

MIAMI-DADE COUNTY FINAL OFFICIAL MINUTES Miami-Dade Sea Level Rise Task Force

Lawson E. Thomas Courthouse Center
175 N.W. First Avenue
26th Floor Conference Room
Miami, Florida 33128

November 21, 2013
As Advertised

Harvey Ruvin, Clerk
Board of County Commissioners

Christopher Agrippa, Director
Clerk of the Board Division

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**CLERK'S SUMMARY AND OFFICIAL MINUTES
MIAMI-DADE COUNTY SEA LEVEL RISE TASK FORCE
NOVEMBER 21, 2013**

The Miami-Dade County Sea Level Rise Task Force (Task Force) convened a meeting on Thursday, November 21, 2013, at the Lawson E. Thomas Courthouse Center, 175 N.W. 1st Avenue, Miami, Florida, at 10:00 a.m. Present were Honorable Clerk of Courts Harvey Ruvin, Task Force Chairman; and members Mr. David Enfield, Ms. Sara Fain, Mr. Arsenio Milian, and Mr. James Murley; (Mr. Willard T. Fair and Mr. Jorge Gonzales were absent).

In addition to the members of the Task Force, the following staff members were present: Deputy Mayor Jack Osterholt; Ms. Nichole Hefty, Chief, Office of Sustainability, Planning Division, Miami-Dade Department of Regulatory and Economic Resources (RER); Mr. Mark Woerner, Assistant Director for Planning (RER); Ms. Debbie Griner, Sustainability Initiatives Coordinator, Office of Sustainability (RER); Assistant County Attorney Christopher Angell; Ms. Elizabeth Soto, Executive Assistant, Clerk of Courts; and Deputy Clerk Maryse Fontus.

I. Welcome and Introductions

Chairman Ruvin called the meeting to order at 10:12 a.m., and asked the Task Force members to introduce themselves. Following the introductions, Chairman Ruvin noted Mr. Willard Fair was unable to attend today's (11/21) meeting, because he had to be in Tampa; and Mr. Jorge Gonzales had to attend to urgent matters at City National Bank.

Chairman Ruvin said that the purpose of today's (11/21) meeting was to review the recommendations made by the Miami-Dade County Climate Change Advisory Task Force, and the Southeast Florida Regional Climate Compact, as well as the status of implementation of the Climate Action Plan.

Chairman Ruvin indicated that a summary of the last meeting had been prepared, which he asked Task Force members to review, prior to approval at the next meeting.

Chairman Ruvin introduced Assistant County Attorney Christopher Angell, who was assigned to assist this Task Force. He said that Mr. Angell was instrumental in developing the ordinance creating this Task Force.

II. Climate 101 – A Quick Users Guide to Understanding Sea Level Rise

Chairman Ruvin introduced Dr. Nancy Gassman, Natural Resources Administrator, Energy and Sustainability Program, Broward County Natural Resources Planning and Management Division. He noted Dr. Gassman was the Chair of the group charged with developing the regional sea level rise projection for the Southeast Florida Regional Climate Compact (the Compact).

Dr. Nancy Gassman noted she was charged with explaining the reasons for the concerns relating to sea level rise in this community. She said that she would provide some basic climate facts; explain the climate concerns in Southeast Florida; and discuss the Southeast Florida Regional Technical Tools developed by the Compact.

Dr. Gassman explained that to begin understanding the impacts of climate change you need to understand how greenhouse gases contribute to climate change; and carbon dioxide is the greatest among those. She said that in 1958, the scientific community started to take careful measurements of carbon dioxide in the atmosphere. She presented a slide depicting the change in atmospheric carbon dioxide from 1958 to the present, noting atmospheric carbon dioxide had increased by 24 percent since 1958, and by 42 percent since the Industrial Revolution. Dr. Gassman noted the importance of the Industrial Revolution in the context of climate change as it marked the time when the global economy began using fossil fuels as the engine of progress; and it was the combustion of fossil fuels that contributed to the increase of carbon dioxide in the atmosphere. Dr.

Gassman stated that in order to understand how this change impacts the climate, it was important to understand the leading and lagging indicators of change. She noted as the concentration of carbon dioxide increased, so did air temperature; this in turn led to thermal expansion of oceans, and to an increase in their volume. Dr. Gassman said that another important component of sea level rise was the melting of land-based ice, which led to an increase in the level of the oceans.

Dr. Gassman noted the climate change impacts expected in South Florida included the potential for a two to ten degrees Fahrenheit increase in the average temperature by 2100. She said that there would be an increasing occurrence of extreme weather resulting in hotter and colder seasons; additional droughts and floods; and more intense hurricanes. Dr. Gassman stated that the sea level could rise between two to five feet by 2100. Dr. Gassman explained that South Florida could experience the following impacts from sea level rise because of its low elevation: saltwater intrusion into the aquifer; drainage and flood control problems; beach erosion; and impacts to public and private infrastructure, coral reefs and the Everglades.

Dr. Gassman said that in 2009, the four counties comprising South Florida (Miami-Dade, Broward, Palm Beach, and Monroe) held the Southeast Florida Regional Climate Leadership Summit, and made the following commitments: to use regional resources for policy collaboration and technical planning tool development; to develop a Regional Climate Change Action Plan; and to hold annual climate leadership summits.

Dr. Gassman noted the four counties had common concerns, but different approaches. She said that each county had conducted a greenhouse gas inventory and analyses concerning vulnerability to sea level rise; and there were six different sea level rise projections for South Florida. Dr. Gassman noted over the course of several months the Compact developed a single sea level rise projection for Southeast Florida, a greenhouse gas inventory, and a common understanding of Southeast Florida's vulnerability to sea level rise. She said the Compact determined that 44 percent of

greenhouse gas emissions were due to transportation, 28 percent were due to residences, and 26 percent were due to buildings.

Dr. Gassman noted South Florida was starting to experience the effects of sea level rise. She pointed out that rates of carbon dioxide emissions were increasing as were the rates of air temperature, noting the amount of change experienced with regard to temperature in the last 40 years was greater than the amount of temperature change experienced in the previous 100 years. Dr. Gassman said that in the 1990s, the loss of Greenland ice was estimated at 7 billion tons per year; however, that number had increased significantly to 177 billion tons per year in the last decade. She reiterated that the acceleration of sea level rise was due to a combination of leading and lagging indicators that were all currently accelerating.

Dr. Gassman said that the Compact commissioned an analysis on Southeast Florida's vulnerability to sea level rise, using a 1 foot scenario from 2040 to 2070, and a 2 feet scenario from 2060 to 2115. She pointed out that South Florida was vulnerable to sea level rise because of its elevation, and that areas near the coast would experience a direct impact due to salt water or tidal waves. However, she noted, South Florida's vulnerability was not limited to coastal areas, as areas that were located away from the coast were vulnerable as well since they could experience impacts due to storm water or drainage infrastructure.

Dr. Gassman explained that under average tidal conditions, rain water is collected in the storm drains, and flows into a canal, the inter-coastal waterway or some other receiving body. However, she noted, in situations of high tides or sea level rise, salt water rises and infiltrates the pipes, thus compromising the capacity to pull fresh water away from the land and into the receiving body. She noted this was the reason for inundations during major storms; flooding occurred because the drainage infrastructure was vulnerable to salt water infiltration. Dr. Gassman pointed out that this scenario was applicable to coastal areas, and to areas away from the coast, but in the latter, the flooding was primarily due to rain water. She

said that some areas had pump stations, but they were not present everywhere. Dr. Gassman indicated that it had been determined that a ten-inch rise in sea level would reduce South Florida's drainage capacity by 60 percent. She emphasized that if nothing was done, the areas near the coast would suffer first; and whether or not these issues were addressed, they would become more prevalent in the future.

In response to Mr. Murley's observation that Dr. Gassman's presentation did not address the effect of storm surges on sea level rise, Dr. Gassman explained that the vulnerability analysis was conducted with the intention of determining the areas that were vulnerable even under perfect weather. She said that the inundation would likely be worse in the event of storm surges or rainfall.

Mr. Murley noted the latter was the kind of situation which the region dealt with, trained for, and anticipated because of past experience with storms. He said that the scenarios described by Dr. Gassman were building in the background; however, if storm surges were added to these scenarios, then a very accurate view of the likely impact of sea level rise would emerge.

Chairman Ruvlin said that he had distributed to the Task Force members the full vulnerability analysis dated August 2012.

Dr. Gassman noted the Light Detection and Ranging (LIDAR) data was obtained by the Florida Division of Emergency Management in 2007-2008, and it was unlikely that the data for Southeast Florida would be updated before 10 to 15 years; similarly, the tidal data was unlikely to change because it was very expensive to perform these studies.

Mr. Murley said that funding was accumulated by the State because of the 2005 hurricanes; when these types of events occurred, post-disaster relief funding was provided by the federal government, and State officials made the decision to use this funding to conduct this study.

Dr. Gassman pointed out that South Florida's core elevation was not likely to change dramatically; on the other hand, the tidal data was based on predictions and current records, and could change in time.

Chairman Ruvlin noted one of the recommendations that the Task Force members would consider was the possibility for the County to move forward with a robust capital improvement program; and if the County was to plan for a worst case scenario, it would be necessary to obtain data more frequently.

Dr. Gassman pointed out that Miami-Dade County (MDC) had a high-quality tide gage in Virginia Key; thus, it would not be difficult to obtain data on sea level rise in the County. She noted Miami-Dade and Broward were pursuing the next level of modeling, which studied how sea level rise would impact ground water levels, and therefore the drainage systems. Dr. Gassman stated that it would be important for the scientists to consult with the engineers regarding the areas in which these studies should be conducted.

Chairman Ruvlin noted the LIDAR mapping showed that this was not just a threat to expensive coastal homes but to low-income areas, as well.

Mr. Enfield commended Dr. Gassman for her excellent presentation. He emphasized the importance of tides for an area such as Miami Beach, which was located next to the coast. Mr. Enfield said that further inland, near the western boundary, the elevation was lower, and the average water table was rising because of sea level rise. He pointed out that if there were many green areas, the water could seep into the ground; however, in urban areas with high-rise buildings and asphalt, the water had nowhere to go, which resulted in flooding. Mr. Enfield said that with the present drainage infrastructure the water went into the canals, which ended up in the bay; and there was a sluice gate that could be opened at low tide and closed at high tide. He noted once the 10-inch scenario was reached, the drainage infrastructure could no longer perform as needed, and the South Florida

Water Management District had to use pumps, which was an expensive proposition.

Dr. Gassman said that in some situations this was challenging because once the pumps were used, the water from the western areas was re-directed into the eastern communities that were subject to high tides. She pointed out that while the pumps created a solution for one area, they caused problems for other areas.

Chairman Ruvin noted at some point it would be necessary to invite representatives from the Water Management District to make a presentation.

Mr. Millian observed that flooding was caused by a combination of factors. He said that Dr. Gassman only used storm water outfalls in her presentation; however, Miami-Dade County had trenches that extended into permeable areas. Mr. Millian noted the reason Alton Road was flooded although there was no rainfall, was because the storm water outfalls in Miami Beach did not have a flap valve.

Dr. Gassman acknowledged that her presentation was a simplified version to help the audience understand the issue. She noted back-flow preventers, or flap valves, worked well for short-term events, but did not work well in a permanent situation of elevated sea level. In such situations, she noted, pumps were necessary.

Mr. Millian agreed that it was necessary to invite the Water Management District, as soon as possible. He pointed out that much could be learned from the past. Mr. Millian recalled that when Sweetwater and West Miami experienced flooding some years ago, the gravity system that operates the canals did not have enough air to release the water, and the Water Management District had to back-pump and forward pump, to divert water from the canals to the sea.

Dr. Gassman stated that the Water Management District had identified which infrastructure had the least amount of distance between the current

sea level and their structure's storm water outfalls. She noted they were currently retro-fitting the storm water outfalls of two infrastructures located in Miami-Dade to either provide pumping or to change the height to avoid salt water intrusion.

Mr. Murley suggested that the two Governing Board members and senior staff of the South Florida Regional Planning Council be invited, as well. He pointed out that this body comprised 17 counties with many competing demands, which were primarily funded with Ad valorem taxes, most of which came from MDC. Mr. Murley said this would ensure that Task Force members had the information necessary to enable them to make decisions.

Chairman Ruvin noted any plan should be coordinated with the other counties.

Responding to a question from Ms. Jane Gilbert, Wells Fargo, regarding the grey areas on the 2-foot sea level rise map, Dr. Gassman clarified that they represented municipal boundaries.

Pursuant to a question from Mr. Daryl Jones, former State Senator, as to whether the study addressed the impact of sea level rise on the water supply, Dr. Gassman noted the United States Geological Survey (USGS) was working on variable density models to determine how sea level rise would impact ground water levels, including salt water intrusion.

Ms. Bertha Goldenberg, Water and Sewer Department, noted the department was working with USGS on variable density models. She noted they were currently studying a scenario that extended to 2040, which showed that the area in the south was vulnerable to sea level rise. Ms. Goldenberg suggested that the Task Force invite a representative of the USGS to make a presentation.

Mr. Enfield said he understood that the USGS models considered different levels of sea level rise. He asked whether they also took into consideration different levels of water in the Everglades.

Ms. Goldenberg said Water and Sewer Department staff assumed that the operations in the Everglades would not change; however, if the situation was to deteriorate, the Water Management District would modify operation of the canals. She noted several County departments met last week with the USGS, and determined that the County's storm water modeling system could benefit from this by obtaining information on the water levels under the different scenarios.

In response to Mr. Terry Murphy's question regarding whether the LIDAR mapping was limited to coastal areas, Dr. Gassman confirmed that it was limited to coastal areas of concern specifically for emergency management purposes. She indicated that the Everglades and certain wetland areas did not have LIDAR data. Dr. Gassman said that she was unaware as to how far inland the LIDAR mapping was done.

Ms. Fain suggested that the Water Management District be asked what their expectations were with regard to restoration.

Chairman Ruvin expressed his appreciation to Dr. Gassman for her informative presentation.

