

Goal and Guiding Principle Document for Captiva & Sanibel Coastal Adaptation Planning:

Drafted by SCCF November/December 2021, Workshopped Dec/Jan 2021

Context/Background:

As barrier islands, Captiva and Sanibel have been historically influenced and shaped by past fluctuations in weather and climate events. Into our future, we expect increasing climate-change induced impacts, especially those with implications for our coastline and communities. These include sea level rise that contributes to high tide or “sunny-day” flooding, more intense storm wave events, as well as increased rainfall that will likely exceed current stormwater capacity. In order to respond to these future stressors, we should develop an adaptation plan to guide our community responses to future sea level rise and associated climate change impacts. Many other coastal Florida communities and the state at large (as outlined in [Senate Bill 1954](#)) are engaging in this process in parallel to our own efforts.

Sanibel and Captiva are both barrier islands in close proximity, however, there are some distinctions that are important to note in a planning context. Sanibel is roughly 16.18 square miles in size, while Captiva has a total land area closer to 1.18 square miles ([US Census Bureau 2021 Gazetteer Data](#)). Sanibel is also an incorporated city, established in 1974, and any planning activities and outcomes would need to be compatible with the [Sanibel Plan](#). Captiva is an unincorporated community whose governance primarily falls under the jurisdiction of Lee County. However, the Captiva Erosion Prevention District is designated on the island as a special beach and shore preservation district under the [Laws of Florida Chapter 2000-399](#). Ultimately, Captiva-specific planning activities and outcomes would need to be consistent with the [Captiva Community Plan](#), as part of the overarching [Lee County Comprehensive Land Use Plan \(Lee Plan\)](#). Due to the orientation of the islands, there is also variability in the propensity for erosion and accretion, exposure to wave energy and storms, and accommodation space both between and within the islands. In practice, this means that no single action or solution will be appropriate across an individual island or between the two islands. The above differences can and should be acknowledged within the planning process while identifying collective opportunities like shared cost savings and mutually beneficial coastal resilience outcomes including protection of resources critical to both islands.

Vision Statement/End Goal for Captiva and Sanibel Coastal Adaptation Planning Process:

We recognize the need to plan for future coastal climate change risks that will impact the natural and human systems on our islands. We are particularly vulnerable to adverse impacts resulting from increases in frequency and duration of rainfall events, storm surge and wind from more severe weather systems, and sea level rise. Such adverse impacts pose great economic, social, environmental, and public health and safety challenges.

While we understand that coastal adaptation planning cannot eliminate all flooding and storm risk, and some degree of residual risk will be inevitable, we can ameliorate future impacts through a variety of strategies and policies. Coastal adaptation plans will provide a clear strategy on how our communities will adapt to sea level rise, increasing storm intensity, and other factors associated with climate change. Individual plans will be developed for each island due to their respective unique considerations, but both will collectively adhere to a single set of guiding principles consistent with the broader planning goals and objectives of our communities. We can also look to local models in our region to inform our process, such as the City of Punta Gorda's [2019 Adaptation Plan Update](#) that addresses coastal flooding. **Language partially derived from:** [Senate Bill 1954 \("Florida Resilient Coastlines" Act\)](#), [Restore the Mississippi River Delta: "Best Practices" for a Strong Coastal Resilience Plan](#), etc.

Timeline and Expectations for Developing Coastal Adaptation Plans:

Due to the previous dedication and hard work of our planning partners, including the Captiva Community Panel, the Captiva Erosion Prevention District, City of Sanibel, etc., we already have the building blocks of comprehensive coastal adaptation plans. However, the full planning process requires multiple steps or phases to be coordinated among our partners. A potential framework or roadmap of these steps is laid out in the Florida Department of Environmental Protection's [Adaptation Guidebook](#). This resource supports Integral's and APTIM's estimated two-year time frame for completion of coastal adaptation planning as a reasonable aim. The planning process must be collaborative and will require the efforts of multiple stakeholders and experts outside of our partner-group. This will also at times include the use of sub-contractors, including science and engineering firms, to help fill data gaps and support the design and implementation process in instances where appropriate.

