













FORT LAUDERDALE



Goal Achieved

 City of Fort Lauderdale transmitted Adaptation Action Area policies to the State in June 2014

Approach

- Create a policy framework for designating Adaptation Action Areas
- Community engagement
- Partnerships

Spreading Ideas

• The flexible model presented here may serve as an example for other communities wishing to utilize similar tools.

Case study Overview

"We are Ready" is an essential component of Fort Lauderdale's vision. This means being ready for extreme tides, flooding, and storm surge. The City's climate resiliency, sea level rise, and natural resource protection goals include:

- **Investing** in infrastructure; drainage systems, bridges, roads;
- **Protecting** assets from inclement weather and high tides; and
- Managing increased water supply demands.

Adaptation Action Areas are a designation in the Coastal Management Element of a local comprehensive government which plan identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning. These Adaptation Action Areas, or Adaptation Areas, will help the City reach these goals, keeping Fort Lauderdale safe and prepared.

This case study is intended to be a "how-to" illustration to guide local governments interested in integrating Adaptation Action Areas into their own policy and operational framework.

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Current Project Objectives

Through funding from the National Oceanographic and Atmospheric Administration (NOAA) and the Florida Department of Environmental Protection (DEP), the Florida Department of Economic Opportunity (DEO) engaged the South Florida Regional Planning Council (SFRPC) to assist in the research for Adaptation Action Area implementation strategies. The SFRPC worked with the City of Fort Lauderdale and Broward County on a pilot study with these objectives:

- Develop a state strategy for Adaptation Action Areas;
- **Test** adaptation policy options for inclusion into a municipal Comprehensive Plan; and
- **Create** an Adaptation Action Area "how to" guidebook to assist other coastal communities in Florida.

Adaptation Action Areas Are a Critical Tool in Improving Community Resilience

Adaptation Action Areas are an optional comprehensive plan designation for areas that are vulnerable to coastal flooding and related impacts of sea level rise. They encourage alignment of resources and prioritization of funding for infrastructure needs and adaptation planning. Local governments that adopt Adaptation Action Areas may consider a range of policies to improve resilience to coastal flooding. Criteria for initial selection of Adaptation Action Areas may consist of ¹:

- Areas below, at, or near mean higher high water;
- Areas which have a hydrological connection to coastal waters; and
- Areas designated as evacuation zones for storm surge.

If You Are Considering Bringing Adaptation Action Areas to Your City, Where Do You Begin?

Luckily, there is a very successful framework that has already been designed, documented and proven successful. Broward County is the first local government to amend its comprehensive plan to provide for Adaptation Action Areas designation. On June 17, 2014, the Fort Lauderdale City Commission voted unanimously to authorize the transmittal of the Adaptation Action Areas Comprehensive Plan Amendment to the Florida Department of Economic Opportunity. The City of Fort Lauderdale's actions thus far have helped to set the stage and formulated the ingredients for planting a seed of policy that sprouts into action. This case study provides examples of step-by-step strategies, crucial tips, and lessons learned derived from groundbreaking work done in Fort Lauderdale. Fort Lauderdale has aligned Adaptation Action Areas into the City's vision, strategy, budget, and planning in a way that fortifies all components.

How Can You Package Adaptation Action Areas to Be Effective and Meaningful?

The key themes that led Fort Lauderdale to accomplish the adoption of Adaptation Action Area into so many policies were:

- **Connect** Partner with your local neighbors, but also with efforts at the county, regional, state, and national level; levels
- Communicate Outreach to gauge community concerns and ideas;
- **Capacity** Train staff on new language and designs. Give them ability to look at things differently; and
- Integrate Weave Adaptation Action Areas into the fabric of local government by taking the policy language and inserting it into existing plans.

Fort Lauderdale has established a model foundation for developing early policy that provides the basis for agency



Mayor Jack Seiler at Open House on January 21, 2014

Background:

Anchored in the central coastal area of Broward County, Fort Lauderdale is a bridge between Miami and West Palm Beach. The tri-county area makes up the Southeast Florida Metropolitan Statistical Area (MSA), the sixth largest in the United States². With over 150,000 residents, Fort Lauderdale is also a highlight for over 10 million tourists that visit Broward County annually and spend close to \$10 billion^{3,4}.

The Fort Lauderdale Experience

When you live in a City like Fort Lauderdale, it is hard not to feel connected to where you live, to feel proud of where you live, and to feel like you never want to leave! With seven miles of beach and over 300 miles of canal/coastline, Fort Lauderdale is truly the Venice of America.

When it comes to tourism, transportation, and trade, Fort Lauderdale is a key player at the international level. The City is served by Broward County's Fort Lauderdale-Hollywood International Airport (FLL), currently undergoing a considerable expansion that includes 6 runway structures that ramp over U.S. Route 1 ^{1,2}. Nearby, Broward County's Port Everglades is #2 worldwide for cruise

activity and spending <u>and</u> it is #1 nationally in exporting foreign-trade zone for warehousing and distribution activity^{7,8}.

Fort Lauderdale is a hub for recreation, art, music, and entertainment. From the Broward Center for the Performing Arts to the Greater Fort Lauderdale Convention Center, from the iconic beaches to the pedestrian Las Olas Boulevard, from the International Swimming Hall of Fame to Lockhart Stadium, from snorkeling over coral reefs to Hugh Taylor Birch State Park, the City has it all.



View from Fort Lauderdale's Charthouse Restaurant Photo Credit: Irit Prize

With Fort Lauderdale's booming business, rich culture, and treasured ecosystems, there is a lot worth protecting. The unique location that gives Fort Lauderdale such abundant opportunities also puts the City at a distinctive risk.