III. Southeast Florida Regional Climate Change Compact Overview

Mr. Mark Woerner, Assistant Director for Planning, Department of Regulatory and Economic Resources (RER), discussed the policy framework for the Southeast Florida Regional Climate Change Compact (Compact). He noted in 2010, Miami-Dade, Broward, Palm Beach and Monroe counties committed to collaborate on climate change policy, to develop regional tools, to create a regional action plan, and to convene annual summits on climate change. Mr. Woerner stated that the four counties decided to examine federal and State legislation, with a view to design a unified program, as this would give the region one voice to lobby in Washington. He pointed out that the Compact was home-grown, and had been used as a model by other parts of the country wanting to replicate this model.

Mr. Woerner emphasized that this model was fragile, because its leadership was comprised of mayors, managers and/or commissioners, who were term-limited; therefore, the issue was how to maintain that leadership to meet the Compact's goals. He noted the importance of maintaining a degree of continuity at the Compact's Steering Committee level, as the consistency and quality of the follow-up work depended on the Steering Committee's staff. Mr. Woerner noted the Compact Steering Committee was comprised of the Policy Coordination and Advocacy Team; the Regional Climate Team; and the Summit Planning Team, whose roles were to assist the Steering Committee by providing information to elected officials.

Mr. Woerner said that the Compact was seeking to integrate the municipalities that were located within the counties. He noted at the Steering Committee level, there were two County representatives and one municipal representative for each County. Mr. Woerner stated that the Steering Committee's staff had been working with the Miami-Dade League of Cities to expand its membership to include more municipalities. He noted the official municipal representatives currently on the Steering Committee were from Boynton Beach, Fort Lauderdale, Miami Beach and Key West; and Mr. Chris Bergh, representing the Nature Conservancy, who also attended the meetings.

Mr. Woerner indicated that the Regional Climate Action Plan was released in October 2012 and was endorsed by each of the counties, with the exception of Palm Beach, which was on the verge of doing so. He noted each of the counties had been asked to implement the Action Plan, which included the following components: sustainable community and transportation planning; water supply, management and infrastructure; risk reduction and emergency management; energy and fuel; natural systems and agriculture; and outreach and public policy.

Mr. Woerner stated that Miami Beach was aggressively trying to address this problem. He noted he was invited to an event recently in Miami Beach, which was attended by 60 Chief Executive Officers of major

telecommunications companies, who were concerned about climate change, and wanted to know how their companies could help the public to understand this issue. Mr. Woerner said they believed that the cities would play a major role in future world economy, and were surprised to learn of Miami Beach's vulnerability to sea level rise.

Mr. Woerner said that County staff was currently reviewing the GreenPrint sustainability plan, published in 2010. He noted this five-year plan, with 137 initiatives and 29 strategies, includes the following components: our environment; strong leadership, connections and commitment; water and energy efficiency; responsible land use and smart transportation; healthy communities; climate change action plan; and vibrant economy.

IV. GreenPrint Overview and Progress Update on Local and Regional Climate Action Recommendations and Plans

Ms. Debbie Griner, Sustainability Initiatives Coordinator, Office of Sustainability, RER, discussed the progress accomplished by the County. She stated that over the years staff has reviewed the Climate Change Advisory Task Force recommendations to provide an update on how other planning processes had integrated them.

Ms. Griner indicated that the Comprehensive Development Master Plan (CDMP) was amended this year to include climate change. She said that great care was taken to ensure that the CDMP policies integrated the Climate Change Advisory Task Force recommendations, the GreenPrint initiatives, and the Regional Climate Action Plan recommendations. Ms. Griner noted a decision was made to weave climate change policies into the existing elements of the CDMP.

Ms. Griner stated that staff was consistently receiving more information on the progress of the Climate Change Advisory Task Force's fifty five recommendations: 60 percent were in progress; 36 percent would be implemented in the future; 4 percent were discontinued or modified; 29 were addressed in the GreenPrint initiatives; and 33 were addressed in the Regional Climate Action Plan. She noted great progress had been

achieved when the County had partnered with other organizations at the local, regional and federal levels.

Ms. Griner said that staff conducted a quick progress scan of the progress achieved under the Regional Climate Action Plan, and found that 92 percent of the public policy recommendations had been implemented, because the four counties had already been working together to develop a Compact policy program for the past three years.

Ms. Griner said that the Compact had received a \$975,000 funding grant from the Kresge Foundation to organize workshops for the implementation of the Compact's recommendations. She stated that the Steering Committee prioritized and grouped recommendations. Ms. Griner noted these workshops were designed to gather experts in the field to identify best practices, and develop a guidance document. She indicated that two workshops would be held by the end of the year, and eight would be held next year.

Ms. Griner noted staff had developed implementation guides, understanding that it involved many partners to implement the recommendations. She said that these guides provided funding sources, milestones, and progress indicators for potential partners.

Ms. Griner provided a few examples of current activities in progress: Science Committee Statement of Sea Level Rise used in the development of the Regional Unified Sea Level Rise Projection; infrastructure planning and design; transportation infrastructure; and drainage improvements to the Florida City Canal. She also provided a few examples of future activities: Develop vital signs; consider sea level rise in design, location, and development of infrastructure and public facilities; all County department plans to include adaptation strategies; and direct future population concentrations away from vulnerable areas.

Ms. Griner said that a more robust understanding of the vulnerabilities was needed, and the Adaptation Action Areas was an implementation tool which could be used to identify local areas that were vulnerable to flooding.

She referred to a pilot project in Fort Lauderdale whose objective was to assist in identifying adaptation action areas.

Ms. Griner noted yesterday, (11/20) at the Board of County Commissioners' meeting, Chairwoman Sosa talked about the importance of including the possibility of sea level rise in every detail of infrastructure improvements.

Chairman Ruvin indicated that Chairwoman Sosa wanted to attend today's (11/21) meeting, but was unable to do so because of a conflict in her schedule. He noted her understanding of this issue had increased tremendously.

Ms. Griner highlighted the purpose of this Task Force, which was to review the relevant data and prior studies, assessments, reports, and evaluations of the potential impact of sea level rise on vital public services and facilities, real estate, water and other ecological resources, waterfront property and infrastructure. With regard to the Task Force's deliverables, she said that the members were to develop a comprehensive and realistic assessment of the likely and potential impacts of sea level rise and storm surge over time; and to develop a set of recommendations relative to the amendments to the Comprehensive Development Master Plan, capital facilities planning, budgetary priorities and other County programs.

Ms. Griner concluded her presentation by pointing out some questions that the Task Force members may wish to answer: What are the gaps, and additional information needed to complete the "review of relevant information"? What information is needed to establish a rate of estimated sea level rise and timing? What is the best method to establish vulnerability and priority adaptation areas? What are the recommended implementation strategies for CDMP policies, capital facilities planning, and budgetary priorities?

V. Discussion and Next Steps

Chairman Ruvin thanked Ms. Griner for her presentation, noting she and Ms. Hefty had been working around the clock to gather this information. He opened the floor for comments and discussion.

Mr. Murley pointed out that in the slide presenting the deliverables of the Task Force, storm surge should also be highlighted, because this raises a different set of data.

Chairman Ruvin suggested that the Task Force members agree on who should be invited to make presentations. He said that the members had already agreed that representatives of the South Florida Water Management District, the United States Geological Survey (USGS), and the Metropolitan Planning Organization (MPO) should be invited.

Mr. Murley suggested that District 6 be invited in addition to the County MPO.

Responding to Ms. Fain's question regarding how the Department of Transportation (DOT) and the MPO interfaced with the Miami-Dade Expressway Authority, Ms. Griner said she believed that the Expressway Authority had a member on the MPO Board.

Mr. Enfield said that he would like to invite someone to explain how to transcend the simple bathtub visualization. He noted GIS techniques could be used to overlay additional information, and Broward County was already doing this. Mr. Enfield expressed an interest in finding out what Miami-Dade was doing in that respect. He said that he was also interested in finding out how the risk of flooding changed over time and from one locality to another as the sea level rose. He referred to the Climate Central website, which was launched a few weeks ago, noting he did not know how to interpret it properly.

Chairman Ruvin explained that the Climate Central had developed a new tool that allowed individuals to discover how vulnerable their properties

were to sea level rise. He said that Mr. Ben Strauss would be invited to discuss this issue.

Mr. Murley suggested that Dr. Jayantha Obeysekera, from the South Florida Water Management District, be invited, as he was an active member of the Compact.

Mr. Murley suggested that Mr. Dan Kimball, Everglades National Park Superintendent, be invited as well, because he could explain to the Task Force members the infrastructure of the Eco-system Task Force, and provide a good indication as to what was happening in the natural areas.

Ms. Fain suggested that one meeting be dedicated to the natural areas, noting RER had a number of staff working on this.

Chairman Ruvlin noted he agreed that this was an important issue, because the County had budgetary constraints, and it would be useful for this Task Force to endorse some of these projects to ensure that they received funding.

Ms. Fain said that it would be important to determine whether RER staff members were incorporating sea level rise into their analysis, and whether any priority areas would benefit from the Task Force's support. Referring to Chairman Ruvlin's comment that the Task Force might recommend that the County embark on a robust capital improvement plan, Ms. Fain inquired what would be the cost of embarking on such a program, versus the cost of doing nothing.

Chairman Ruvlin referred to the report from the Geneva Society entitled: "Sea Level Rise: Implications for the Insurance Industry", which found that the insurance industry could no longer rely on historic data to set rates or assess risk; and now had to rely on predictive data. He noted the insurance industry was formulating new policies in light of the report's findings. Chairman Ruvlin said that eventually, the insurance industry may expect a plan from government addressing this issue; otherwise, this could impact insurance rates in South Florida. He pointed out that it was

imperative to begin developing a plan, preferably in coordination with the other counties in the region, and he would like to invite representatives from Swiss Re to address the Task Force, because this was such an important concern. Chairman Ruvín stated that it would also be necessary to educate the public; however, he wanted the message to be as positive as possible to avoid creating panic.

Mr. Millian noted it was important to start identifying the vulnerable infrastructure, such as the waste water treatment plants along the coast, and the power plant. He said that it would also be necessary to identify funding sources, such as the federal and State governments, and the Water Management District.

Chairman Ruvín reiterated that the Task Force members had agreed to invite the following organizations to make presentations: USGS, MPO, the County's Water and Sewer Department, the Water Management District, and Swiss Re.

Mr. Murley indicated that the Rockefeller Foundation was operating with a grant in Miami Beach, and suggested that representatives from that organization and Miami Beach City be invited to address the Task Force.

Ms. Griner stated that at the summit a representative from Hazen and Sawyer made a presentation on the work being done in New York City and on the cost of doing nothing. She noted the County's storm water master planning process could provide information on how to design storm water infrastructure.

Referring to Ms. Fain's comments regarding the cost of doing nothing, Chairman Ruvín pointed out that Miami was on the verge of emerging as a major future city, noting it was obvious that even if a multi-billion dollar program was to be implemented, the benefits of this program would far outweigh its cost.

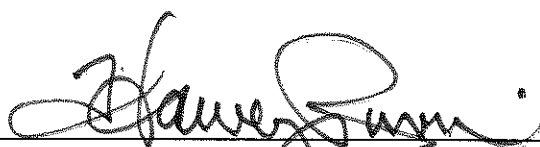
Chairman Ruvín noted he had a list of organizations to be invited to make presentations. He said that he would select three or four dates that were

convenient for him, and consult the other Task Force members before deciding on a date for the next meeting. He asked Assistant County Attorney Angell about the Sunshine Law implications if he sent materials to the Task Force members and communicated with them outside of the meetings.

Assistant County Attorney Angell said that he would verify the regulations pertaining to Task Forces and provide the information to Chairman Ruvin and the other members.

VI. Adjournment

There being no other business to come before the Sea Level Rise Task Force, the meeting adjourned at 12 noon.



Chairman Harvey Ruvin
Sea Level Rise Task Force



**Miami-Dade County
Sea Level Rise Task Force
November 21, 2013**

Prepared by: Maryse Fontus

EXHIBITS LIST

NO.	DATE	ITEM #	DESCRIPTION
1	11/21/2013		Attendance Sheets
2	11/21/2013		Agenda
3	11/21/2013		A Quick User's Guide to Understanding Sea Level Rise
4	11/21/2013		Sea Level Rise – Recommendations, Planning, and Practice
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MEETING DATE OF 11/21/13

Four (4) members constitutes a quorum

Sea Level Rise Task Force Meeting

November 21, 2013

10:00 AM

Lawson E. Thomas Courthouse Center
26th Floor Conference Room

Name	Organization	Phone Number	Email Address
Kimberly Brown	MDC - Planning Division	305-375-4724	brownk@miamicidade.gov
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Daryl L. Jones	Law Offices of Daryl L. Jones, P.A.	305-969-3602	djones@DLJonesLaw.com
NANCY SCHNEIDER	CONSULTANT TO SFARPC	305-720 4464	nscneider2015@yahoo.com
Bertha Goldenberg	MDC - Water & Sewer Dept	786-552-8120	brg@miamicidade.gov
David Adams	Reuters News Agency	305-810 2690	David.A@thomsonreuters.com



Miami-Dade Sea Level Rise Task Force Meeting

November 21, 2013

10:00AM – 12:00 PM

Lawson E. Thomas Courthouse Center

175 NW 1st Avenue, 26th Floor Conference Room

Miami, Florida 33128.