Adaptation Efforts to Date:

Several scientists from Florida Gulf Coast University including Dr. Michael Savarese contributed to beginning steps to set the stage for characterizing coastal vulnerability to sea level rise and other climate-change associated flooding risks. This included assessing Sanibel and Captiva's critical assets as informed by local stakeholders, and generating digital elevation models, beach profiles, and sediment budgets for the gulf-facing coastlines of the islands.

The Captiva Community Panel has also been addressing sea level rise adaptation planning for over three years within its Sea Level Rise Committee. Committee membership has included a variety of Captiva stakeholders, along with a City of Sanibel and Sanibel Captiva Conservation Foundation representative. The Committee has adopted and followed guidance from the Florida Department of Environmental Protection (FDEP) in their process. Integral Consulting, working with the Committee, has produced a sea level rise vulnerability assessment for Captiva, which further identified assets and critical infrastructure on the island, as well as when in time (sea level rise scenarios) different assets will be affected. The assessment is limited in that it does not include storm scenarios, but does showcase the systemic vulnerability Captiva can expect in the future. Based upon this assessment, the Panel hired Integral to

develop Conceptual Site Model Adaptation Designs for five priority areas on Captiva's Bayside meant to address two feet of sea level rise. Several proposals (unfunded to date) have been prepared and submitted to both the National Fish and Wildlife Foundation (NFWF) and FDEP to conduct more comprehensive modeling for both Sanibel and Captiva to aid in adaptation planning.

Guiding Principles:

In our process and outcomes, while protecting the islands' diverse coastal community infrastructure and critical assets along with economic outcomes including local commercial services that reflect the balance between tourism, seasonal occupancy and year-round residency, we must also balance preserving the fragile land, coastline, wildlife, and waters of Captiva and Sanibel. This balance is crucial to maintaining our quality of life. The following principles are shaped with this balance in mind and are not listed in a hierarchical manner, but should be considered equally throughout the planning process. During our process, we may also find occasional inconsistencies between protection of habitat and protection of infrastructure and will have to work through these on a case-by-case basis. **Language partially derived from:** [Captiva Community Plan](#)

General:

- Coastal adaptation planning, policies, and solutions for Sanibel and Captiva must be designed and implemented based on the climate of the future to the best of our ability rather than the climate of the present or past. In support of this aim, planning partners must use the best available scientific information and technical know-how to fill in existing data gaps and characterize future risk while making informed decisions now and recognizing the need to act adaptively as knowledge improves. **Adapted from:** [A Resilient Future for Coastal Communities: Federal Policy Recommendations from Solutions in Practice](#); [Ecosystem Adaptation to Climate Change in California: Nine Guiding Principles](#)
- Climate change and its impacts, including those related to storm events and coastal flooding, do not stop at community borders, and the adaptation of one community can be strengthened or weakened by actions in another. When practicable, the Sanibel and Captiva coastal adaptation planning partners will coordinate coastal adaptation efforts to minimize negative impacts between communities, and to maximize cost savings and mutually beneficial outcomes. **Adapted from:** [Coastal Resilience Partnership Guiding Principles](#), Southeast Palm Beach County
- Final coastal adaptation plans, policies, and adopted solutions should be evaluated during their development to ensure that they are consistent and compatible with one another and with the Sanibel, Captiva Community, and Lee County Plans, while also being unified in their efforts. **Adapted from:** [Sanibel Plan](#), Section 3.2.2 "Conservation Element", Policy 1.1
- Public participation is a vital part of the planning process. It engages and empowers various constituencies including those that are most affected by climate change impacts, as well as those particularly well placed to contribute to climate adaptation actions. Planning partners will identify opportunities for and solicit community feedback within the coastal adaptation and planning process at points where community support and buy-in are deemed critical to the success of the overall process, and to reduce the likelihood of community dissent, legal action,

and other actions that may become barriers to successful and equitable coastal adaptation. **Starting Language Adapted from:** [Guiding Principles for Climate City Planning Action](#), United Nations Habitat

Environmental:

- Our unique and special island beach ecosystems provide important habitat for a variety of coastal wildlife. Captiva and the west end of Sanibel are federally designated as critical habitat for nesting loggerhead sea turtles (*Caretta caretta*), and Sanibel is designated as critical habitat for the federally threatened red knot (*Calidris canutus rufa*). Loss of suitable habitat is one of the leading causes of decline for protected wildlife in Florida. Shorebirds and sea turtles have nuanced habitat requirements and adaptation planning measures need to consider potential impacts and should avoid unintended consequences on the survival of these species. **Developed:** with input from SCCF Wildlife & Habitat Management Staff
- When appropriate to design and implement engineered coastal protections, coastal resilience planning partners including non-profits, community and civic organizations, and local municipalities and jurisdictions must work together to choose solutions that preserve the shoreline and natural habitats, enhance water quality, incorporate native vegetation, maintain the mangrove fringe, and limit noise, light, water and air pollution. **Adapted from:** 2017 [Captiva Community Plan](#) Amendment, [Captiva Community Vision Statement](#)
- As both Sanibel and Captiva can be considered barrier island sanctuaries, one in which a diverse population lives in harmony with the Island's wildlife and natural habitats, our communities must be vigilant in the protection and enhancement of those sanctuary characteristics. Coastal adaptation planning outcomes should therefore enhance the persistence and health of coastal ecosystems as sea level rises by allowing them to flourish in response to the changing climate. **Adapted from:** [Sanibel Plan](#) Vision Statement, [Ecosystem Adaptation to Climate Change in California: Nine Guiding Principles](#), Principles 1 & 5

Infrastructure:

- To protect shoreline development from climate change-induced flooding and associated impacts, natural systems, setbacks, beach re-nourishment, living shorelines and other nature-based solutions or hybrid solutions consisting of hardened structure paired with natural features will be employed preferentially rather than the sole installation of seawalls or other hardened structures which tend to hasten beach erosion and can cause unintended impacts to adjacent properties and wildlife habitat. Beach and boat access will be maintained in accordance with legal requirements, and in balance with maintaining effectiveness of solutions and minimizing environmental impacts. **Adapted from:** Policy 101.3.1, [Lee Plan 2021 Codification](#)
- Adaptation and resilience strategies must protect human life, and should strive to protect public and private property including cultural resources from climate change impacts. Actions affecting infrastructure should be prioritized with consideration to economic and social vulnerability to ensure that climate impacts do not disproportionately affect disadvantaged communities and populations while supporting equitable infrastructure benefits across our island communities and economic sectors. **Adapted from:** [Coastal Resilience Partnership Guiding Principles](#), Southeast Palm Beach County

Economic:

- We should acknowledge that protecting infrastructure helps maintain the important tax base of our communities and county. We should also seek to protect the recreational opportunities provided by our beaches as they have historically represented an important economic driver for Lee County and our islands (Ex: In pre-pandemic year 2019, local beach visitors spent \$3B in the county, while generating a \$5B economic impact). **Beach data derived from:** Lee County Visitor and Convention Bureau 2019 [Visitor Tracking, Occupancy & Economic Impact Study](#)
- Before adopting any new coastal adaptation solution or policy which potentially imposes new costs to taxpayers and private business, coastal adaptation planning partners first will generally assess the cost-benefit and/or impact of that action upon the local economy and will adopt solutions that are both cost-effective and best serve public need. Appropriate expertise (e.g., a coastal economist) should be used to incorporate the co-benefits of nature-based features when possible. Partners will also engage in the planning process in a way that will best maintain eligibility for outside funding sources.

Proposed Steps/Milestones:

The following outlines key steps necessary for reaching an end goal of comprehensive coastal adaptation plans for our communities. We have building blocks for some of these steps already in place.

- Define planning vision, principles, motivations
- Draft framework, outline for a coastal adaptation plan or plans
- Adopt a planning horizon and sea level rise projection consistent with eligibility for DEP Florida Resilient Coastline Funds (refer to [Senate Bill 1954](#))
- Comprehensively characterize coastal risks (sea level rise, storm surge/winds, inland flooding/stormwater)
- Evaluate critical assets data and confirm all assets are included in planning lists, overlap with coastal risks to identify most vulnerable sites
- Generate ranked list of target sites for coastal adaptation planning/projects
- Develop adaptation strategies for highest ranked target sites and recommendations for future sites
- Assess cost/benefit and feasibility of proposed adaptation solutions, make final recommendations for projects, policies, strategies
- Submit plans for formal adoption and integration with other existing plans
- Outline potential implementation timeline, funding mechanisms, assessment options