Sea Level Rise and Coastal Challenges in Fort Lauderdale

In the fall of 2012, Hurricane Sandy off-shore in the Atlantic Ocean weakened natural and built coastal armory (i.e., seawalls) in Fort Lauderdale, and one month later high seasonal tides coupled with a strong onshore wind resulted in severe erosion of the remaining beach, resulting in the collapse of a 2000 foot section of roadway A1A, seawall, sidewalk and traffic signal mast arm. Fort Lauderdale shut down two lanes of traffic on the road as the Florida Department of Transportation (FDOT) began emergency repairs. The process for repairing A1A and restoring the beach was a collaboration among FDOT, the City, and Broward County. Fort Lauderdale hosted a community meeting with over 200 residents that came to voice their opinions and concerns and opinions on what to do next. Public opinion was considered as the new design was engineered to be resilient. The four lanes were reduced to three, the setbacks were increased, and dunes were elevated. A new fortified seawall made of metal sheet pilings was driven 42 feet into the ground⁹. The final design for the road was actually adopted by FDOT as a resilient prototype to use for all future repairs and updates to A1A. While the City has been



well aware of the increasing threat of erosion as the sea level rises, this was a wake-up call for many residents who needed to consider balancing shoreline protection against traffic and vista concerns.

A1A November 2012 Photo Credit: Keren Bolter

Sea Level Rise Impacts

The main impacts of sea level rise are higher storm surge, tidal flooding, and compromised stormwater management. Sea level rise heightens the foundation which storm surge and extreme tides build upon (fig. 1). Fort Lauderdale has a significant amount of land that is at low elevations and already vulnerable to tidal flooding. In addition, higher sea level reduces the capacity in the existing drainage system to move stormwater off the land and storm surge (figs. 3 & 4). Saltwater intrusion is a threat due to contamination of drinking water and groundwater lifting.



Figure 1: Sea-level Rise and Storm Surges on Barrier Islands: Conceptual diagram illustrating the effects of sea-level rise and storm surges on barrier islands. When sea-level rise combines with strong storms, barrier islands experience high storm surges which increases the effects of flooding and erosion. Diagram from http://ian.umces.edu/link/tos_barrier_learn

Saltwater Intrusion and Groundwater Elevation

Coastal flood and surge risk is not the only consideration. Another vulnerability relates to water below ground, the coastal Biscayne Aquifer, which is currently region's primary water supply. South Florida's porous limestone geology allows seawater to intrude into the bedrock. Sea level rise exacerbates the landward advancement of a wedge of seawater that underlies the Biscayne Aquifer. Our groundwater is pushed higher towards the land surface as it floats above the

deeper saltwater (fig. 2). Sea level rise allows the existing wedge of seawater to further protrude inland impacting the aquifer. The lens of freshwater is pushed inland, threatening coastal well fields with contamination from saltwater intrusion. In addition, groundwater elevations increase as the lens floats above the saltwater. This process of "lifting the water table" causes a threat of inland flooding as the capacity of the ground to absorb and store stormwater is reduced.



Figure 2: Saltwater Intrusion on Barrier Islands: Conceptual diagram illustrating saltwater intrusion and ground water lifting



Figure 3 (left): Low lying areas in Fort Lauderdale (data source Florida Division of Emergency Management LiDAR 2007) Figure 4 (right): Storm Surge Zones in Fort Lauderdale (data source: National Hurricane Center SLOSH Model –description at http://www.sfrpc.com/SRESP%20Web/Vol7-11_Broward.pdf)

How Did Adaptation Action Areas Come about in Florida?

In January 2011, the Southeast Florida Regional Climate Change Compact (Compact) Counties (Broward, Monroe, Palm Beach and Miami-Dade)



collectively pursued an amendment to state law that integrated Adaptation Action Areas. On May 8, 2011, the Community Planning Act (HB 720) was created, providing Adaptation Action Area language at the state level.

Adaptation Action Areas moved up to the federal level on May 13, 2011 when members of Congress signed a letter of support for Adaptation Action Areas which requested funds to study, define and designate Adaptation Action Areas¹.

In 2010, the Board of County Commissioners for Broward, Miami-Dade, Monroe and Palm Beach Counties signed a Southeast Florida Regional Climate Change Compact. The Compact recognized that the South Florida region which comprises 30 percent of state's population, has and will continue to be prone to coastal hazards, **"the impacts of climate change, especially sea level rise"**, and therefore **"must give significant consideration to adaptation strategies designed to protect public infrastructure, property, water resources, natural areas and native species, and basic quality of life"** (Southeast Florida Regional Climate Change Compact, 2010).

The Compact's initiative to promote Adaptation Action Areas is tied <u>directly</u> to a strong request from Florida communities that the State provide guidance on how to implement Adaptation Action Areas and to the current effort to create such resources for the State.



Section 163.3164(1), Florida Statutes **Adaptation Action Area** or "adaptation area" means a designation in the **coastal management element** of a local government's **comprehensive plan** which identifies one or more areas that experience **coastal flooding** due to **extreme high tides** and **storm surge**, and that are vulnerable to the related impacts of **rising sea levels** for the purpose of **prioritizing funding** for **infrastructure needs** and **adaptation planning**.

Section 163.3177(6)(g)(10), At the option of the local government, develop an adaptation action area designation for those **low-lying** coastal zones that are experiencing coastal flooding due to **extreme high tides** and **storm surge** and are **vulnerable** to the impacts of **rising sea level**. Local governments that adopt an adaptation action area may consider policies within the **coastal flooding** resulting from

- high-tide events;
- storm surge;
- flash floods;
- stormwater runoff; and
- related impacts of sea-level rise.

Criteria for the adaptation action area may include, but need not be limited to:

- areas for which the land elevations are below, at, or near mean high water;
- which have hydrologic connection to coastal waters; and/or
- which are designated as **evacuation zones** for **storm surge**.

