



**City of Fort Lauderdale
Frequently Asked Questions
Proposed Tidal Barrier Ordinance
February 2023**

The City of Fort Lauderdale is amending the Unified Land Development Regulations of the City of Fort Lauderdale Section 47-19.3 Boat Slips, Docks, Boat Davits, Hoists, and Similar Mooring Structures to come into compliance with a Broward County mandate to implement a regionally-consistent flood protection standard for seawalls, berms, and other tidal barriers. This amendment is intended to improve coastal resilience and mitigate the effects of tidal flooding and sea level rise through 2070.

1. What are the requirements of the existing City seawall ordinance?

The existing ordinance sets a minimum elevation for all new seawalls at 3.9 feet NAVD88.

- Sets a minimum seawall elevation at 3.9 feet NAVD88
- Recommends design of seawall for future height adjustment of up to 5.0 feet NAVD88
- Sets an allowable maximum height of the seawall and dock based on a property's base flood elevation
- Requires seawall reconstruction to the minimum elevation if the substantial repair threshold (50%) is triggered
- Requires maintaining seawalls in good repair and sets a timeline of 365 days for completion of repairs if cited
- Requires owners to prevent tidal waters entering their property from impacting others and sets a timeline of 365 days for remedy if cited
- Allows fixed docks to extend 10 inches above the adjacent seawall
- Addresses floating docks



2. What are the proposed changes in the seawall ordinance?

The Commission is considering the following changes to the seawall ordinance:

- Modifies the definitions of mooring device and mooring structure
- Removes all language related to seawall elevation requirements from this section
- Allows docks to have a maximum elevation of up to 12 inches above the associated tidal barrier or shoreline structure
- Establishes terms, phrases, and words for definition and interpretation purposes of this section
- Extends the elevation requirement from only seawalls to all tidal flood-barriers
- Requires a minimum elevation of five (5) feet National American Vertical Datum (NAVD88) for new or substantially repaired tidal barrier
- Allows for structures permitted before Jan 1, 2035, to be built at four (4) feet NAVD88 but they must be designed to be elevated to five (5) feet NAVD88 by Jan 1, 2050
- Establishes a maximum elevation for tidal barriers in relation to the base flood elevation (BFE) of the property or 6 feet NAVD whichever is lower
- Requires tidal structures built where no previous seawall existed to provide habitat enhancement at the waterward face of the bulkhead or seawall
- Encourages incorporation of living shoreline features
- Provides for the City Engineer's ability to issue a waiver from the top elevation requirement for waterfront properties containing a principal structure with a habitable finished floor elevation of less than 4.0 feet NAVD88
- Required disclosure in contracts for the sale of waterfront real estate after the date of ordinance adoption "THIS REAL ESTATE IS LOCATED IN A TIDALLY INFLUENCED AREA. THE OWNER MAY BE REQUIRED BY COUNTY OR MUNICIPAL ORDINANCE TO MEET MINIMUM TIDAL FLOOD BARRIER ELEVATION STANDARDS DURING CONSTRUCTION OR SUBSTANTIAL REPAIR OR SUBSTANTIAL REHABILITATION OF SEAWALLS, BANKS, BERMS, AND SIMILAR INFRASTRUCTURE OR WHEN REQUIRED TO ABATE NUISANCE FLOODING."
- Required all property located in the annexed areas to comply with the tidal flood protection measures outlined in ULDR 47-19.3

3. Do I have to raise my seawall to the new minimum height of 5.0 feet NAVD88?

The proposed changes to the ordinance primarily impact new construction or rehabilitation of an existing seawall. The changes are in relation to the required height; a seawall will have to be raised if:

- a. The owner is installing a brand-new seawall;
- b. The owner comes in for a seawall repair permit and it is determined that a substantial repair threshold is triggered (at least 50% of the value or the structure must be repaired or replaced);
- c. The owner is cited for having a seawall in disrepair and it is determined that the damage to the seawall triggers a substantial repair threshold;
- d. The owner is cited for allowing tidal waters entering their property to impact adjacent properties or a public right-of-way and the owner elects to install a new seawall or to raise their seawall to come into compliance.

Please note the ordinance changes allow for structures permitted before Jan 1, 2035, to be built at four (4) feet NAVD88 but they must be designed to be elevated to five (5) feet NAVD88 by Jan 1, 2050.

4. How did the City determine the minimum seawall elevation of 5.0 feet NAVD88?

The United States Army Corps of Engineers (USACE) and Broward County conducted a flood risk management study for tidally influenced coastal areas and concluded a minimum seawall height of 5 feet NAVD88 was needed to ensure proper protection from projected high-frequency tidal flooding by the year 2070. The average seawall lifespan is 50 years, thus providing adequate tidal protection for the duration of the life of the seawall.

