

# As the Tide Rolls In: Florida Cities and Counties Adapt to Sea Level Rise with Land-Use Plans

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Imagine you are a developer who wants to build a luxury hotel on the beach. If you are unlucky, you might find yourself embroiled in a tangle of federal laws, such as the Endangered Species Act, Clean Water Act, and National Historic Preservation Act. However, no matter where you are in the United States, and with even the simplest and cleanest of proposals, you will need to navigate ordinances and approvals from the city and county in which the development is located. The decisions made by local governments across the United States have significant impacts on what communities look like and how they grow: where buildings may be built, how close structures may be located to the beach, compliance with requirements for green building and stormwater management, and so forth. Whereas the federal government deals with big-picture environmental issues, local governments fill the gaps of regulations of the practical, mundane, and seemingly unsexy, ultimately determining the development patterns of cities, towns, and villages across the nation.

Recent changes to Florida's growth management legislation have paved the way for cities and counties throughout the state to respond to climate change and sea level rise. This article explores strategies that Florida's local governments have employed to plan for sea level rise, including adaptation action areas (AAAs), restrictions on coastal construction, and floodplain management regulations. It provides a window into how local governments across the United States can respond to sea level rise adaptation, independent of the federal government.

Three fourths of Florida's population live by the coast, and a majority of Floridians live within 60 miles of it. S. Fla. Reg'l Planning Council, *Adaptation Action Areas: Policy Options for Adaptive Planning for Rising Sea Levels* (2013). Florida's counties and municipalities are on the front lines of sea level rise impacts and are the community's first line of defense. This geographic situation presents an opportunity for creativity and sustainability with a lot at stake: a risk of failure might mean a neighborhood underwater.

Every city and county in Florida is required to have a "comprehensive plan" that serves as a constitution or guiding document for how land can be used and developed within the jurisdiction. In 2011, Florida enacted the Community Planning Act, which, among other significant changes to Florida's growth management laws, created an option for local governments to address in their comprehensive planning efforts sea level rise through AAAs. AAAs are areas identified by local governments as particularly susceptible to risks and vulnerabilities from sea level rise. Community Planning Act, ch. 2011-139 (2011) (codified as amended in Fla. Stat. § 163.3164(1) (2018)).

In 2015, the Florida Legislature enacted SB 1094, entitled and addressing “Peril of Flood,” which mandated local governments to update their comprehensive plans to include strategies to reduce flood risk in coastal areas from “high-tide events, storm surge, flash floods, storm water runoff, and the related impacts of sea level rise.” Peril of Flood, ch. 2015–69 (2015).

This article will explain briefly how comprehensive plans work in Florida, and then provide examples of how cities and counties have incorporated climate change adaptation mechanisms into their planning documents, regulations, and capital projects.

## Comprehensive Planning in Florida

The Florida Community Planning Act requires counties and municipalities to adopt a “comprehensive plan.” The plan guides land development through principles, guide- lines, standards, and strategies for the economic, social, physical, environmental, and fiscal development. Fla. Stat. § 163.3177(1) (2018). Comprehensive plans have been compared to a “constitution for all future development within the governmental boundary,” because all land-use decisions by the local government, including land-development regulations and approvals of land development, must be consistent with the comprehensive plan. *Machado v. Musgrove*, 519 So. 2d 629 (Fla. 3d DCA 1987).

While these plans contain broad principles, they do not include specific regulations to implement them. Fla. Stat. § 163.3177(1) (2018). Rather, they simply identify programs, activities, and land-development regulations to be part of the overall strategy. However, there is an accountability aspect to these plans—they must identify procedures for monitoring, evaluating, and appraising their implementation. Fla. Stat. § 163.3177(1)(d) (2018). It is up to the local government to implement their goals and principles articulated in the comprehensive plan through regulations, capital projects, decisions related to development, and other related actions. Also, all decisions related to development projects must conform to the requirements of the comprehensive plan. If not, there may be potential exposure for liability, which will be described later in this article.