The Community Resiliency Initiative Moving Adaptation Action Areas Forward

In January 2011, National Oceanic & Atmospheric Administration (NOAA) approved the Florida Coastal Management Program's (FCMP) Section 309 Strategy¹⁰, which supported a statewide Community Resiliency Initiative, as a collaboration between the Florida Department of Economic Opportunity (DEO) and the Florida Division of Emergency Management. The scope of work for the project outlined a five 5-year plan¹¹:

•Year 1: Partnership building, information gathering and establishing parameters;

•Year 2: Evaluating vulnerability analyses, selecting pilots and developing preliminary statewide guidance on adaptation planning / Adaptation Action Areas Pilot Project;

•Year 3: Piloting adaptation planning guidance in two different communities;

•Year 4: Compiling Lessons Learned a disseminating results; and

•Year 5: Information Dissemination and Outreach.

City of Fort Lauderdale Pilot Project of Special Merit Objectives

•Implement Adaptation Action Area Policies;

•Advance Partnership between City of Fort Lauderdale, Broward County, South Florida Regional Planning Council and Southeast Florida Regional Climate Compact to collaborate in support of this initiative;

•Address AAA in City of Ft. Lauderdale Local Comprehensive Plan; and

• Create guidance for statewide dissemination.

The pilot project is part of a series of resources intended to support local government, working with their region and with the State of Florida, to create the best opportunities for merging growth with resilience by implementing Adaptation Action Areas. Other resources include a guidebook, a policy options report, and informational videos focused on Adaptation Action Areas.

Fort Lauderdale Adaptation Action Areas/Sustainability Milestones

These key events have laid a strong foundation for Adaptation Action Areas to build upon, and have helped Fort Lauderdale fortify plans and partnerships in moving forward towards implementing Adaptation Action Areas.



Fort Lauderdale Key Players

Susanne Torriente, Assistant City Manager, City of Fort Lauderdale

Dr. Nancy J. Gassman, Assistant Publics Work Director, Fort Lauderdale Public Works Sustainability Division

Jim Koeth, Principal Environmental Strategist, Fort Lauderdale Public Works Sustainability Division

Adrienne Ehle, Environmental Analyst, Fort Lauderdale Public Works Sustainability Division

Shannon Vezina, Public Information Specialist, Public Affairs, Office of the City Manager

These individuals and many other important individuals, including City Commissioners and members of the visioning committee (listed in the acknowledgements section of the Vision Plan¹).

Broward County provided an early foundation by first having integrated the language into its comprehensive plan, providing for designation within the County.

The Fort Lauderdale Comprehensive Plan contains proposed goals, objectives and policy language for Adaptation Action Areas through the Coastal Management Element and the Administration and Implementation Element (see Appendix)¹.

In addition to these Elements, Fort Lauderdale staff has been carefully folding resiliency and climate adaptation into a combination of many other plans and events, including the Strategic Plan, the Vision Plan, and the Sustainability Action Plan. This set the foundation to bring in Adaptation Action Areas to the community and the commission as a tool for improving community resilience.



Three Step Process Fort Lauderdale Used to Adopt Adaptation Action Area Policies

STEP 1: Getting Started: Understand Your Baseline Risk and Data Collection

The first step for any community adopting Adaptation Action Areas is understanding their own unique risk based on geographic location and specific impacts. Many national and local models are available for identifying risk and conducting vulnerability assessments.

National Tools for Assessment of Vulnerabilities

A well-developed guidance document for understanding a community's baseline risk is NOAA's Report: What Will Adaptation Cost?¹² This document guides users through the steps of understanding your baseline risk, which include:

- Selecting appropriate local Sea Level Rise (SLR) scenarios;
- Developing high water event scenarios; and
- Assessing exposed Infrastructure for a no-action scenario.

NOAA has a SLR viewer that maps extensive information on local vulnerability¹³.

Local Examples of Vulnerability Assessments at Regional and County Levels

Fort Lauderdale is fortunate to have access to the extensive vulnerability assessments, guides and tools created by the Southeast Florida Regional Climate Compact and Broward County. These documents are tailored to the specific characteristics of the Southeast Florida Region:

- Regional Climate Action Plan^{14b} (fig. 5)&
 Implementation Guide^{14c}
- A Unified Sea Level Rise Projection for Southeast Florida (Broward County)^{14d}



A Region Responds to a Changing Climate Southeast Florida Regional Climate Change Compact Counties

Figure 5 Regional Climate Action Plan Available at: http://southeastfloridaclimatecompact.org/ pdf/Regional%20Climate%20Action%20Plan %20FINAL%20ADA%20Compliant.pdf

- Regional Greenhouse Gas Emissions Inventory^{14e}
- Analysis of the Vulnerability of Southeast Florida to Sea Level Rise^{14f}
- Health Impact Assessment (Broward County & Florida Public Health Institute) ¹⁵

Broward County is also supporting the City by providing resources created from a Coastal Partnership Initiative Grant that was awarded in 2011 through the Florida

Coastal Management Program with funding from NOAA.

The aims were to provide tools and support for resilience planning for the 13 tidally influences municipalities (situated seaward of flood control structures) (fig. 6). The results of this project are available via an online repository that contains a wide range of^{18b}:

- Vulnerability Assessments
- Policy Support Tools
- Technical Support Tools
- Detailed Maps



Figure 6 Available at: http://www.broward.org/NaturalResources/ClimateC hange/Pages/ClimateResilience.aspx

STEP 2: Community Conversations

For an Adaptation Action Area to be designed for a particular place and its distinctive population, input from a wide range of stakeholders is required. When the local concerns and preferences are considered, the solutions can be tailored to the community. The plans and policy will be well-received and gain public support when residents have participated in the process from the start. Fort Lauderdale ensured these necessities were met by informing public and decision makers and engaging positively throughout all planning steps. To take the next

steps and reduce pushback, outreach offers many advantages to gain support for Adaptation Action Areas.