5. What is the projected sea level rise and what is its impact on king tides in South Florida?

The sea level rise projection (Figure 1) was updated in 2019 by a working group of scientists and sea level rise experts convened by the Southeast Florida Regional Climate Change Compact and accepted by the City Commission for purposes of sea level rise adaptation planning activities in May 2020. These projections outline a likely sea level rise of 21-40 inches by the year 2070. As noted in Figure 2, tides exceeding the threshold for flooding in low-lying areas are beginning to impact City of Fort Lauderdale neighborhoods every month of the year. The increased sea level will in turn increase the maximum elevation of high tides, putting at risk areas that were not previously considered to be vulnerable to tidal flooding. The highest tide in recent years reached an elevation of 2.65 feet NAVD88. These ordinance changes are one way the City is protecting citizens and property from flooding risk.

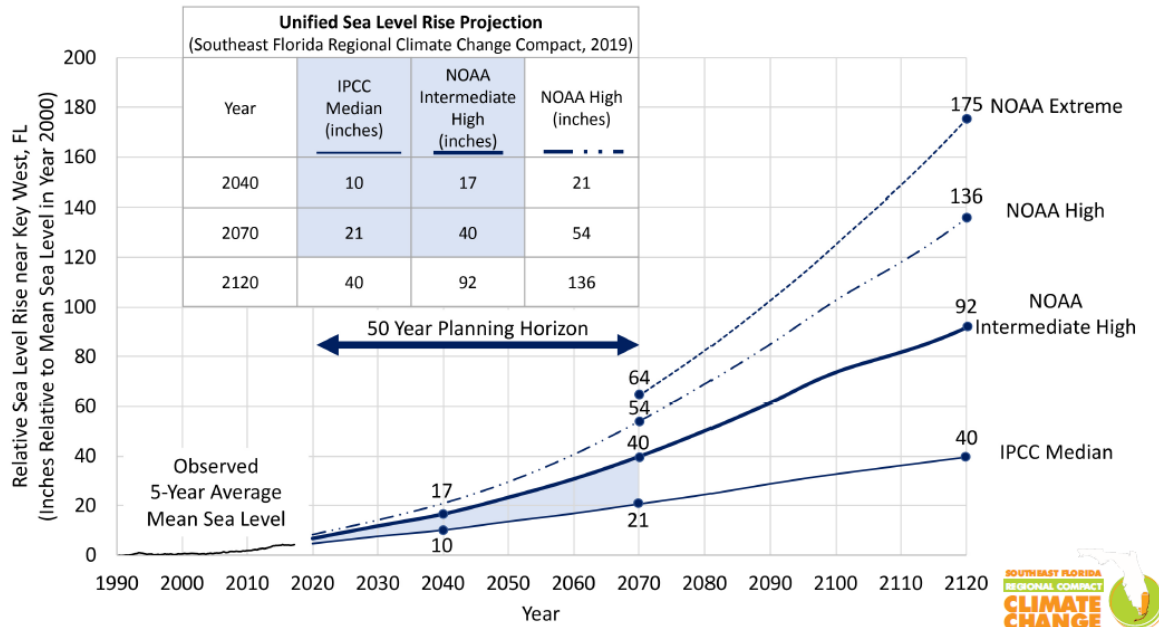


FIGURE 1: Unified Sea Level Rise Projection

These projections start from zero in year 2000 and are referenced to mean sea level at the Key West tide gauge. Based on the 5-year average of mean sea level, approximately 3.9 inches of sea level rise has occurred from 2000 to 2017 (see historic sea level section of guidance document). The projection includes global curves adapted for regional application: the median of the IPCC AR5 RCP 8.5 scenario (Growing Emissions Scenario) as the lowest boundary (solid thin curve), the NOAA Intermediate High curve as the upper boundary for short-term use until 2070 (solid thick line), the NOAA High curve as the upper boundary for medium and long-term use (dash dot curve). The shaded zone between the IPCC AR5 RCP 8.5 median curve and the NOAA Intermediate High is recommended to be generally applied to most projects within a short-term planning horizon. Beyond 2070, the adaptability, interdependencies, and costs of the infrastructure should be weighed to select a projection value between the IPCC Median and the NOAA High curves. The NOAA Extreme curve (dash curve) brackets the published upper range of possible sea level rise under an accelerated ice melt scenario. Emissions reductions could reduce the rate of sea level rise significantly.