Local governments must base their comprehensive plans and plan amendments on relevant and appropriate data, which may include surveys, studies, community goals, and vision documents. Fla. Stat. § 163.3177(1)(f) (2018). In the context of climate change and potential political controversies regarding just what qualifies as “relevant and appropriate data,” you might ask, what and whose data is trusted? In Florida, such data must be taken from professionally accepted sources. Local governments may evaluate the application of the methodology utilized in its data collection or whether that methodology is professionally accepted, but they cannot include discussion of whether one accepted methodology is better than another. Fla. Stat. § 163.3177(1)(f)(2) (2018). Some municipalities have partnered with nonprofit organizations and universities to provide the needed data. For example, Yankeetown on Florida’s Gulf Coast used studies from the University of Florida and the Nature Conservancy to support their comprehensive plan documents related to climate change and the preservation of natural areas. Amy Green, *With Gov. Scott and Legislature in Denial, Tiny Town Adapts on Its Own to Climate Change*, Miami Herald, July 11, 2018, available at [www.miamiherald.com/news/state/florida/article214355019.html](http://www.miamiherald.com/news/state/florida/article214355019.html).

Comprehensive plans also must include a future land-use map. Fla. Stat. § 163.3177(6)(a)(1) (2018). These maps contain a clear visual representation of flooding vulnerabilities in low lying areas, known as Coastal High Hazard Areas. Fla. Stat. § 163.3177(10)(vi) (2018). The coastal high hazard area is defined as the area below the elevation of the Category 1 storm surge line as established by the National Weather Service’s Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. Fla. Stat. § 163.3178(2)(h) (2018). The National Oceanic and Atmospheric Administration (NOAA) updates the SLOSH model based on data from almost 93,000 storm scenarios to predict the maximum flooding from hurricanes of various strengths. As a result, the model is dynamic when adjusted with new data, and may contain stunning information. For example, in Pinellas County, Florida, the home of St. Petersburg and Clearwater, the coastal high hazard area expanded nearly 21,000 acres between 2008 and 2018—an 86 percent increase, now covering about 25 percent of the land area in the county. Linda Fisher, *The Rising Tide: Adapting Our Coastal Communities to a Changing Climate*, Forward Pinellas, Feb. 28, 2018, available at <http://forwardpinellas.org/blog/rising-tide-adapting-coastal-communities-changing-climate/>. According to data from the Pinellas County Property Appraiser’s Office, roughly 25,000 more houses and 8,000 other buildings are in the newly designated area. *Id.*

In 2011, the Community Planning Act amendments created a voluntary process for local governments to include a plan for sea level rise impacts through AAA designations. Fla. Stat. § 163.3177(6)(g)(10) (2018); Fla. Stat. § 163.3164(1) (2018). In 2015, the Florida Legislature amended the Community Planning Act again via SB 1094 to address flooding in coastal areas. As a result, comprehensive plans now must include a section in their coastal management element addressing strategies and solutions to reduce flood risk resulting from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea level rise. Fla. Stat. § 163.3179(f)(1) (2018).

While politicians on a national level continue to bicker over the existence of climate change, these amendments have quietly catalyzed Florida’s local governments to respond to sea level rise. At least once every seven years, each local government must evaluate its comprehensive plan to determine if plan amendments are necessary to reflect changes in state requirements since the last update. Fla. Stat. § 163.3191 (2018). If so, the local government prepares and transmits comprehensive plan amendments to state agencies, led by the Florida Department of Economic Opportunity (the latest incarnation of the former Florida Department of Community Affairs) for approval within one year pursuant to section 163.3184, known as Evaluation and Appraisal Review (EAR) amendments. Fla. Stat. § 161.3191 (2018). EAR amendments are staggered for municipalities and counties across the state on a rolling basis. The first examples of EAR amendments responding to sea level rise are being enacted, including in Satellite Beach, Miami Beach, and Clearwater, among others. Local governments also can amend their comprehensive plans at any time through other state-reviewed procedures. Fla. Stat. § 163.3184(3) (2018).

## Local Governments Respond: Adaptation Action Areas

In reviewing how various cities and counties in Florida have responded to comprehensive plan changes related to sea level rise and climate change, there is no one-seawall-fits-all solution.

Counties and municipalities throughout Florida have designated AAAs in their comprehensive plans, with varying focus and emphasis.