Communication and Outreach

Fort Lauderdale has cultivated an aware, informed and active community. The team achieved this, not by quoting statutes and enforcing compliance, but by treating residents as their neighbors, as family. This shift from "telling" towards "asking" is key for public engagement. Principal Environmental Strategist Jim Koeth involves his neighbors (as he calls them) when he engages them. By referring to the community's Vision 2035 plan, he lets the residents know that the City is acting upon the requests that they made. By referring to the community's Vision 2035 plan, he lets the city is acting upon the residence know that the City is acting upon the residence know that the Xision 2035 plan, he lets they made.

Conversations with Various Audiences and Forums for Discussion

Fort Lauderdale's planning and improvements rely heavily upon involvement from the public. Fort Lauderdale's approach is unique because it is forward-thinking; the staff asks questions that not many others would think to ask^{16b}. Their methodology is to first generate possibilities and then work towards making them happen. These possibilities for the future need to be shaped by what the

community envisions the future Fort Lauderdale to look like.

For the 2035 Vision Plan (highlighted in the next section), possibilities were explored via stakeholder interviews, town hall meetings with the Mayor and City Commissioners, Meetings-in-a-Box, and an



Open House January 21, 2014

interactive website (OurVisionFTL.com) complete with social ideation. There were also two key events, the Big Ideas Fort Lauderdale and the Neighborhood Summit in 2012. Feedback from these events helped to feed into the Adaptation Action Area process. As residents brought up issues such as flooding and resilience on their own, it laid a foundation for the evolution of related information and education.

Adaptation Action Areas Open House

. A "Climate Adaptation" Open House was held in January 2014 to showcase Adaptation Action Areas and to collect feedback. Staff was greeted by a public that was already listening due to the previous achievements outlined in this report. Staff worked both individually and collectively to share information with Commissioners, homeowners associations, counsel and civic associations. Both one-on-one conversations and the formal conference meetings with Commissioners were important to gain support. As a result, the Commission unanimously voted yes on June 17, 2014, authorizing the transmittal of the Adaptation Action Areas Comprehensive Plan Amendment to the Florida Department of Economic Opportunity.



Open House January 21, 2014

Neighbor Survey

Fort Lauderdale's 2012 Neighbor Survey showed that 70% of residents observed coastal water level increases and 68% observed increases in flooding (fig. 6). These numbers both decreased to 64% and 64% in 2013. The survey has several questions related to sustainability (more results are shown in the Appendix). Among the top 3 overall priorities identified in the 2013 survey, one was storm water management and the other was overall maintenance of streets, sidewalks and infrastructure. The City considers residents' perceptions very seriously. This annual review helps officials to adjust plans, direct energy and allocate resources to tackle suggested improvements. The City uses a system for benchmarking results and prioritizing the most urgent needs of residents. The visioning committee worked to consider these and other annual survey results^{16b} and the variety of other venues for a total aggregation of 1,562 public comments, all in preparation for writing the Vision Plan. The city of Fort Lauderdale understands that the plan's success depends upon the confidence of its residents that reductions in long-term risk exposure, combined with present day mitigation efforts, will sustain if not increase community resilience and affordability. As part of the vision, Adaptation Action Areas need to be viewed as a tool that contributes to enhance resilience, maintaining property values and allowing for business opportunities.



NOAA staff training January 14-16, 2014

Fort Lauderdale's Method to Adopt Policies

In June, 2014 Fort Lauderdale's Commission unanimously voted yes to authorize Adaptation Action Areas into their Comprehensive Plan. Fort Lauderdale's Comprehensive Plan now contains proposed goals, objectives and policy language for Adaptation Action Areas through the Coastal Management Element and the Administration and Implementation Element.

The **Coastal Management Element*** outlines goals to:

- Identify public investments, infrastructure and assets at risk from rising sea levels by 2018
- Develop and implement adaptation strategies for areas vulnerable to coastal flooding, tidal events, storm surge, flash floods, stormwater runoff, salt water intrusion and other impacts related to climate change or exacerbated by sea level rise.

Strategies for Adaptation Action Areas may include		
0	Protection	
0	Accommodation	
0	Managed retreat	
0	Avoidance	
0	Other options	

The **Administration and Implementation Element*** contains definitions for the strategies for Adaptation Action Areas:

- Protection: Strategies that involve "hard" and "soft" structurally defensive measures to mitigate impacts of rising seas in order to decrease vulnerability while allowing structures and infrastructure to remain unaltered. Two examples are shoreline armoring and beach renourishment.
- Accommodation: Strategies that do not act as a barrier, but rather alter the design through measures such as elevation or stormwater improvements, to allow the structure of infrastructure system to stay intact. Rather than preventing flooding or inundation, these strategies aim to reduce potential risks.

- **Managed Retreat:** Strategies that involve the actual removal of existing development, their possible relocation to other areas, and/or prevention of further development in high-risk areas.
- Avoidance: Strategies that involve ensuring development does not take place in areas subject to coastal hazards associated with sea level rise or where the risk is low at present but will increase over time.

*See appendix for full language of the Coastal Management Element and the Administration and Implementation Element

Aligning Adaptation Action Areas with Other Plans

In addition to these Elements, Fort Lauderdale staff has been carefully folding resiliency and climate adaptation into a combination of many other plans and events, including the Strategic Plan, the Vision Plan, and the Sustainability Action Plan. This set the foundation to bring in Adaptation Action Areas as a tool.



STEP 3: Identifying Planning Tools and Initiatives to Implement Adaptation Action Areas

For an Adaptation Action Area strategy to be successful and sustainable, it must be both well-established and well-received. Fort Lauderdale ensured these requirements were met by making every effort to weave new policy language into a wide range of other policies. Many existing and potential plans can be leveraged to ensure the Adaptation Action Area wording is so ingrained in policy that it will sustain turnover of managers and elected officials.

