	$ 1.2B
	125	North Terrebonne Bay Marsh Creation	1	$ 210M
	286c	North Lake Mechant Marsh Creation - East	1	$ 250M
	286d	North Lake Mechant Marsh Creation - West	2	$ 230M
	337	Fourleague Bay - Blue Hammock Bayou Marsh Creation	1	$ 370M
	339	West Terrebonne Marsh Creation Project	1	$ 1.5B
Ridge Restoration	127	Bayou Decade Ridge Restoration	1	$ 13M
	130	Mauvais Bois Ridge Restoration	1	$ 13M
	340	Lower Bayou Petit Caillou Ridge Restoration	1	$ 3.3M
Diversion	362	Atchafalaya Diversions	1	$ 790M
Structural Risk Reduction	110b	Morganza to the Gulf	1	$ 3.9B
	111	Larose to Golden Meadow	2	$ 500M
	144	Amelia Levee Improvements	2	$ 840M

BARATARIA

See page 134 for regional project map and project descriptions.

PROJECT TYPE	ID#	PROJECT NAME	IP	COST
Integrated Project	329	Caminada Bay Marsh Creation and Fifi Island Ridge	1	$ 78M
Landbridge	325c	Lower Barataria Landbridge - East	2	$ 840M
	326b	Mid-Barataria Landbridge - West	2	$ 520M
Marsh Creation	090c	Large-Scale Barataria Marsh Creation	2	$ 560M
	267	North Barataria Bay Marsh Creation	2	$ 220M
	330	East Bayou Lafourche Marsh Creation	1	$ 1.3B
	331b	Southeast Golden Meadow Marsh Creation - North & South	2	$ 270M
	331c	Southeast Golden Meadow Marsh Creation - Central	1	$ 100M
Ridge Restoration	334	Bayou L'Ours Ridge Restoration	1	$ 9.5M
Diversion	322	Freshwater Delivery to Western Barataria	2	$ 120M
	361b	Upper Basin Diversion Program - Barataria	1	$ 750M
Structural Risk Reduction	082	Upper Barataria Risk Reduction	1	$ 510M
	083	Lafitte Ring Levee	2	$ 1.4B

PONTCHARTRAIN / BRETON

See page 146 for regional project map and project descriptions.

PROJECT TYPE	ID#	PROJECT NAME	IP	COST
Integrated Project	310	Three Mile Pass Marsh Creation and Hydrologic Restoration	2	$ 560M
Marsh Creation	035	Hopedale Marsh Creation	2	$ 160M
	037e	New Orleans East Marsh Creation	2	$ 1.1B
	040	Central Wetlands Marsh Creation	1	$ 49M
	246	Sunrise Point Marsh Creation	1	$ 47M
	247	Uhlan Bay Marsh Creation	1	$ 33M
	248c	Pointe a la Hache and Carlisle Marsh Creation	1	$ 860M
	249	Fritchie North Marsh Creation	1	$ 110M
	250	Oak River to Delacroix Marsh Creation	1	$ 170M
	251	Spanish Lake Marsh Creation	2	$ 61M
	253	Tiger Ridge/Maple Knoll Marsh Creation	1	$ 150M
	313	West Delacroix Marsh Creation	1	$ 390M
	314	Belle Pass Island Marsh Creation	1	$ 99M
	315	North and East Lake Lery Marsh Creation Project	2	$ 890M
	316	Chandeleur Sound Island Restoration Projects	2	$ 57M
Ridge Restoration	054	Bayou LaLoutre Ridge Restoration	2	$ 26M
	318	Tchefuncte River Restoration	1	$ 1.9M
Diversion	014a	Central Wetlands Diversion	2	$ 270M
	361a	Upper Basin Diversion Program - Pontchartrain	1	$ 750M
Structural Risk Reduction	029	Lake Pontchartrain Barrier	1	$ 2.4B
	032	Slidell Ring Levees	1	$ 420M
	319	Braithwaite to White Ditch	1	$ 440M
	320	St James-Ascension Parishes Storm Surge Protection	2	$ 730M

Figure 5.2: 2023 Coastal Master Plan Project List.