In 2015, as a pilot project for the Florida Department of Economic Opportunity, the City of Fort Lauderdale, located in Broward County, pioneered one of the first AAAs in Florida. S. Fla. Reg'l Planning Council, *Adaptation Action Areas: A Planning Guidebook for Florida's Local Governments* 87 (Aug. 2015), available at [www.floridajobs.org/docs/default-source/2015-community-development/community-planning/crdp/aaaguidebook2015.pdf?sfvrsn=2](http://www.floridajobs.org/docs/default-source/2015-community-development/community-planning/crdp/aaaguidebook2015.pdf?sfvrsn=2). Many of Fort Lauderdale's AAAs are located close to gems of the city's tourism areas—the well-known shopping area on Las Olas Boulevard, and the central beach area on Florida State Road A1A that is lined with shops and restaurants, including the legendary dive bar, the Elbo Room. Fort Lauderdale used vulnerability assessments and tools created by the Southeast Florida Regional Climate Compact (SFRCC) and Broward County. *Id.* at 87. The plan uses a risk map to identify and illustrate areas within Broward County at increased risk of flooding due to, or exacerbated by, sea level rise over the next 50 years. The city designated AAAs as areas that are below tidal water elevation, areas connected through rivers or canals with coastal waters, and areas in storm surge evacuation zones. Elkin Diaz, City of Fort Lauderdale “Coastal Flooding—The Fort Lauderdale Tidal Valve Program, available at <https://fsa.memberclicks.net/assets/MemberServices/Conference/AC17/05%20-%20Diaz.pdf>.

Fort Lauderdale's updated comprehensive plan states that the city's adaptation strategy options may include, but are not limited to, “Protection,” “Accommodation,” “Managed Retreat,” “Avoidance,” and “Other” options. *See* Fort Lauderdale Comprehensive Plan, Coastal Element Ordinance No. C-14-27, Policy 3.1.4. Protection means strategies that act like a barrier against rising waters, like seawalls and beach renourishment. Accommodation includes strategies that raise infrastructure and improve stormwater management, such as raising roads and bridges, and retrofitting drainage pipes to direct the flow of water out to tide. The concept of managed retreat involves the removal of existing development, relocation of buildings and structures to other areas, and preventing further development in areas that are at high risk for flooding. Avoidance stops further building and development in places with high risk of flooding.

The City of Fort Lauderdale has identified, funded, and pursued a variety of capital projects that respond to sea level rise, especially those related to accommodation through stormwater management within its AAAs. Notably, the city has installed tidal flex valves across coastal Fort Lauderdale, a seemingly small change with a big difference. Usually, rainwater drains out from drainage pipes, but when there is coastal flooding, water backflows up to city streets through the pipes. With “tidal flex valves,” the valve shuts and locks the tidal water from pushing up, thus preventing or at least reducing flooding. Since 2015, over 147 tidal flex valves have been installed, and results have been successful in tempering tidal flooding, especially in residential neighborhoods like Riviera Isles. Diaz, *supra* at 7. In addition, the city has over 40 other capital projects designated specifically for AAAs in its Capital Improvements Plan, including tidal and stormwater improvements such as grassy swales and trenches to filter water, and seawall repair. City of Fort Lauderdale, Proposed Community Investment Plan 2019–2023, available at [www.fortlauderdale.gov/home/showdocument?id=31389](http://www.fortlauderdale.gov/home/showdocument?id=31389).

Up Florida's coast and east of Walt Disney World, the small town of Satellite Beach has also taken some creative and potentially controversial steps in implementing AAAs. Unlike Fort Lauderdale's implementation of AAAs through a menu of capital projects, Satellite Beach has adopted a regulatory approach that tells developers where they can and cannot build through managed retreat. Like Fort Lauderdale, Satellite Beach's first step in creating AAAs was to identify a source of science and data to analyze the impacts of sea level rise within their municipal boundaries. The city used information obtained through a partnership with the Indian River Lagoon National Estuary Program. City of Satellite Beach, Resolution 880 (2009). The city designated the AAA as "the area including the Coastal High Hazard Area and other areas of the city as may be identified by the City Council in the future as being subject to coastal erosion, flooding, sea level rise, or damage to environmental systems." City of Satellite Beach Comprehensive Plan, Coastal Mgmt./Conservation at Policy 1.12.A.2.D. Since the first AAA was adopted in 2014, the City of Satellite Beach created more AAAs, and expanded boundaries further inland based on data forecast 100 years in the future. In July 2018, the city updated its AAAs again to include a new AAA known as the "Erosion Adaptation Action Area" (EAAA), targeting the area right along the coast.