Integration of Policy

Fort Lauderdale has created a synergistic effect by infusing sustainability and Adaptation Action Areas into a wide range of other City initiatives and methodically aligning them.

The key pieces are comprised of the:

- SUSTAINABILITY ACTION PLAN ^{16c}
- STRATEGIC PLAN ^{16d}
- VISION PLAN ^{16e}

These plans establish short and long term goals with an emphasis on monitoring and accountability to ensure success and resilience.







Highlights from these documents as they relate to resiliency and climate adaptation include:

Sustainability Action Plan

The Sustainability Action Plan from 2010 was updated in 2011 and now contains 101 actions and a specific goal in the Leadership chapter on preparing for climate change impacts (Goal 4).

Goal 4:	Prepare for Climate Change Impacts.
Objective 4.1:	Plan for climate adaptation and mitigation.
Action 4.1.1:	Utilize existing planning strategies and include adaptation strategies into the City's plans.
Action 4.1.2:	Enhance communication about climate change adaptation in coordination with other agencies and municipalities.
Action 4.1.3:	Partner with local, regional and state agencies or educational institutions to increase preparedness.



Our City, Our Strategic Plan for 2018

The Strategic Plan describes issues when flood control structures using gravity drainage do not function at high tide. On the same page, the incentives to adapt these structures are highlighted. A chart (fig. 7) illustrates how flood insurance discounts achieved through the Federal Emergency Management Agency (FEMA) National Flood Insurance Program's Community Rating System (CRS) will increase as the City implements flood protection.



Figure 7: from Fort Lauderdale Strategic Plan

The section of the Strategic Plan as it relates to Adaptation Action Areas is Goal 2: "be a sustainable and resilient community." This goal has three underlying objectives:

- Objective 1 Proactively maintain our water, wastewater, road, and bridge infrastructure;
- **Objective 2** Reduce flooding and adapt to sea level rise; and
- Objective 3 Improve climate change resiliency by incorporating local, regional, and mega-regional plans.

To provide accountability, each Objective has specific strategic initiatives and key performance indicators.

Objective 2 has a strategic initiative to identify potential Adaptation Action Areas and develop Adaptation Action Area policies. A key performance indicator is improving the rating of the FEMA Community Rating System (CRS) Score by two points.



Open House January 21, 2014

Open House January 21, 2014



Fort Lauderdale's 100 year anniversary kicked off the visioning process, which had a very strong focus on what the community wanted for their future. The Commission requested a grassroots outreach that would touch every corner of the City. The Vision Plan brings together elements of climate adaptation, resilience, and public comments on these topics.

FAST FORWARD

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The Vision tells a story in a way that demonstrates the city's role in creating a future based on how everyone wants it to look.

The Vision statement is a collection of six phrases, all starting with "We Are...", upon which...", and these are how the document is organized. The We Are Ready section is described as "We are a resilient and safe coastal community."



Progress Tracking for the Vision Plan

Measuring Our Success: The Vision Scorecard is a living document that tracks movement towards the Vision. Specific variable were chosen for each component of the plan. Progress toward implementing the "We Are Ready" section is tracked using a broad range of sustainable construction performance measures and environmental indicators.

As we implement this Vision and move toward 2035, it should be revisited, renewed, or even rewritten to reflect the reality of the changing times.

-Vision Plan Executive Summary Fort Lauderdale

From the Vision Plan – "Where we see ourselves in 2035"

"Fort Lauderdale continues to utilize the latest scientific data to pioneer innovative technologies that allow us to prepare for and respond to emergencies. This well-developed relationship between resiliency and disaster preparedness brings the co-benefit of quick and effective response to fires, accidents, and emergency medical needs present in daily life and exacerbated in disaster response."

Other Planning Tools that Consider Adaptation Action Areas

To implement the policy that has been introduced, additional funding and resources will be needed and must be prioritized. The Fiscal Year Budget for Fort Lauderdale is designed to prioritize annual resources in a way that will incrementally and efficiently guide the City towards the 2035 Vision. The five-year Community Investment Plan considers current and future improvement projects. The plan has been aligned in the context of the 2035 Vision priorities. These tools and plans can be supplemented with Foundation, State, and Federal Grants. For some ideas specific to Florida, Broward County has compiled a database of sources.^{18c}

Highlight on Fort Lauderdale's Successes and Challenges

Adaptation Action Areas are an excellent opportunity for resilience. Here are some tips on how to frame them. The key pieces of advice that the Fort Lauderdale staff unanimously agreed upon were:

- Make your policy language broad and flexible
 - As alignment with other plans is being organized, this gives room to address the intent of the policies.
 - If something doesn't work, the policies allow space to step back and try something new
- Be methodical and strategic about your choice of words in terms of jumping too far ahead
- When communicating about increased vulnerability, provide factual information and avoid negative language that may alarm constituents.

Susanne Torriente, Assistant City Manager, says her best advice to other cities is to integrate Adaptation Action Areas into fabric of local government and the budget process. Take the new language and put it into existing government lingo. She said that it is an ongoing process. Next year, they will revise their design standards for infrastructure to integrate climate resiliency and sustainability into planning, designing and construction. The revised comprehensive plan language is now going to the state for review.



NOAA staff training January 14-16, 2014

Jim Koeth, Principal Environmental Strategist, explains how carefully crafting and institutionalizing language into plans that get approved makes Adaptation Action Areas stronger and easier to fund. This limits resistance and preserves the efforts even if there are changes in administration occurs.

"We are local government. We are at the front line. We have to deal with these issues in a practical manner." - Susanne Torriente

The extensive consideration of public opinion gives an advantage. It is advantageous, when presenting funding requests, to point to the request being directly related to priorities identified by engaged community members.