- **Welcome and Introductions**
Honorable Clerk & Sea Level Rise Task Force Chair, Harvey Ruvin
- **Climate 101 – A Quick Users Guide to Understanding Sea Level Rise**
Dr. Nancy Gassman, Natural Resources Administrator, Energy and Sustainability Program
Broward County Natural Resources Planning and Management Division
- **SE FL Regional Climate Change Compact Overview**
Mr. Mark Woerner, Assistant Director for Planning, Miami-Dade Dept. of Regulatory and Economic Resources
- **GreenPrint Overview & Progress Update on Local and Regional Climate Action Recommendations and Plans**
Ms. Debbie Griner, Sustainability Initiatives Coordinator, Miami-Dade Dept. of Regulatory and Economic Resources
- **Discussion and Next Steps**
- **Date for next Task Force Meeting**

Climate 101

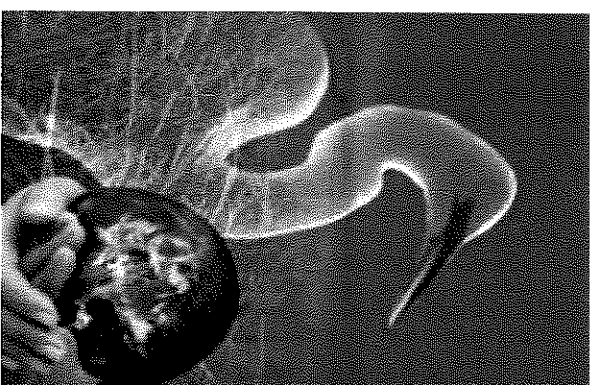
A Quick User's Guide to Understanding Sea Level Rise

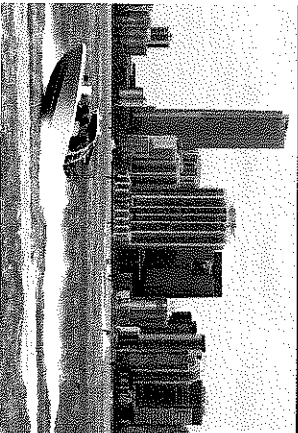
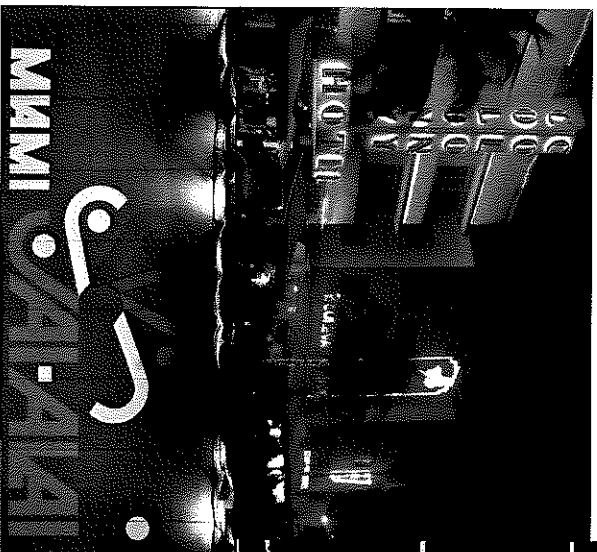
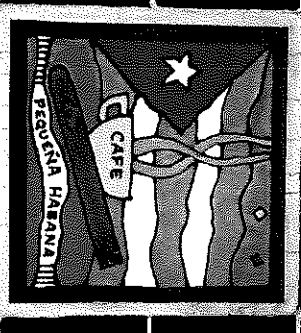
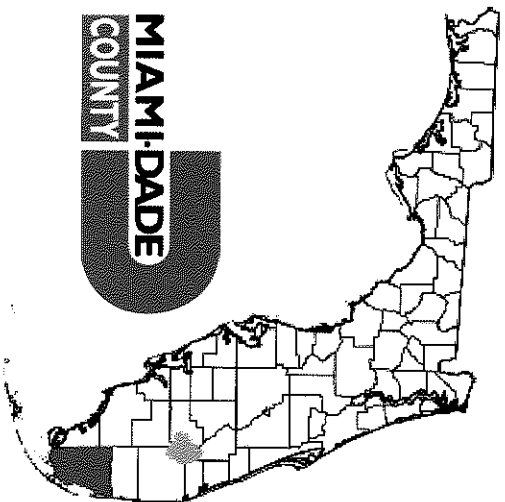
Nancy J. Gassman, Ph.D.
Broward County



Natural Resources Planning & Management Division

Miami-Dade County – Sea Level Rise Task Force
November 21, 2013





Overview

- Climate Basics
- Climate Concerns in Southeast Florida
- Southeast Florida Regional Technical Tools

Atmospheric Carbon Dioxide

- 24%↑ measured [CO₂] since 1958
- 42%↑ [CO₂] since Industrial Revolution

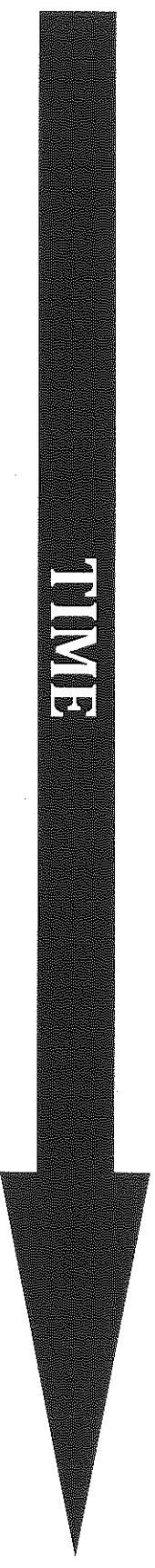
395 ppm
(Aug 2013)

318 ppm (1958)

Mauna Loa Observatory on Hawai'i



Leading Indicators of Change



Leading

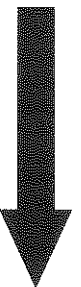
Lagging

↑ CO₂



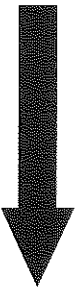
↑ Air Temp

↑ Air Temp



↑ Ice Melt/ Thermal
Expansion

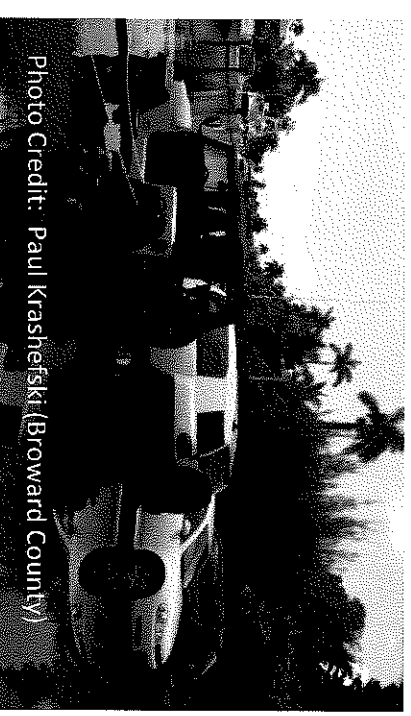
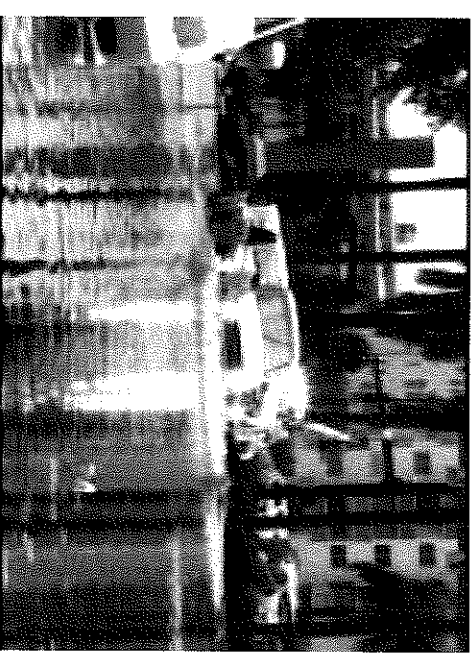
↑ Ice Melt/TE



↑ Sea Level Rise

Climate Change Impacts in SE FL

- Increasing Temp (2 to 10°F) by 2100
- Increasing occurrence of extreme weather
 - hotter summers
 - drier droughts
 - wetter rainy seasons
 - cold snaps
- ↓ frequency with ↑ intensity of tropical storms
- Sea level rise (2-5 feet) by 2100



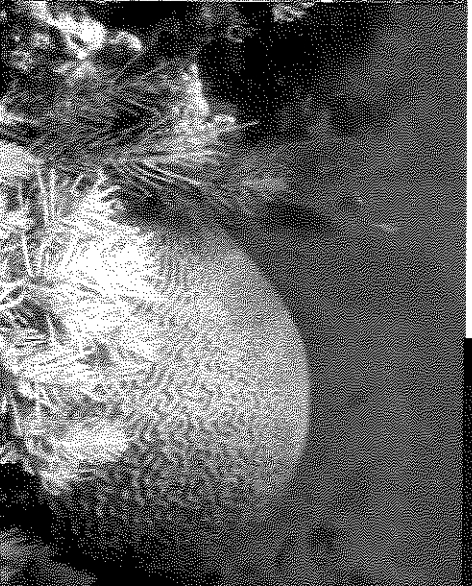
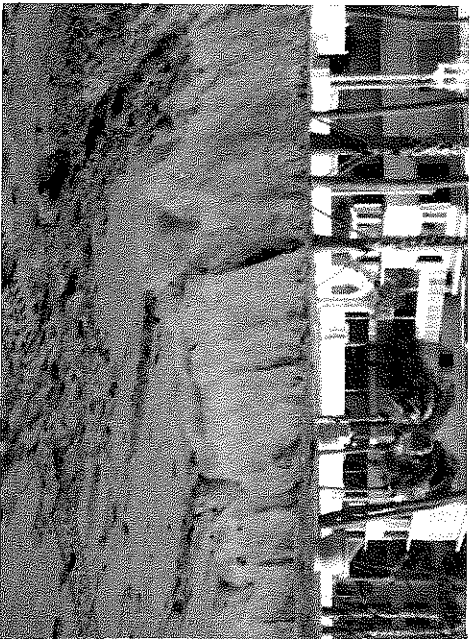
Climate Change Impacts in SE FL



**"Of all the regions,
in all the towns,
in all the world,
sea level is affecting
mine."**

Sea Level Rise Implications for SE Florida

- Saltwater intrusion into the aquifer
- Drainage and flood control compromised
- Impacts to public and private infrastructure
- Beach erosion
- Impacts to coral reefs
- Impacts to Everglades





Regional Climate
LEADERSHIP SUMMIT

Southeast Florida Regional Climate Leadership Summit

Friday, October 23, 2009

BROWARD
COUNTY
FLORIDA

MIAMI-DADE
COUNTY

Greener Every Day



SECTION 6. That each county shall work with other counties party to this compact in developing a Southeast Florida Regional Climate Change Action Plan. The Action Plan could, at a minimum, include the following components:

- a) A baseline of greenhouse gas emissions for Southeast Florida;
- b) Strategies for coordinated emissions reduction throughout the high environment to include: increased reliance on public energy conservation, and the use of demand side management energy resources;
- c) Strategies for coordinated emissions reduction resulting from changes in local and regional land use;
- d) Strategies for the coordinated regional preparation for and adaptation to a rapidly changing global environment based upon regional mapping of projected sea level rise and any resulting amplification of localized impacts of tropical cyclone events; such strategies shall incorporate climate preparation concerns for the regional economy, regional infrastructure and the built environment, social and cultural needs, and natural systems within the four counties party to this compact.

SECTION 7. That each county shall commit to participating with other counties party to this compact in hosting the Second Southeast Florida Regional Climate Change Summit in October 2010.

Kristin Jacobs
Commissioner Kristin Jacobs
Broward County

Walter George Neumann
Walter George Neumann
Miami-Dade County

Katy Sorenson
Commissioner Katy Sorenson
Miami-Dade County

Shelley Van Aken
Commissioner Shelley Van Aken
Palm Beach County

Compact Commitments



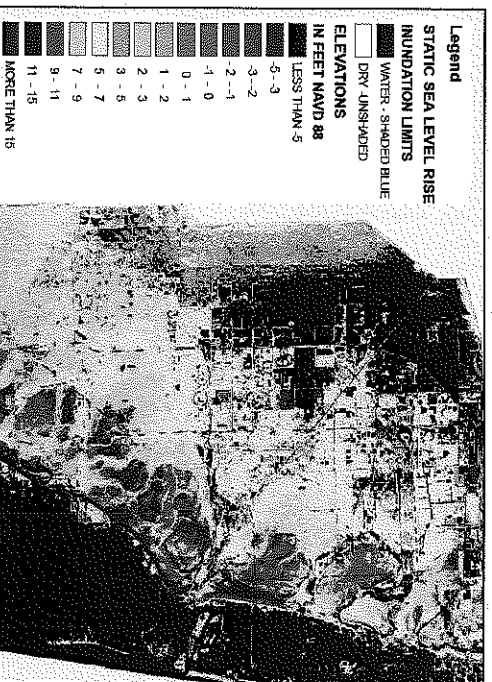
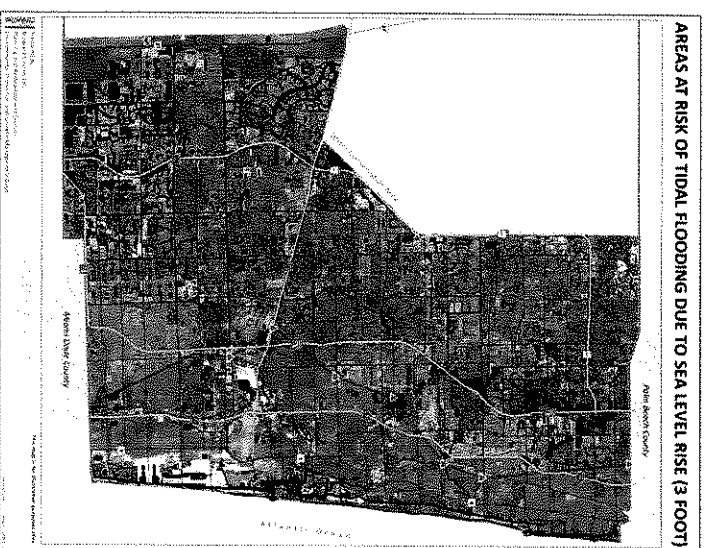
Greener Every Day



Use Regional Resources on:

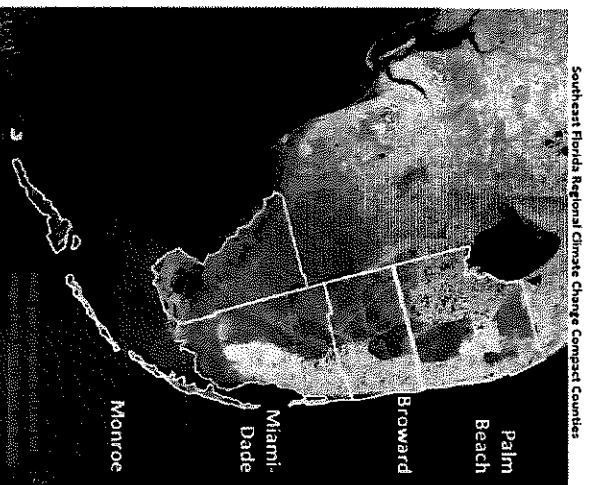
- Policy Collaboration
- Technical Planning Tool Development
- Regional Climate Change Action Plan
- Annual Climate Leadership Summits

Common Concerns / Different Approaches

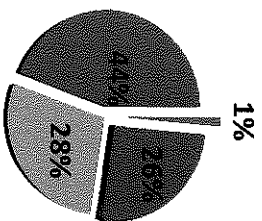
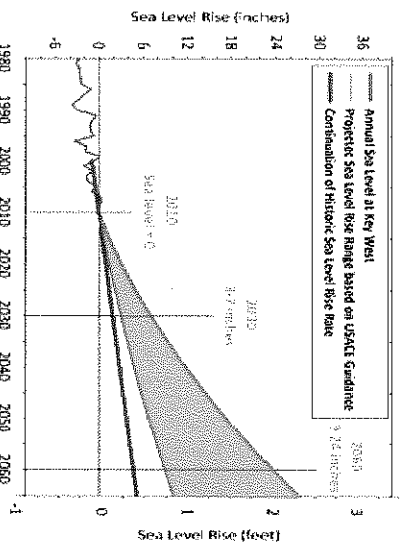


Compact's Technical Foundation

A Unified Sea Level Rise Projection for Southeast Florida

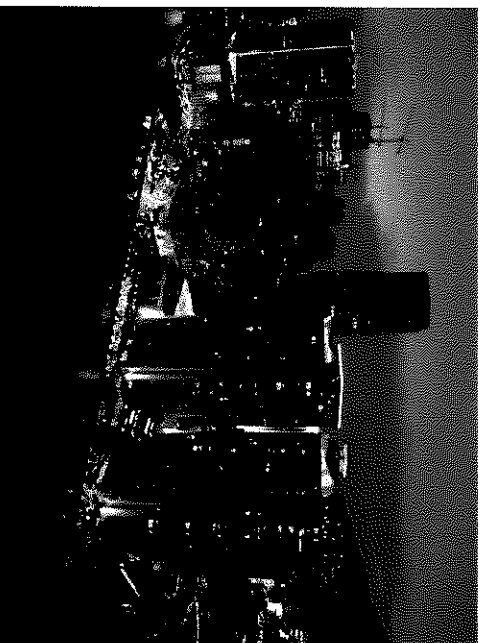


April 2011
Prepared by the
Technical Ad hoc Work Group



- Industrial
- Commercial
- Residential
- Transportation

Southeast Florida Regional Climate Compact Regional Greenhouse Gas Emissions Inventory Baseline Period: 2005 - 2009



Produced by the Regional Compact
GHG Inventory Working Group

November 2011



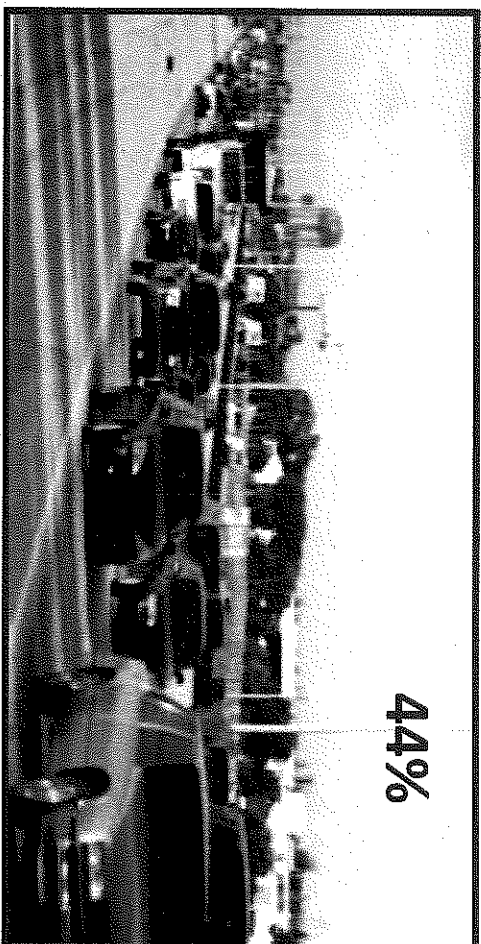
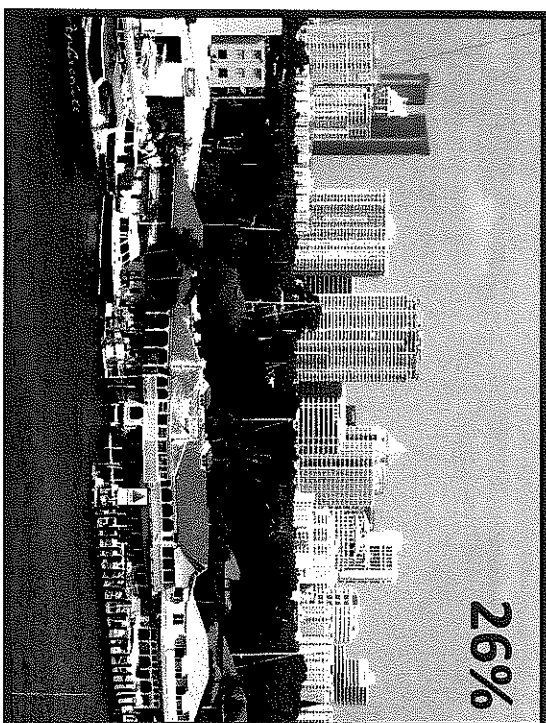
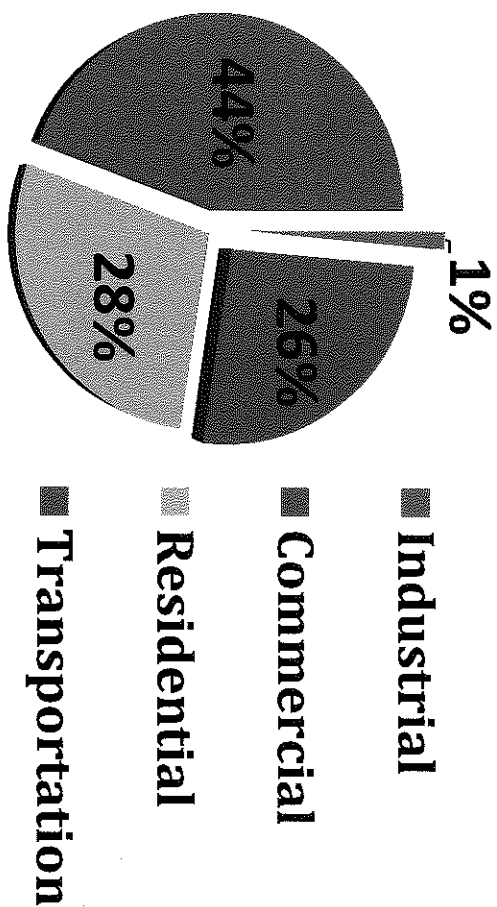
Analysis of the Vulnerability of Southeast Florida to Sea Level Rise

Southeast Florida Regional Climate Change Compact
Inundation Mapping and Vulnerability Assessment
Work Group

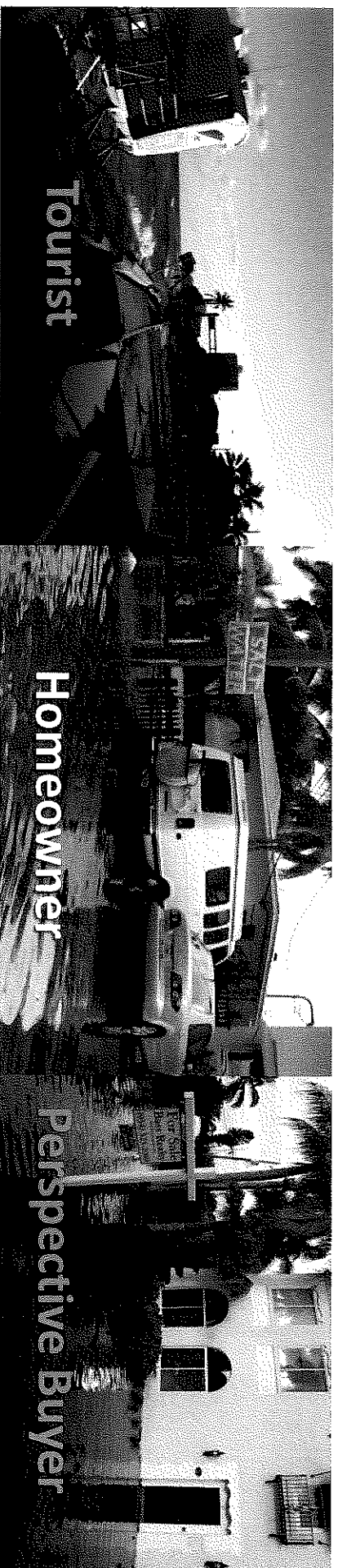
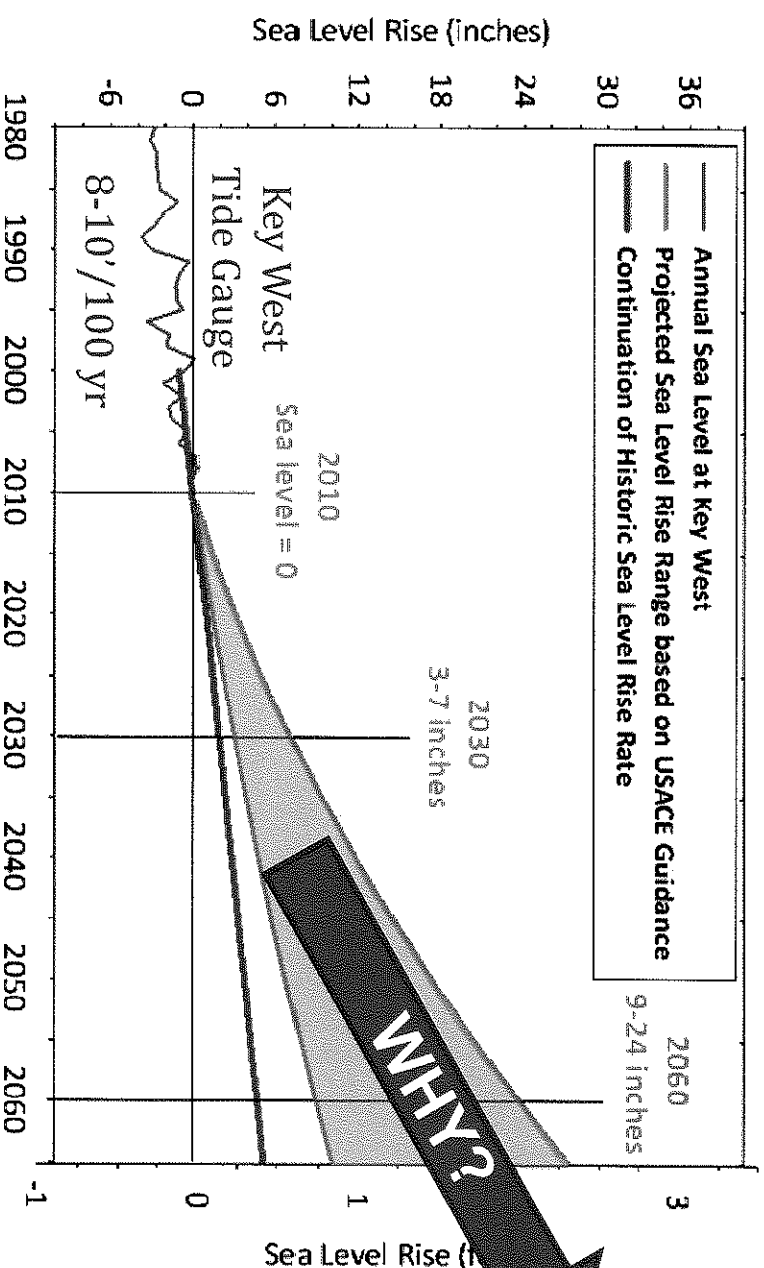
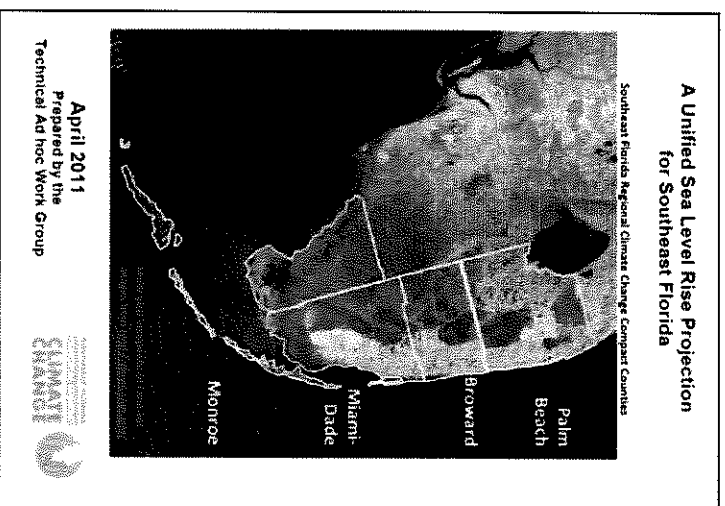
August 2012