Specifically, Ordinance No. 1159 requires new development and redevelopment within the city's EAAA to be set back 15 feet landward of the coastal construction control line. City of Satellite Beach, Ordinance No. 1159, July 18, 2018. A "coastal construction control line" (CCCL) is an imaginary line created by the Florida Department of Environmental Protection throughout many places on the coast that are in close proximity to the beach, usually up to 100 feet from the shore. Pursuant to section 161.053, Florida Statutes, the CCCL defines the portion of the beach-dune system subject to severe fluctuations based on a 100-year storm surge, storm waves, or other predictable weather conditions. Fla. Admin. Code r. 62B-33.002(11) (2018).

In November 2018, the City of Satellite Beach adopted Ordinance No. 1160 to implement the comprehensive plan amendment through formal regulations. City of Satellite Beach, Ordinance No. 1160, Nov. 7, 2018. The ordinance, described as "managed retreat," stops further development within a certain distance of the coastline. Discussions related to this ordinance have proven controversial. The proposed regulations appeared in front of the City Planning Advisory Board multiple times. Several changes were made to address situations in which property owners are grandfathered in under certain circumstances before the ordinance finally was adopted. City of Satellite Beach Planning Advisory Board minutes, Aug. 20, 2018. The ordinance establishes a coastal setback line to require construction to be set back at least 15 feet landward of the 1981 CCCL for all new or reconstructed principal structures. Also, all native dune vegetation seaward of this line must be *protected*. City of Satellite Beach Ordinance No. 1160, Sec. 30-737, 30-738 (2018). Developers can receive a variance from these regulations only if the new structure is built on approved stilts or piling at least 10 feet above the base flood elevation. City of Satellite Beach Ordinance No. 1160, Sec. 30-739 (2018). If properties already are built beyond the newly established coastal setback line, they can be modified, repaired, or rebuilt only if their need to be modified, repaired, or rebuilt did not result from erosion, sea level rise, hurricanes, or other disasters. City of Satellite Beach Ordinance No. 1160, Sec. 30-738(d) (2018).

Whereas Fort Lauderdale and Satellite Beach focus on AAAs as they relate to man-made infrastructure, the small town of Yankeetown on Florida's northern Gulf Coast emphasizes

protection of the natural environment through its AAA. In 2016, the city amended its comprehensive plan to establish an 18-square mile area, which included 86 percent of the town, to be a “Natural Resources Adaptation Action Area” (NR-AAA). The city’s boundaries extend three miles into the Gulf of Mexico, and include 13 square miles of estuary and marine habitat. The NR-AAA in Yankeetown’s comprehensive plan requires the town to move forward with oyster reef restoration, offshore island habitat protection, and restoration of hydrologic connectivity. Town of Yankeetown Comprehensive Plan, Policy 5.2.3.2. The plan discourages new building and structures within the NR-AAA unless they are designed to allow for coastal ecosystem migration, for example with floating, elevated, or moveable structures. *Id.* at Policy 5.3.1. Note that while this language is in the town’s comprehensive plan, it has not been implemented by regulations yet.

In contrast to the specifically delineated boundaries or definitions of AAAs in Fort Lauderdale, Satellite Beach, and Yankeetown, the City of Miami Beach, per Ordinance No. 2016-4027, designated the entire city as an AAA. City of Miami Beach, Ordinance No. 2016-4027 (2016). The city found all areas meet consideration for AAA designation, including:

- a. areas which experience tidal flooding, storm surge or both,
- b. areas which have a hydrological connection to coastal water,
- c. locations within areas designated as evacuation zones for storm surge, and
- d. other areas impacted by stormwater/flood control issues.