Adrienne Ehle, Fort Lauderdale's Environmental Analyst, is proud of the variety in possibilities that were made available in the public comment collection. While the website, social media such as twitter, and live broadcast of public meetings facilitated participation through technology, some communities might not have this kind of access. It is important to also have face-to-face interviews, hearings, and the option to submit paper comments. This outreach on all levels had a positive tone that kept things moving forward.



Adaptation Action Areas Case Study: Fort Lauderdale, Broward County

If the team could change anything, they would restructure the timing of the process. Because they had to jump on opportunities, they were not able to fully align the Sustainability Action Plan with the Strategic Plan and Vision Plan

Torriente says, "Government isn't perfect and things don't start and end in perfection. There is never a perfect time – just jump in the middle – work forwards and backwards!"



Adaptation Action Area Do's and Don'ts

- **Don't:** choose limiting wording for your policy.
- **Do:** keep policy and plans flexible and broad. Allow it to get through and then it will set a precedent for more specific actions.
- **Don't:** quote statutes in an overly professional way.
- **Do:** interact with residents as neighbors, one-on-one, grab their attention with a story. Brand your key objectives in a way that keeps a compelling theme.
- **Don't:** jump ahead to drastic long-term adaptation options such as retreat and transfer of development rights. You can soften this language or refer to these options as long-term tools. Understand that these are future tools to consider concurrently with short -term actions.
- **Do:** communicate gradually progressing from short-term solutions to long-term solutions over time. These incremental steps will ease the process and make goals more attainable. Use adaptive management to keep short-term solutions flexible for a wide range of long-term scenarios.
- **Don't:** tell residents and elected officials what to do.
- **Do:** ask for concerns, ideas, and preferred solutions. Give people the space to look at things different in their own time.
- **Don't:** give emphasis to large costs and extreme scenarios.
- **Do:** use the incentive approach introduce funding options and focus on cost/benefit to show that adaptation can save money in many cases.
- **Don't:** scare people, because they get defensive or shut down.
- **Do:** communicate risk carefully and effectively you need to soften the language to enroll stakeholders and decision makers into accepting Adaptation Action Areas as a means to a more resilient community.
- **Don't:** go it alone. Resources can be found at the local, regional, state and federal levels.
- Do: The crucial component is to have partners on all levels for support and collaboration!

Partnerships - Adaptive Planning Efforts at Multiple Levels

Breaking down silos in crucial for success. Adaptation Action Areas are promoted and encouraged via outreach initiatives through partners at the State, Regional, County, and City level.

These valuable teamwork efforts have brought Fort Lauderdale, Broward County, and the Southeast Florida Region international recognition. The work that has been done is highlighted as a national example for regional cooperation.

Broward County

Broward County is home to approximately 1.8 million residents. The county contains 431 square miles of urban area in the eastern portion and 796 square miles of conservation area in the west, mostly comprised of Water Conservation Areas, which are integral to Florida's Everglades ecosystems.

Broward County has earned numerous awards for their collaborative work on climate impacts and planning, including the National Planning Excellence Award from the American Planning Association (APA). This award recognized the County's efforts to address climate change today by being the first to add a Climate Change Element as part of their Comprehensive Plan, which specifically describes and sets goals for Adaptation Action Areas.

Broward County, a leader in coastal hazard planning, has developed a suite of plans and tools to manage the impacts of climate change. Broward County's Enhanced Local Mitigation Strategy has comprehensive sections which focus on sea level rise in the risk assessment and economic vulnerability chapters, with a loss estimation and mapping impacts of 1, 2, and 3 ft. sea level rise scenarios. Broward County has a Climate change Action Plan and a Climate Change Task Force. Broward County was the first to integrate Adaptation Action Area language into their comprehensive plan, through their new and nationally recognized Climate Change Element. Broward County is committed to helping their 31 municipalities designate Adaptation Action Areas, as needed, in order to prepare and strengthen the community's climate resilience. Using the Priority Planning Areas for Sea Level Rise Map as a basis for identifying areas especially vulnerable to sea level rise, Broward County and its municipalities will use the Adaptation Action Area designation to develop policies for adaptation and enhance the funding potential of infrastructure adaptation projects.

Broward County was recently recognized by the Southeast Florida Clean Cities Coalition as one of five organizations that made outstanding contributions in support of the Coalition's goal of reducing dependence on imported oil and improving the environment by creating a sustainable fuel market.

The City and County hosted a delegation of five city officials from Durban, South Africa, from March 10-15, 2014 for a week-long visit focusing on a variety of environmental and community issues associated with climate adaptation.

Broward County Resilience Highlights

- Diverse regional efforts to conserve natural areas and marine/freshwater resources, including an advanced hydrologic model development
- Climate Change Element and Land use plan changes
- Climate Change Action Plan
- Resilient Coastal Communities Project
- Climate Change Task Force



In February 2013, the County government adopted a new Climate Change Element into the Broward County Comprehensive Plan (Broward County, 2013a) and related amendments to its Land Use Plan (Broward County 2013b).^{18a} The new Climate Change Element represents an important milestone in adaptation planning in Florida as the County is the first local government to adopt such detailed policy direction focused on planning for climate related impacts.

In summary, the Climate Change Element establishes a framework for integrating

the economic, environmental, and social factors of changes to the climate into future planning and land use decisions. Objective 19.3 directs the County to "develop adaptation strategies for areas vulnerable to climate-related impacts". Those vulnerable areas have been identified in the Broward County Land Use Plan's "Priority Planning Areas for Sea Level Rise Map", illustrating areas that are at increased risk of flooding due to, or exacerbated by, sea level rise over the next 50 years. The associated Priority Planning Areas policies direct the County to discourage land use plan amendments that would place additional residential and nonresidential development at risk of flooding from sea level rise. Please note that Broward's charter gives the County government countywide land use authority established with the passage of Chapter 59-1154, Laws of Florida, Special Acts of 1959. The County has also committed itself to coordinate with its local municipalities to help designate Adaptation Action Areas, using the Priority

Planning Areas in order to identify vulnerable areas and to enhance funding opportunities for adaptation projects.