Regional GHG Emissions by Sector



Planning for Sea Level Rise



Leading Indicators of Change

TIME

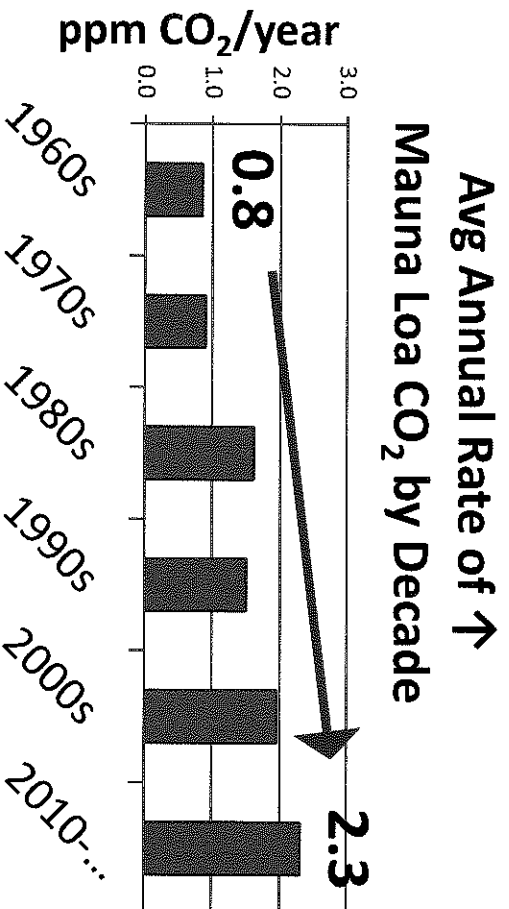
Leading

Rates are
Increasing

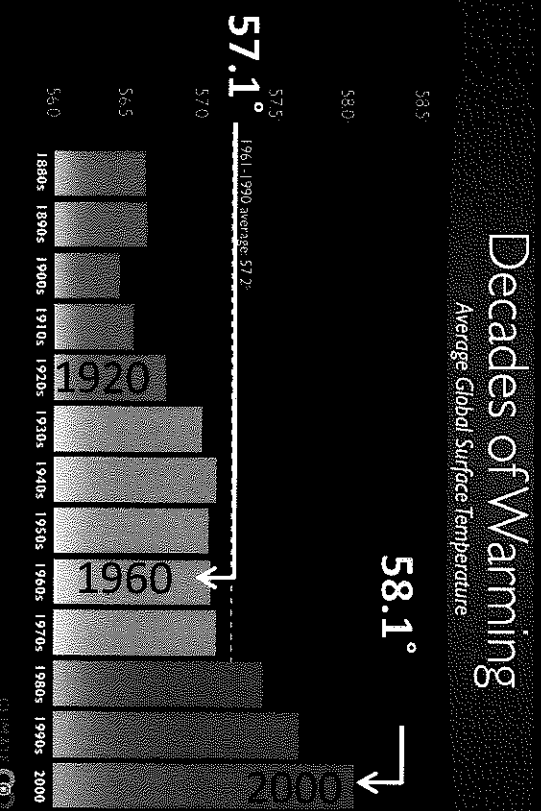
↑ CO₂

Lagging

↑ Air Temp



NOAA- ESRL



Average Global Surface Temperature

CLIMATE GO NATIONAL

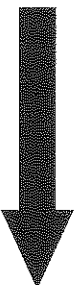
Leading Indicators of Change

TIME

Leading

Lagging

↑ CO₂



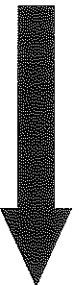
↑ Air Temp

↑ Air Temp



↑ Ice Melt

↑ Ice Melt



↑ Sea Level Rise

Leading Indicator of Sea Level Rise

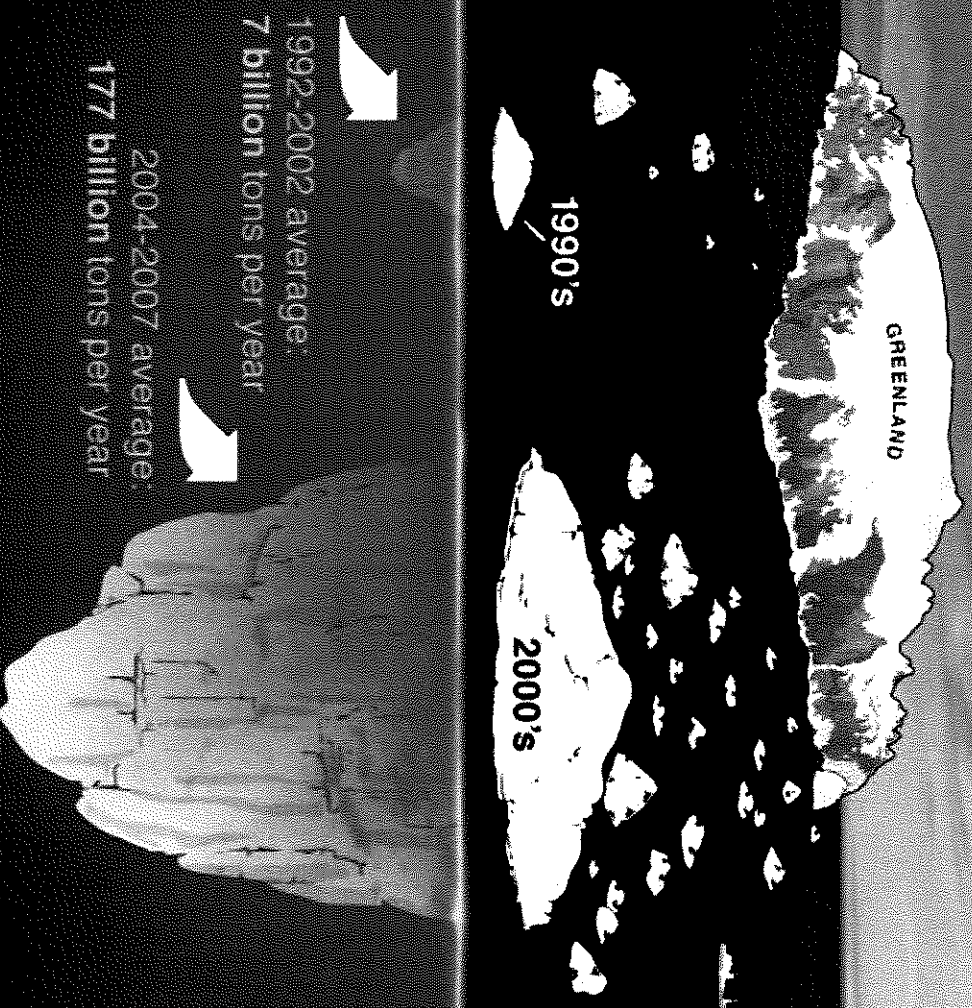
Loss of
Greenland Ice

> 25X than a
decade ago

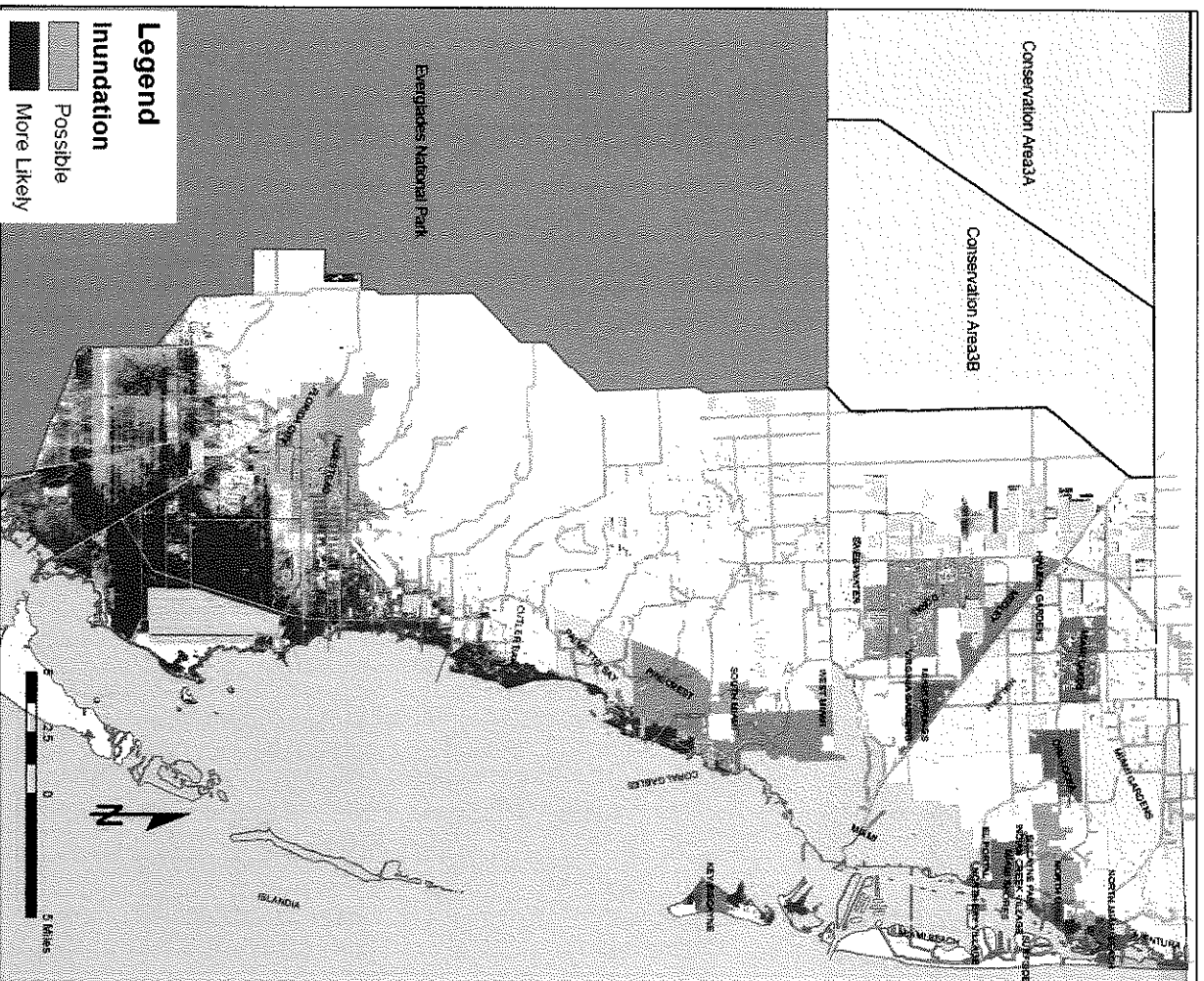
1990s:
7B tons/yr

2000s:
177B tons/yr

Shedding Ice Faster



1-foot Sea Level Rise In Miami-Dade County

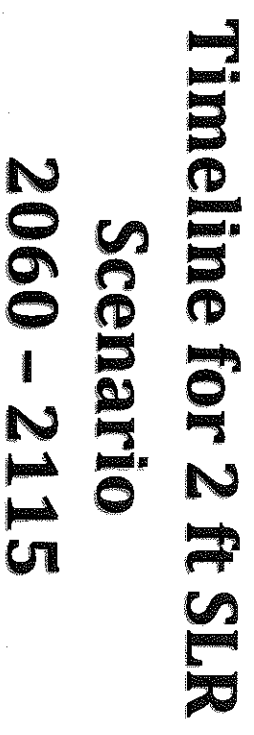


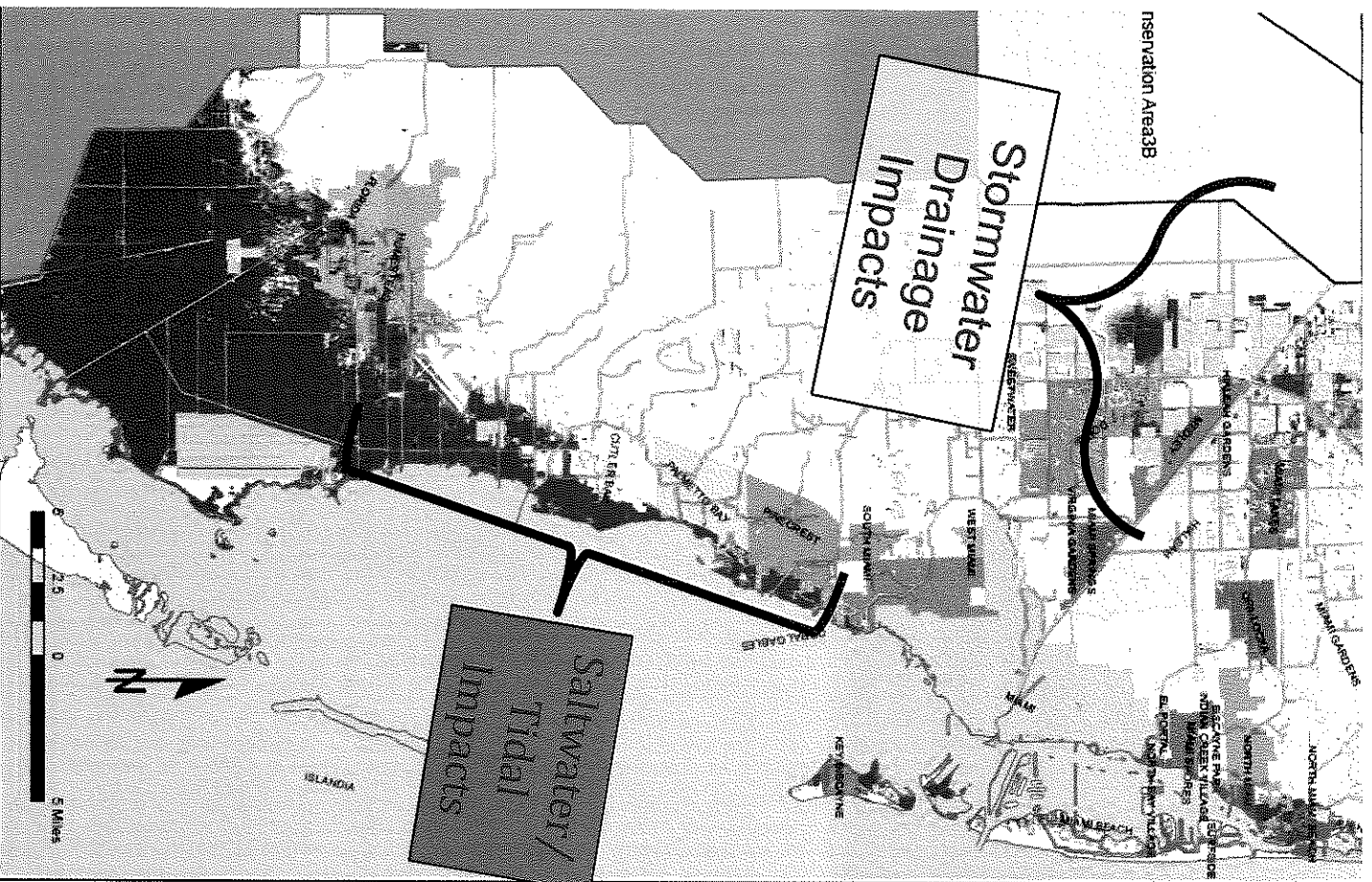
SE FL Regional Vulnerability Analysis

- Identifies area with elevations below Mean Higher High Water
- Planning tool to identify areas of concern