Unified Sea Level Rise Projection: 2019 Update

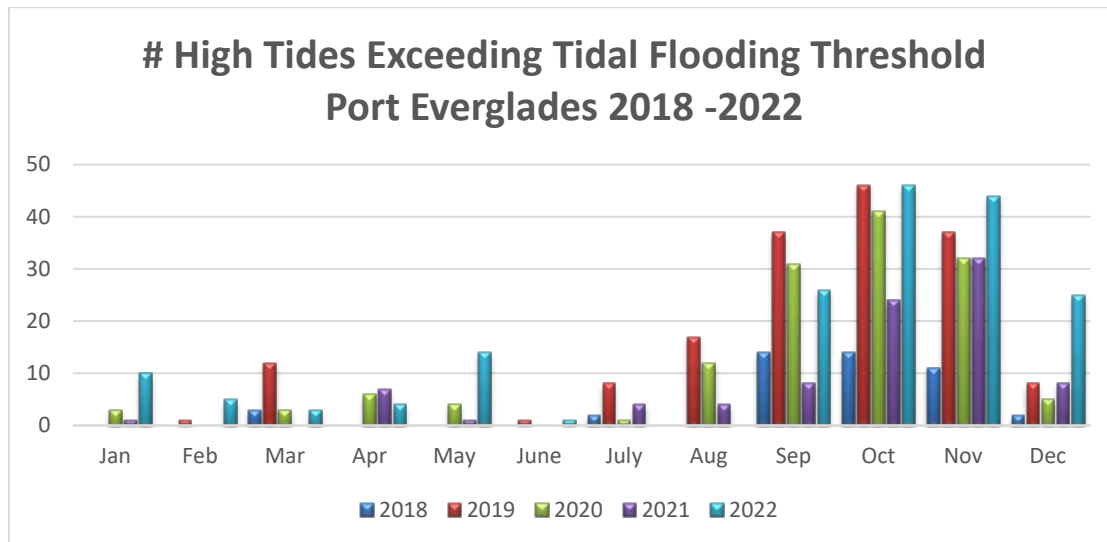


Figure 1. The number of high tides exceeding the tidal flooding threshold by month. These incidences are becoming more numerous and occurring in longer seasons. The number of incidences by year are as follows: 2018-46 flooding tides, 2017-170, 2020-138, 2021-89, and 2022-178.

6. How do seawalls and stormwater flooding events interact?

The elevated seawalls could prevent overland flow of stormwater during rain events. The City's stormwater management system (drainage infrastructure) is designed to prevent overland flow. The City of Fort Lauderdale is in the process of installing tidal valves within terminal storm drains that connect to waterways. These tidal valves prevent the backflow of tidal waters into the storm drains.

Please note that these seawall ordinance changes are just one component of an overarching strategy to improve the resiliency of our community to stormwater and tidal flooding. Other efforts being implemented through the City's Stormwater Master Plan and Seawall Master Plan will further reduce flooding and complement the seawall ordinance. While elevation of the roadways is another potential tool to address flooding, the elevation of property properties and their finished floor elevations need to be considered which limits the locations where street elevations could be applied. The Commission is considering policy direction on road elevation.

7. What are the cost benefits of raising our seawalls?

The Rockefeller Foundation partnered with the reinsurance industry to conduct a study to determine the benefits of investing in resilience. The report entitled "Leveraging Catastrophe Bonds as a Mechanism for Resilient Infrastructure Project Finance" was released in December 2015. One of the case studies reviewed was the impact of raising seawalls on Miami Beach. The study concluded that raising the seawall cap minimum elevation "can provide significant benefits, particularly in reducing loss from frequent, low-intensity surge events."

Recent academic studies also have shown an elevated risk of tidal flooding and/or flooding on nearby roads negatively impacts property values in South Florida. Raising seawalls reduces these risks and improves the resiliency of individual neighborhoods toward flooding, thus protecting property value.

8. What do "habitat enhancement" and "living shoreline features" mean?

Habitat enhancement and living shoreline features improve ecological function within waterways by creating suitable habitats for fish and other marine life to colonize. This has a twofold impact. The first is related to infrastructure as these features help reduce wave action. Reduced wave action protects shorelines and infrastructure from degradation and lowers the cost of maintenance. The second is related to ecological improvements by creating new habitats for fish and plant life to attach themselves to the preexisting structure. This results in the increased health of local marine ecosystems and fisheries, which in turn improves water quality throughout the waterway. There are multiple types of habitat enhancements and living shoreline features that can be deployed. The most common are rip rap, oyster bags, special texturing of the seawall, and the planting of native species of plants.