Broward County is holding itself accountable through Policies 19.3.4 and 19.3.7, requiring the County to update its "Priority Planning Area for Sea Level Rise Map" and infrastructure vulnerability assessments, every five years, so that decisions regarding adaptation planning and investments can be based on best available data.



Figure 8 Available at: https://www.broward.org/PlanningAndRedevelopm ent/Documents/BCLUP%20Priority%20Planning%20 Area%20for%20Sea%20Level%20Rise%20Map.pdf Southeast Florida Region and the Southeast Florida Regional Climate Change Compact

These local efforts are recognized internationally as a pathway to a solution. The Southeast Florida Regional Climate Change Compact (The Compact) has been given global attention for its local adaptation planning achievements. Fort Lauderdale, Broward County, and SFRPC have been key players in the ongoing efforts of the Compact. The Compact has been acknowledged by ICLEI and the National Association of Counties, receiving multiple awards of excellence. The Compact has been asked to lend support and resources by the White House Domestic Policy Council, the White House-Interagency Adaptation Task Force, and it is referenced within the Task Force's Final Report and CEQ progress reports to the President.

Broward County, the City of Fort Lauderdale, and the SFRPC have been key players in the ongoing efforts of the Southeast Florida Regional Climate Change Compact (The Compact). The Compact, a partnership of Broward, Miami-Dade, Monroe, and Palm Beach Counties, represents regional cooperative framework designed to set the agenda for adaptation planning in Southeast Florida while providing a means for state and federal agencies to engage with technical assistance and support. The Compact has been successful in changing Florida planning legislation to incorporate efforts to address a changing climate and sea level rise, and prioritize funding for this purpose. The Compact hosts an annual summit to bring key partners together to learn about new projects, ideas, and research relating to regional climate impacts for the Four County Regional Climate Action Plan. In addition to this plan, the Compact has produced several key documents to guide local governments including:

- Mayors' Climate Action Pledge
- Southeast Florida Regional Climate Action Plan
- Southeast Florida Regional Climate Action Plan Implementation Guide

- A Unified Sea Level Rise Projection for Southeast Florida
- Regional Greenhouse Gas Emissions Inventory: Baseline Period 2005 2009
- Analysis of the Vulnerability of Southeast Florida to Sea Level Rise

With 109 municipalities and nearly one-third of Florida's population, the Compact has not been alone in this effort. The compact works with government agencies, such as the South Florida Water Management District, the Florida Department of Transportation, the Florida Department of Economic Opportunity, NOAA, USGS, and the Army Corps of Engineers to reinforce the technical and science-based aspects of adaptation; as well as with international non-profits, such as Institute for Sustainable Communities (ISC) to build up local and national partnerships. ISC has actively supported the Compacts efforts to involve the community and to bolster regional governance and local climate change initiatives.

It is important to note that ALL work done by the Compact is voluntary. The compact has received funding from private sources, but this trailblazing, nationally recognized effort was initiated and proliferated without any government funding.





Expanded Region: Seven50

Seven 50 is a plan for the seven counties for the next 50 years. It is a vision for prosperity plan funded by the United States Department of Housing and Urban Development. The project brought together residents from all counties to design their future by choosing from http://seven50.org/ alternative scenarios. The results showed



that the preferred future is Region in Motion, a region of increased connectivity. We want to be connected and sustainable with access to opportunity and maximized potential. The regional prosperity plan is aimed to serve as a blueprint for our future. The plan is based on pillars, one of which is climate & energy resiliency, with eight specific goals (fig. 9). The data collected for the plan scenarios included sea level rise vulnerability indicators.



Figure 9: From seven50 executive summary – available at http://seven50.org/wp-content/uploads/2013/11/Seven50- Executive-Summary.pdf

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APPENDIX



CITY OF FORT LAUDERDALE COMPREHENSIVE PLAN

PROPOSED GOAL, OBJECTIVE AND POLICIES LANGUAGE ADAPTATION ACTION AREAS

COASTAL MANAGEMENT ELEMENT

GOAL 3:

Increase the City's resiliency to the impacts of climate change and rising sea levels by developing and implementing adaptation strategies and measures in order to protect human life, natural systems and resources and adapt public infrastructure, services, and public and private property.

OBJECTIVE 3.1:

Develop and implement adaptation strategies for areas vulnerable to coastal flooding, tidal events, storm surge, flash floods, stormwater runoff, salt water intrusion and other impacts related to climate change or exacerbated by sea level rise, with the intent to increase the community's comprehensive adaptability and resiliency capacities.

Evaluation Measure: Collaborating with regional partners, City shall identify public investments, infrastructure and assets at risk from rising sea levels by 2018. Thereafter, this assessment will be performed every five (5) years.

Policy 3.1.1:

Identify public investments and infrastructure at risk to sea level rise and other climate related impacts. Assess the vulnerability to public facilities and services, including but not limited to water and wastewater facilities, stormwater systems, roads, bridges, governmental buildings, hospitals, transit infrastructure and other assets.

Policy 3.1.2:

Adaptation strategies may include, but not be limited to:

- a. Public infrastructure planning, siting, construction, replacement, operation and maintenance
- b. Emergency management
- c. Stormwater management
- d. Land development regulations
- e. Building codes
- f. Comprehensive planning
- g. Other strategies

Policy3.1.3:

Adaptation strategy options may include the designation of Adaptation Action Areas (Adaptation Action Areas). As per Section 163.3164(1), Florida Statutes, an Adaptation Action Area is an optional designation within the coastal management element of a local government's comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure and adaptation planning.