City of Miami Beach Ordinance No. 2016-4027 Comprehensive Plan Policy 13.3 (2016). Like the City of Fort Lauderdale, Miami Beach categorized its adaptation strategies as protection, accommodation, management strategies, avoidance, and other options. City of Miami Beach Ordinance No. 2016-4027, Policy 13.6.

## Addressing Flood Risks

Municipalities also have responded to the 2015 Peril of Flood amendments. Miami Beach amended its comprehensive plan in 2016, adding requirements to the future land use element to encourage landscaping techniques to enhance stormwater management and modify the level of service for storm-sewer capacity. City of Miami Beach Ordinance No. 2016-4027 (2016). Miami Beach also requires new construction to be built at a certain elevation above sea level, known as a freeboard requirement. In addition, new construction must contain stormwater storage on-site and infiltration, meaning that rainwater needs to be filtered through drains or swales before running off into the street. The use of highly water-absorbent native plants is strongly encouraged. *Id.*

The City of Miami Beach passed Ordinance No. 2016-4009 to formalize its comprehensive plan amendments through regulations. The ordinance requires minimum elevations, stormwater management plans, and site drainage calculations for new developments and substantial improvements to existing buildings. City of Miami Beach Ordinance No. 2016-4009 (2016). If

you want to build a new building or substantially change an existing one in Miami Beach, you must build at least one foot higher than the highest point of the adjacent road for residential, and two feet higher for commercial buildings. In addition, you now have extra leeway to build up to five feet higher than you would have been able to before, thereby providing a buffer as flood maps change and sea levels rise in the future. This is considered helpful to guard against flooding because structures are higher off the ground.

Also, the local ordinance mandates that a stormwater management plan with site-drainage calculations be provided by a Florida licensed engineer with the application for the development permit: Site drainage for new construction cannot exceed predevelopment conditions of runoff, volume, and pollutant loads, and must prevent the flooding of adjacent properties. City of Miami Beach Ordinance No. 2016-4009, Sec. 54-45 (2016). The ordinance also created definitions for “green infrastructure” and “low-impact development” but did not include regulations further referencing these terms. *See* Sec. 54-35.

The City of Clearwater, on Florida’s Gulf Coast, addressed flooding through its comprehensive plan amendments on a larger scale via policies related to transportation, utilities, and infrastructure. The City of Clearwater’s 2016 Comprehensive Plan update included a goal to elevate roads and bridges to maintain dry access, and to stabilize or armor vulnerable shoulders or embankments. City of Clearwater Comprehensive Plan Goal E.2.7.3 (2016). The Clearwater comprehensive plan also addressed the communication and human aspect of response to flooding. By 2020, the city is to expand upon existing emergency-management communication efforts and coordinate resilience and adaptation initiatives with the owners of private utilities, hospitals and clinics, nursing homes and assisted living facilities, and other privately-operated facilities in locations identified as vulnerable to impact from sea level rise. *Id.* at Goal E.2.7.4. Clearwater’s focus on coordinating the human element in climate change planning is interesting and relevant. In 2017, in the wake of Hurricane Irma, a power outage led to 12 deaths inside a nursing home in Hollywood, Florida. Jim Saunders, *Judge Backs Revoking Nursing Home License After Irma Deaths*, WUSF (Dec. 4, 2018), available at <http://wusfnews.wusf.usf.edu/post/judge-backs-revoking-nursing-home-license-after-irma-deaths>. Although Clearwater has not yet moved forward with implementing regulations, the city could look to Pinellas County Emergency Management’s “Assisted Living Facility Disaster Plan Guidance” for ideas to implement regulations and plans for evacuation, sheltering, and communications between emergency management and assisted living facilities. Pinellas County Emergency Management, *Assisted Living Facility Disaster Plan Guidance* (2018), [www.pinellascounty.org/emergency/PDF/Assisted\\_Living\\_Facility\\_Disaster\\_Plan\\_Guidance.pdf](http://www.pinellascounty.org/emergency/PDF/Assisted_Living_Facility_Disaster_Plan_Guidance.pdf). Finally, several local governments have addressed sea level rise adaptation through a broad “climate change element” in their comprehensive plans. For example, Broward County was the first to include a climate change element. The Broward County Ordinance No. 2015-54, in addition to adaptation methods addressed by other local governments, includes mitigation for greenhouse gas emissions, materials management, mitigation for built environments, and natural systems.