**Timeline for 1 ft SLR
Scenario
2040 – 2070**

SEFL Regional



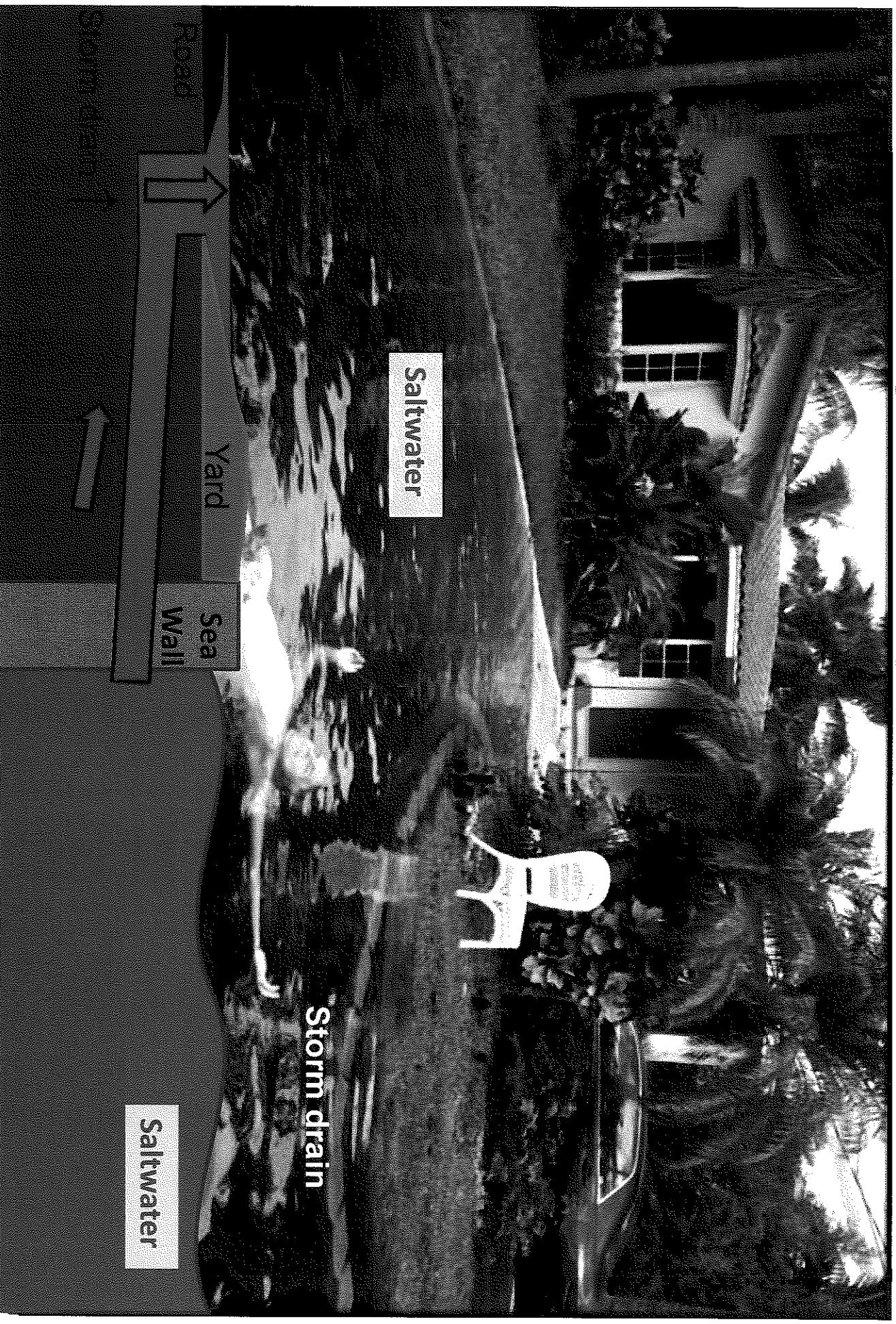


**Vulnerability to
Sea Level Rise
is not just a
Coastal Issue**

Drainage under Average Tidal Conditions



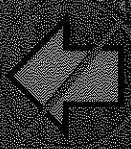
Drainage Challenge with Sea Level Rise





Freshwater

Stormwater cannot drain



Road

Storm drain

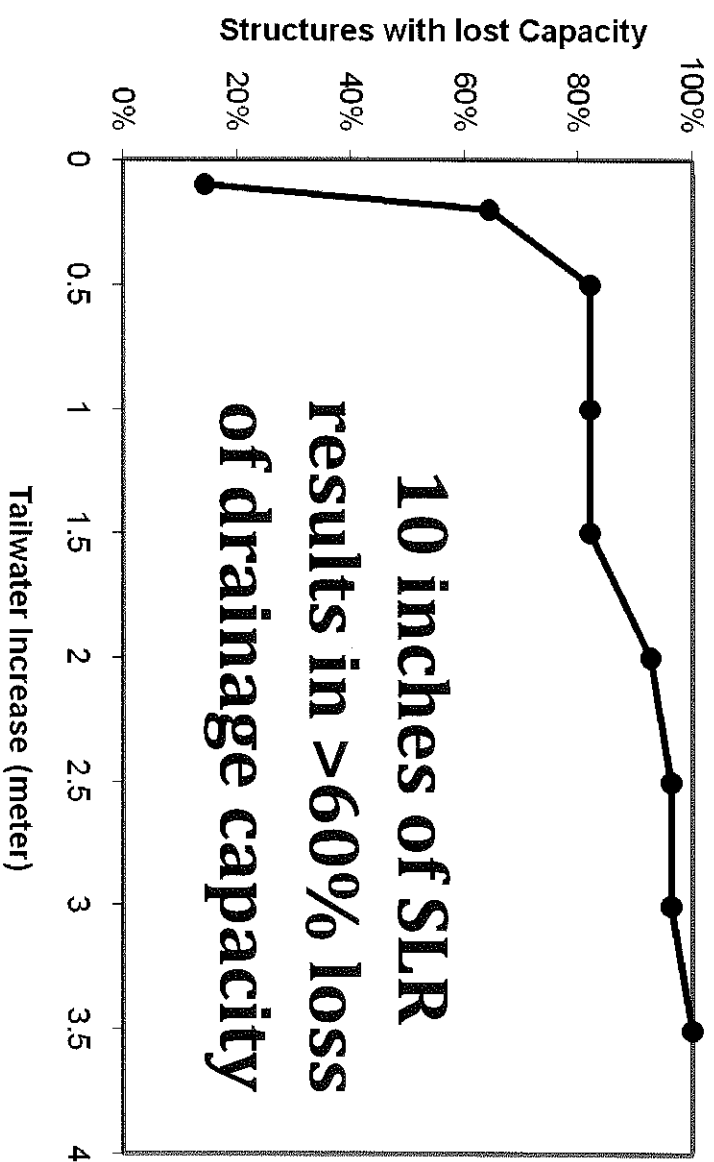
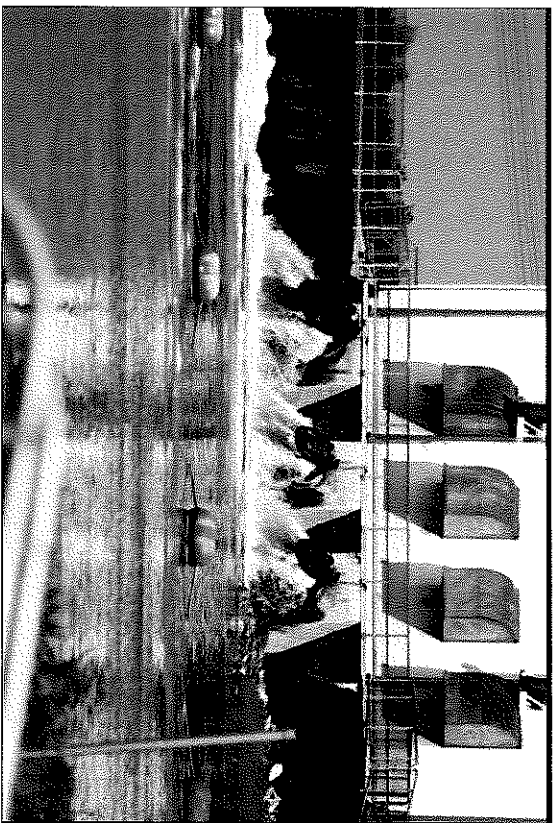
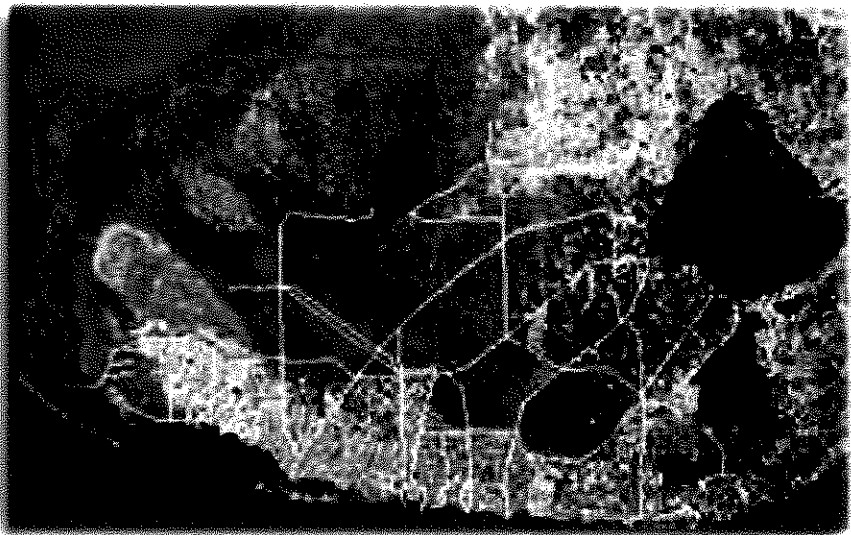
Yard

Sea Wall

High Tide / Sea Level Rise

Resulting Coastal (SW) or Inland (FW) Flooding





Courtesy of SFWMD

Local Climate Impact

- More flooding
- Compromised drainage infrastructure

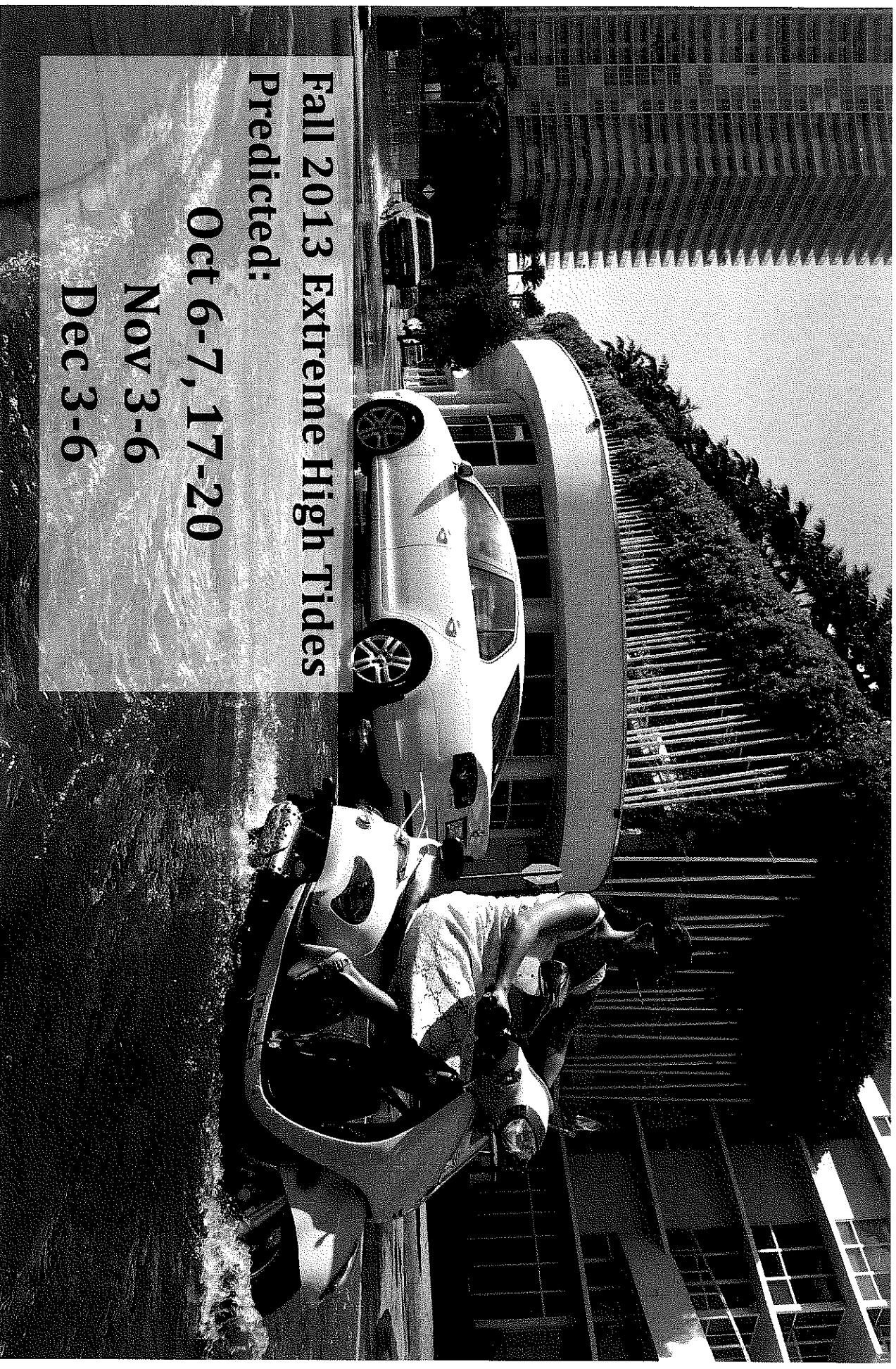
Extreme High Tide Events – Not our Future, NOW