Policy3.1.4:

Adaptation Action Areas' adaptation strategy options may include, but not be limited to:

- a. Protection
- b. Accommodation
- c. Managed retreat
- d. Avoidance
- e. Other options

Policy 3.1.5.:

Considerations for Adaptation Action Areas designation may include, but not be limited to:

- a. Areas which experience tidal flooding
- b. Areas which have an hydrological connection to coastal waters
- c. Locations which are within areas designated as evacuation zones for storm surge
- d. Other areas impacted by stormwater/flood control issues

Policy 3.1.6:

As a basis for the designation of Adaptation Action Areas, the City will utilize the best available data and resources, such as the Unified Sea Level Rise Projection for Southeast Florida and Broward County's Priority Planning Areas for Sea Level Rise Map, in order to identify and understand the risks, vulnerabilities and opportunities to formulate timely and effective adaptation strategies.

Policy 3.1.7.:

As deemed to be in the best interest of the City, the City Commission may designate or remove designation by means of, but not limited to, the following mechanisms:

- a. Community Investment Program (Capital Improvement Plan)
- b. City Commission Resolution or Ordinance
- c. Comprehensive Plan via location description or map
- d. Other mechanisms as appropriate

Policy3.1.8.:

Potential funding sources for the implementation of Adaptation Action Area's associated adaptation strategies include, but are not limited to:

- a. Federal and State grants and technical expertise assistance (in-kind)
- b. Local Stormwater Utility Fees and Community Investment Program (Capital Improvement Plan) prioritization
- c. Public/Private Partnerships
- d. Other sources

Policy 3.1.9:

Integrate Adaptation Action Areas into existing and future City processes and City-wide plans and documents which may include, but not be limited to:

- b. Local Mitigation Strategy
- c. Strategic Plan
- d. Sustainability Action Plan
- e. Stormwater Master Plan
- f. Comprehensive Emergency Management Plan
- g. Unified Land Development Regulations
- h. Other related processes, plans and documents.

Policy 3.1.10:

Align and be consistent with, to the extent possible, relevant and current national, state, and regional adaptation strategy documents such as the Broward County Climate Action Plan, Southeast Florida Regional Climate Action Plan and The President's Climate Action Plan as well as other regional strategic plans, disaster mitigation plans, water management plans, transportation/transit plans, and climate change plans.

Policy3.1.11:

Participate in, when appropriate, coordinated governmental, non-governmental and other appropriate agencies' proposed application requests for funding adaptation implementation projects.

Policy3.1.12:

Collaborate and coordinate with appropriate local, regional and state governmental agencies, to the extent possible, toward the implementation of Adaptation Action Area adaptation strategies.

Policy3.1.13:

Based on evolving rising seas data and associated vulnerabilities, to allow for flexible adjustments, preserve future strategic adaptation implementation options to maintain maximum resiliency in response to new risks and vulnerabilities. The City will take advantage of new emerging data and technological opportunities.

Policy 31.14:

Continue to foster effective collaborations, partnerships and coordination with national, state, regional and local partners to identify risks, vulnerabilities and opportunities associated with coastal hazards and the impacts from sea level rise.

ADMINISTRATION AND IMPLEMENTATION ELEMENT

Add/Amend Comp Plan Administration and Implementation Element (VII. Definitions):

- a. Priority Planning Areas for Sea Level Rise Map, Broward County: Map which identifies and illustrates vulnerable areas within Broward County that are at increased risk of flooding due to, or exacerbated by, seal level rise over the next fifty (50) years. Broward County generated this map in partnership with the South Florida Water Management District and the National Oceanographic and Atmospheric Administration.
- b. Protection: Strategies that involve "hard" and "soft" structurally defensive measures to mitigate impacts of rising seas in order to decrease vulnerability while allowing structures and infrastructure to remain unaltered. Two examples are shoreline armoring and beach renourishment. Protection strategies may be targeted for areas of a community that are location-dependent and cannot be significantly altered or relocated, such as downtown centers, areas of historical significance, or water-dependent uses.

(Adaptation Action Areas: Policy Options for Adaptive Planning For Rising Sea Levels, South Florida Regional Planning Council, 2013)

- Accommodation: Strategies that do not act as a barrier, but rather alter the design through measures such as elevation or stormwater improvements, to allow the structure of infrastructure system to stay intact. Rather than preventing flooding or inundation, these strategies aim to reduce potential risks. (Adaptation Action Areas: Policy Options for Adaptive Planning For Rising Sea Levels, South Florida Regional Planning Council, 2013)
- Managed Retreat: Strategies that involve the actual removal of existing development, their possible relocation to other areas, and/or prevention of further development in high-risk areas. (Adaptation Action Areas: Policy Options for Adaptive Planning For Rising Sea Levels, South Florida Regional Planning Council, 2013)
- e. Avoidance: Strategies that involve ensuring development does not take place in areas subject to coastal hazards associated with sea level rise or where the risk is low at present but will increase over time.
 (Adaptation Action Areas: Policy Options for Adaptive Planning For Rising Sea Levels, South Florida Regional Planning Council, 2013)

The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of their subagencies.

July 2014



Excerpt from 2013 Fort Lauderdale Neighbor Survey: Final Report

Q20. Of these Community Investment Plan capital project types, which <u>three</u> would you select as the most important?













Q24. Satisfaction With Public Communication and Outreach

by percentage of respondents who rated the item as a 1 to 5 on a 5-point scale (excluding "don't know") Quality of www.fortlauderdale.gov 17% 40% 35% 8% 11% 41% 35% Ease of access to information about City services 14% Opportunities to participate in local government 14% 35% 39% 13% 20% 0% 40% 60% 80% 100% Very Satisfied (5) Satisfied (4) Neutral (3) Dissatisfied (2,1) Source: ETC Institute DirectionFinder (2013 - Fort Lauderdale, FL)