9. What if my finished floor is below 5.0 feet NAVD and I have to raise my seawall?

Waterfront properties with a habitable finished floor elevation of less than 5.0 feet NAVD88 have site conditions that may not be able to accommodate raising their seawall or equivalent tidal barrier to the minimum required elevations. For this reason, the ordinance contains a provision that will allow some flexibility for a seawall to be constructed at less than the stated minimum elevation if a waiver is granted by the City Engineer.

10. Will this ordinance affect ongoing repairs on City-owned seawalls?

No. The City's current seawall construction projects are already being built to 5 feet NAVD88. Examples can be seen on Cordova Road, Isle of Palm and Hendricks Isle.

11. What neighborhoods may be impacted by this ordinance change?

As the Venice of America, Fort Lauderdale has waterside communities throughout the City, not just on the ocean and the Intracoastal Waterway. Nearly every canal, river, and water body that runs through the City (Intracoastal Waterway, New River, Tarpon River, Middle River) are connected directly to the oceans and therefore impacted by sea level rise and potentially by seasonal extreme high tides. Neighborhoods as far west as Lauderdale Isles, in the center of the City like Sail Boat Bend, and to the north like Coral Ridge Isles have seawalls. The number of recognized Neighborhood Associations that are not on a water body is dwarfed by the number of Associations that border one.

12. Will higher tidal barriers help with impacts from tropical storms and storm surges?

A new seawall built to the proposed standard will provide some protection from storm surges. However, the ordinance was developed to address tidal flooding events that occur seasonally, especially in the fall. These are high-frequency chronic events. By trying to design an ordinance to address catastrophic low-frequency events like hurricanes, we would be armoring the City with very high seawalls creating concrete passageways out of our current scenic waterways.

13. What is the cost of seawall replacement or repair?

Seawall contractors were contacted to better understand the range of charges for installing a seawall. They quoted \$650-\$2,000 per linear foot depending on the depth of the waterway and the location of the seawall. Engineering and permitting services typically cost \$2,000-\$5,000 per job. Repair of broken/spalled concrete areas costs \$60 per cubic foot of epoxy mortar. To add a 12" cap to an existing seawall is estimated at \$75 - \$125 per linear foot.

Most homeowners have an expectation that they will need to maintain and, at some point, replace their roof or fencing. Maintaining and, when appropriate, replacing their seawall should be a consideration for all waterfront property owners as well. The City is currently investing substantial dollars to reduce tidal and stormwater flooding. Homeowners, likewise, need to invest in their own property improvements to address these same concerns.

14. How do we find out the height of our sea walls?

If the sea wall was recently built, you may be able to request property and survey records in person at the Development Services Department at 700 NW 19th Avenue, 33311. The elevation of the seawall will be on the plan. If it is an older existing seawall, you would need a property survey to determine the height of your seawall. If you have a survey of your property, the height of the sea wall is likely to appear on the survey. Make sure to look at the units on the survey (NAVD v NGVD). The proposed minimum seawall elevation requirement is 5 ft NAVD88. If your survey does not have the elevation of the seawall but does include your finished floor elevation, you can estimate the height of your seawall by running a level string line from your finished floor to your seawall and measuring the difference in vertical height. The current height of the seawall, its condition, and its structural design will determine how this proposed ordinance will affect any given property.

15. Does the City assume any responsibility for seawall maintenance/repairs when public infrastructure (such as an outfall pipe) passes through a privately owned wall?

City infrastructure penetrating a private seawall serves a public benefit usually tied directly to the neighborhood in which the property is located. The City is responsible for maintaining its infrastructure. On a case-by-case basis, property owners should work with the City if there are concerns with the repair or maintenance of City assets that may have an impact on the private seawall.

16. Will putting in a new seawall or tidal barrier impact my property assessment?

According to the Broward County Property Appraiser's Director of Residential Property Department, the seawalls are already included in the land value and therefore modification would not affect the assessment. This contrasts with a new roof in which modifications may affect the market value. However, based on the Property Appraiser's point system, a new roof would have a minimal impact on the assessment.

17. What happens if Fort Lauderdale does not comply with the Broward County mandate to implement a regionally-consistent flood protection standard for seawalls, berms, and other tidal barriers?

Broward County's policy is not clear on what actions they will take if Fort Lauderdale does not comply with its mandate for tidal barriers. However, one possible result is that Broward County may require land use development permits issued by the City may be required to receive an additional review by the County for compliance with their Land Use Development Plan.