**Fall 2013 Extreme High Tides
Predicted:**

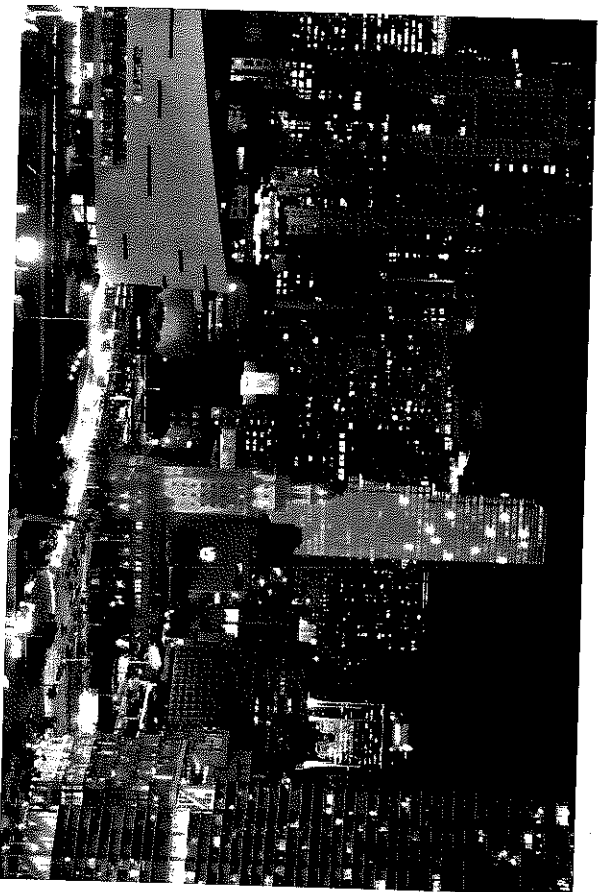
Oct 6-7, 17-20

Nov 3-6

Dec 3-6

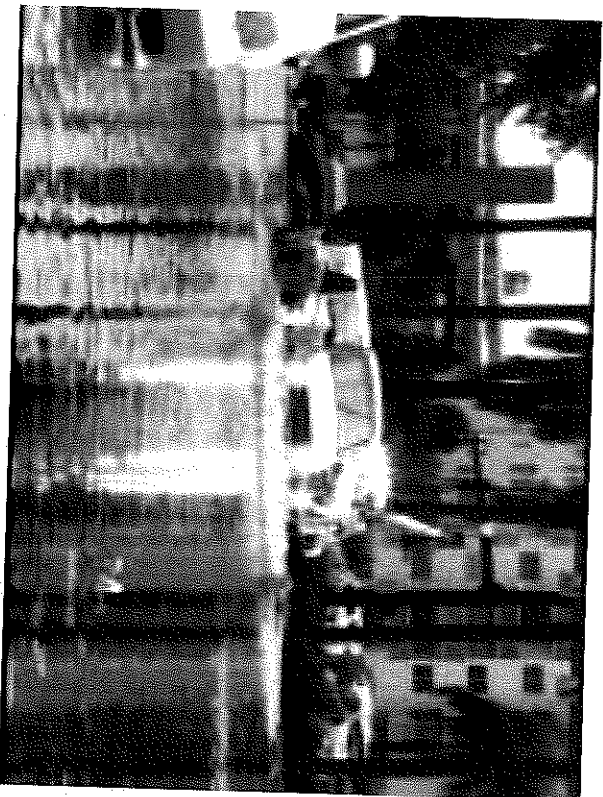


The No Action Option for Coastal Communities

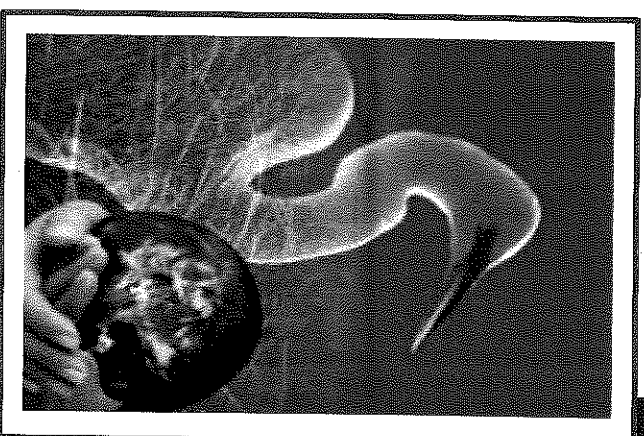


"Frankly my dear, sea level rise doesn't give a damn."

Whether or not we plan to address current or future sea level rise, it will come.

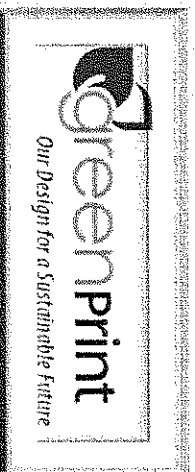


Questions?



BROWARD COUNTY
FLORIDA
Nancy J. Gassman, Ph.D.
ngassman@broward.org

Sea Level Rise Recommendations, Planning, and Practice



Nichole Hefty, Chief

Office of Sustainability

Planning Division

Miami-Dade County Department of
Regulatory and Economic Resources

Debbie Griner

Sustainability Initiatives Coord.

Office of Sustainability, Planning Division

Miami-Dade County Department of
Regulatory and Economic Resources

Topics

- GreenPrint Overview
- Brief Compact History and Structure
- Progress & Common Themes
- Discussion on Purpose of Task Force/Next Steps



Convene Annual Summits



SECTION 3. There is a duty and manner of participating with other similarly placed officers, subject to finding the necessary facts, that is, similarly placed officers, 102

Thain (Jaco)

Правда, что

Commissioner Kelly McGowan
Albino Duck Company

Answer the rest

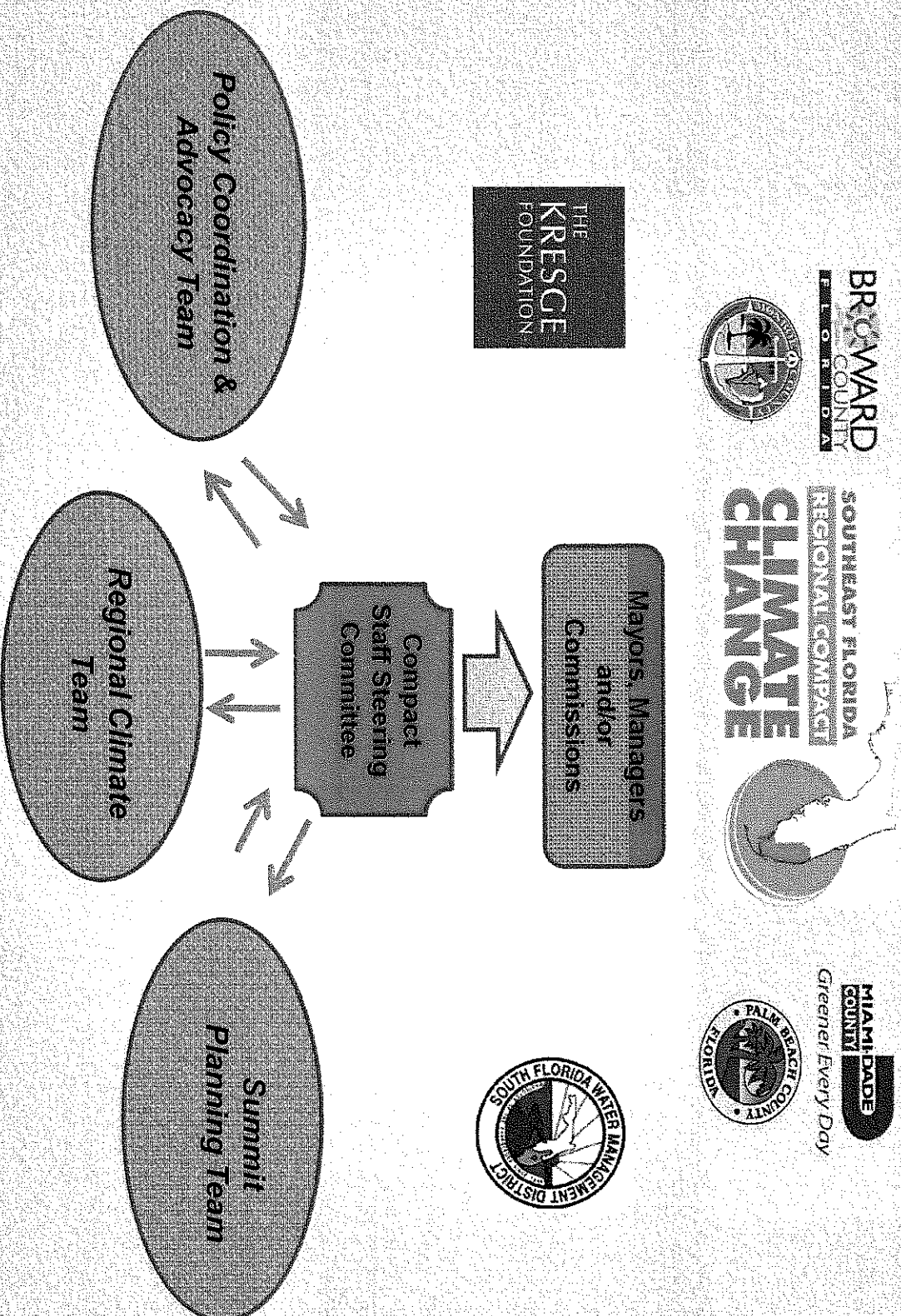
Black & White

Wiley

1000

November 21, 2013

Compact Structure



Miami-Dade County Sea Level Rise Task Force
November 21, 2013



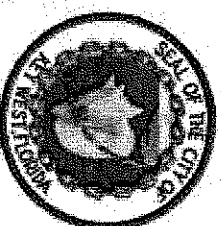
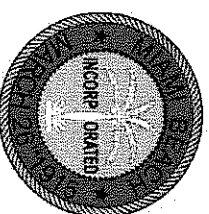
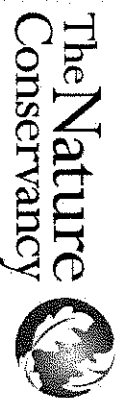
Expansion of Steering Committee in 2012

- **Municipal Representation**

- City of Boynton Beach
- City of Fort Lauderdale
- City of Miami Beach
- City of Key West

- **Environmental Representation**

- Chris Bergh, Nature Conservancy



The Regional Climate Action Plan

To integrate climate adaptation and mitigation into existing systems.

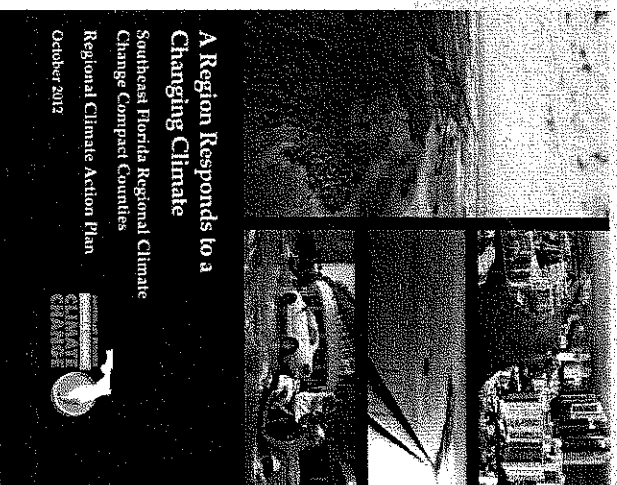
To implement through existing local and regional organizations.