## Considerations, Challenges, and Opportunities

Ultimately, it is up to Florida's local governments to design and implement strategies to adapt to sea level rise, and the law grants them great latitude in making these decisions. Funding is essential, of course, to implement municipalities' plans. Miami Beach and Fort Lauderdale enumerate several potential funding sources for the implementation of AAAs: federal and state grants and technical expertise assistance, Local Stormwater Utility Fees and Community Investment Program (Capital Improvement plan) prioritization, public/private partnerships, and other sources. Fort Lauderdale Comprehensive Plan Policy 3.1.8; City of Miami Beach Ordinance No. 2016-4027, Comprehensive Plan Policy 13.7. The money available in federal and state funds will be finite, and someone is going to have to decide if a city in Florida or somewhere else receives it. This is relevant because the availability of funding may have a bearing on whether local governments focus their plans on capital projects versus regulations. Costs for capital projects are borne by the community at large, whereas regulations may lead to private developers and businesses absorbing the cost of sea level rise adaptation. Other local governments have addressed costs with bonds. On November 7, 2017, the voters of Miami passed a \$400 million general obligation bond known as Miami Forever, with \$192 million slated for flood prevention and sea level rise mitigation. City of Miami, Miami Forever General Obligation Bond, FAQ, Oct. 21, 2018, *available at* [miamigov.com/miamiforever](http://miamigov.com/miamiforever). Will voters in other areas of Florida or the United States make similar decisions?

## But Who Can Challenge?

Is there any potential for legal liability arising out of comprehensive plans addressing sea level rise? An affected party, defined in Fla. Stat § 163.3184(1)(a), and a state land planning agency can challenge a comprehensive plan amendment to the Florida Division of Administrative Hearings. Fla. Stat. § 163.3184(5)(a-b). However, it is a "fairly debated" standard of review, and deference is afforded to the local government. Fla. Stat. § 163.3184(5)(c)(1-2) (2018). Thus, as local governments draft and submit comprehensive plan changes for review, their liability is limited.

However, as local governments proceed to implement their comprehensive plans through regulations and development orders, they may incur potential liability. Florida law mandates consistency between a local government's comprehensive plan and its development orders. Fla. Stat. § 163.3194(1)(a). To ensure compliance with this obligation, the Florida Legislature permits "[a]ny aggrieved or adversely affected party [to] maintain a de novo action . . . to challenge any decision of such local government granting . . . a development order." § 163.3215(3). Aggrieved parties, such as neighbors and nonprofit organizations with standing, could potentially challenge developments if it can be proven that their development's use, density, or intensity is inconsistent with the comprehensive plan. Would a high-rise development built in the coastal high hazard area be susceptible to a challenge? Potentially, if a comprehensive plan explicitly required that development could not be built in that area.

In Florida, vested rights exist for a property owner or developer who, in good faith, has relied on some act or omission of government, and then made a substantial change in position or incurred

such extensive obligation and expense that interference with the acquired right would be highly inequitable. *Hollywood Beach Hotel Co. v. City of Hollywood*, 329 So.2d 10 (Fla. 1976). Subsequently enacted regulations do not apply to landowners who have vested rights; however, those without vested rights are subject to those regulations. *Monroe County v. Ambrose*, 866 So.2d 707 (Fla. 3d. DCA 2003). This is relevant because local governments will need to be aware of which developers have vested rights. Likewise, developers will need to be apprised of regulatory changes that may impact their investment. Open communication with stakeholders and discussions related to grandfathering regulations in ordinances are important for local governments to reduce the potential of legal challenges later.

Answers to these questions raise many more that can be settled only with time. Meanwhile, as Florida's local governments face the impacts of sea level rise head-on, they are a living laboratory that others nationwide can study and evaluate to discern which ideas, partnerships, regulations, and solutions may be adopted for their piece of America's coastline.