5 year timeframe

- **Sustainable Community and Transportation Planning**
- **Water Supply, Management and Infrastructure**
- **Risk Reduction and Emergency Management**
- **Energy and Fuel**
- **Natural Systems and Agriculture**
- **Outreach and Public Policy**

Download at www.southeastfloridaclimatcompact.org

*Includes companion
Implementation Guide*



*>100 Recommendations
Adaptation and Mitigation*

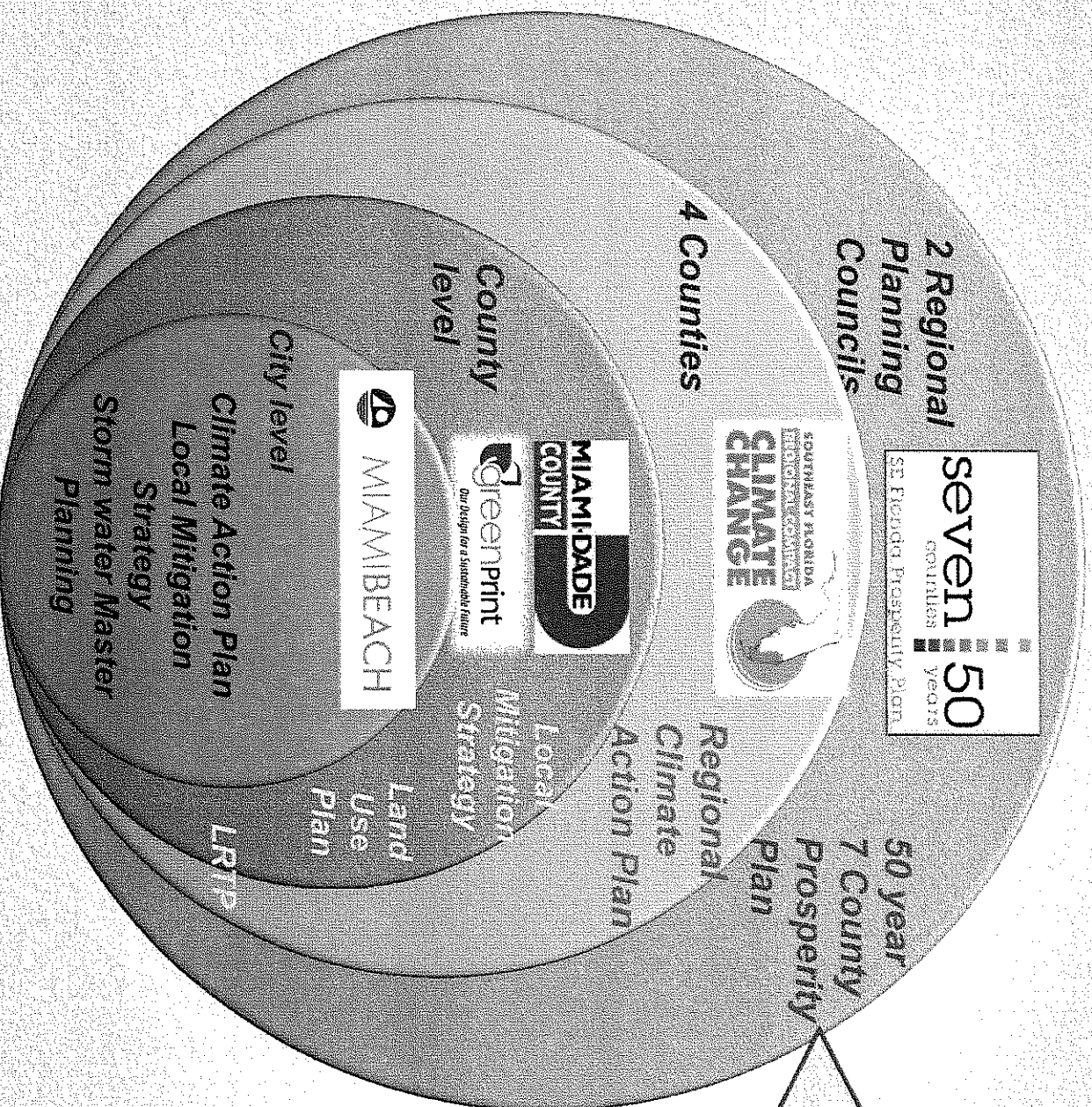


Miami-Dade County Sea Level Rise Task Force

November 21, 2013



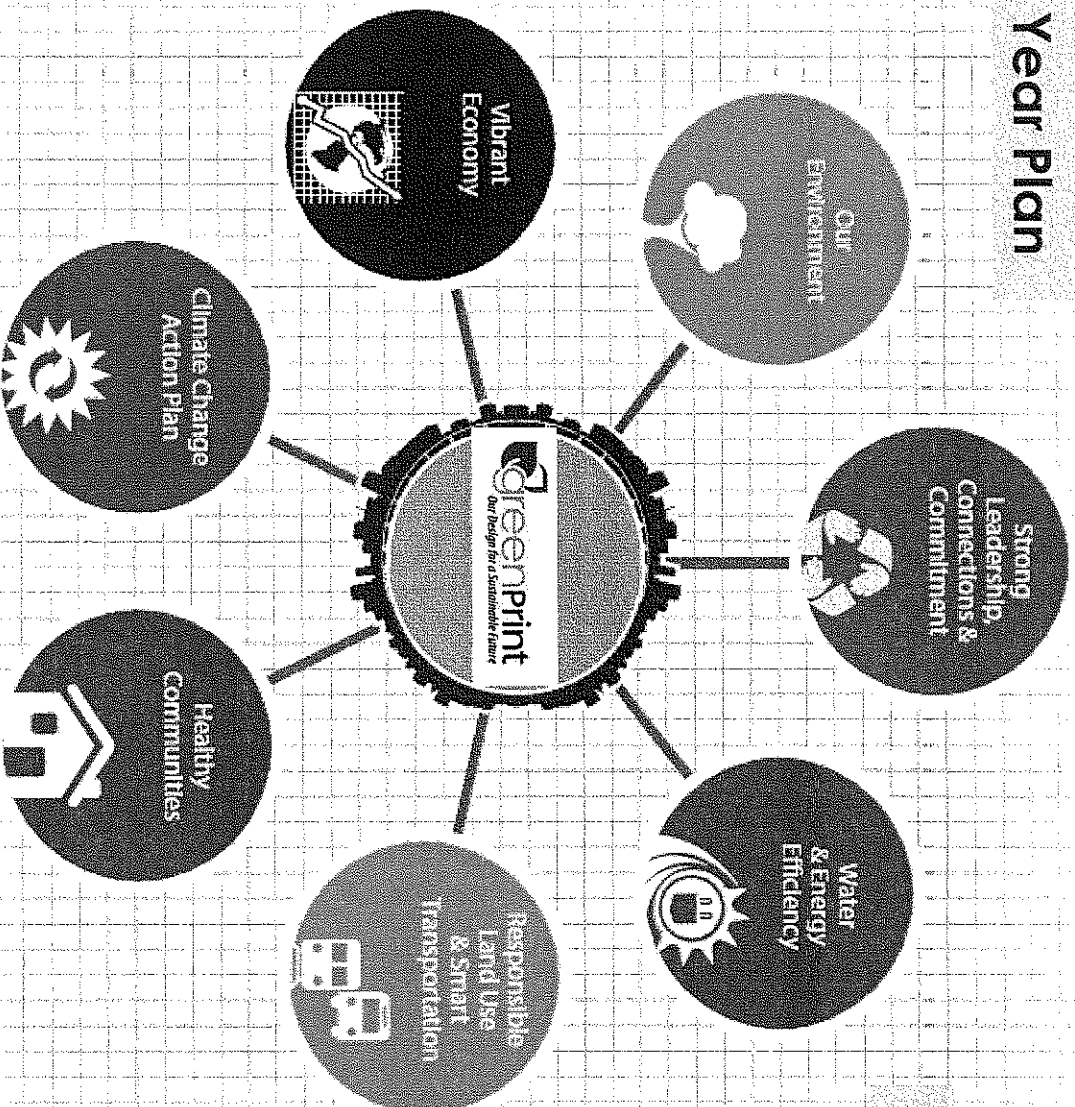
Building Livability and Resilience at Every Scale of Government



7th Livability Principle -
Enhance community resiliency to the impacts of Climate Change

Local Response...

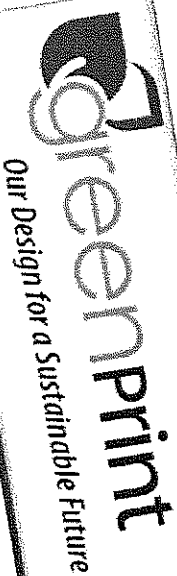
5 Year Plan



137 Initiatives

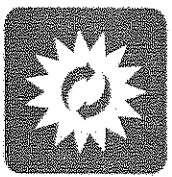
29 Strategies





the County's first Sustainability Plan

- **County and community –wide action plan**
- **Culminates in County's 1st climate action plan**
- **Estimated to reduce 1.5 million mt of GHG over the first 5 yrs**
- **Estimated savings \$73,000,000 per year if fully implemented**
- **Preparing Progress Report**
- **Completed initiatives include: *Implement EECBG Projects, complete the Airportlink, Develop a Green Business Certification Program, Designate Bicycle Space on Metrorail Cars, Construct Earthen Plug in Card Sound Road Canal***



Understand and respond to current and future climate change impacts

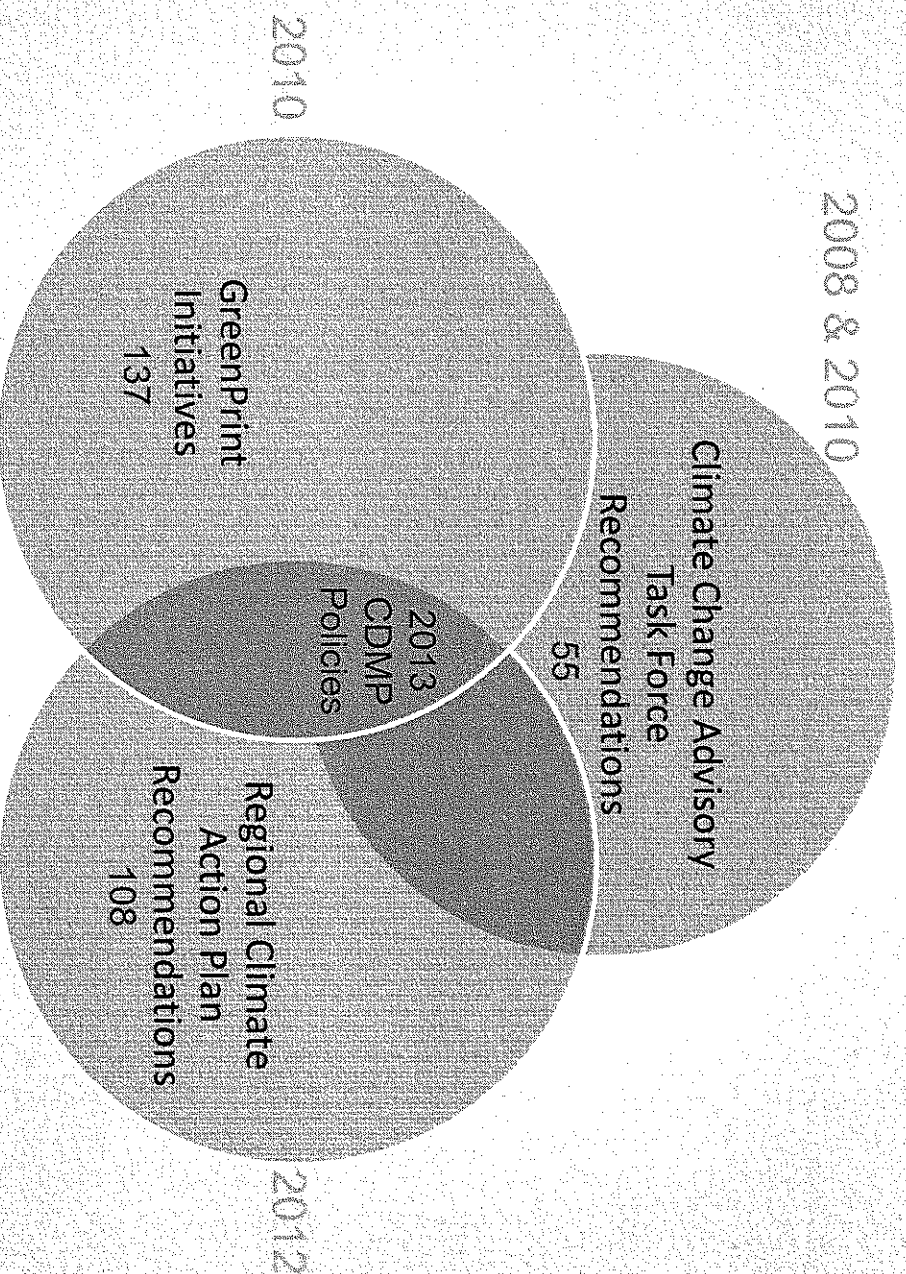
CLIMATE CHANGE ADAPTATION

- Prepare our community for the future impacts of climate change
- Communicate the need and urgency for action
- Turn science into action

Strategies

- Track local and regional climate change indicators and trends
- Develop local and regional climate change scenarios depicting various impacts and time frames
- Integrate future climate change impacts into community and government decision-making for capital, operational, and land-use issues
- Continue to participate in an support the SE Florida Regional Climate Change Compact

Progress & Common Themes



CDMP – Comprehensive Development Master Plan



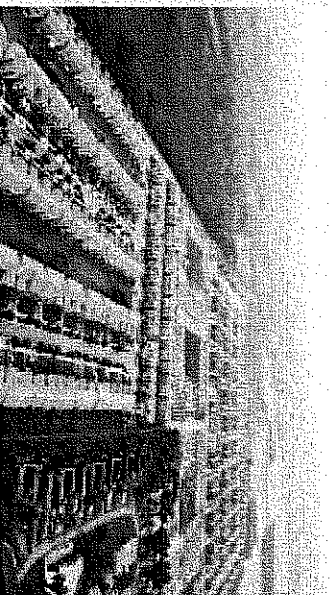
Miami-Dade County Sea Level Rise Task Force
November 21, 2013



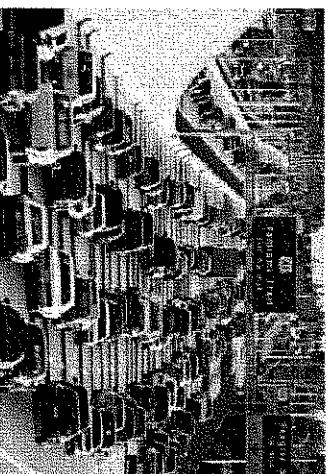
County Policy as a Strong Foundation

- Climate Change policies woven into existing elements

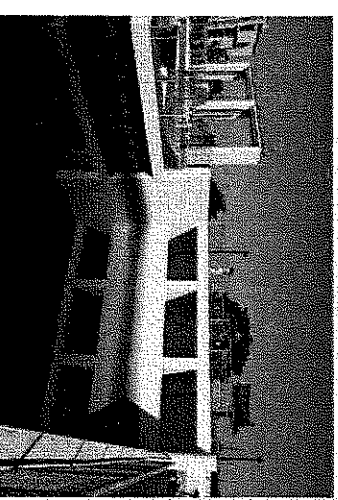
Land Use



Transportation



Water, Sewer & Solid Waste



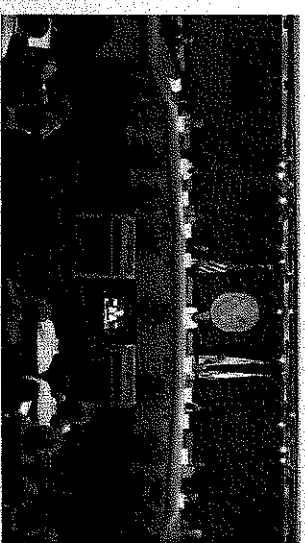
Coastal Management



Conservation, Aquifer Recharge & Drainage



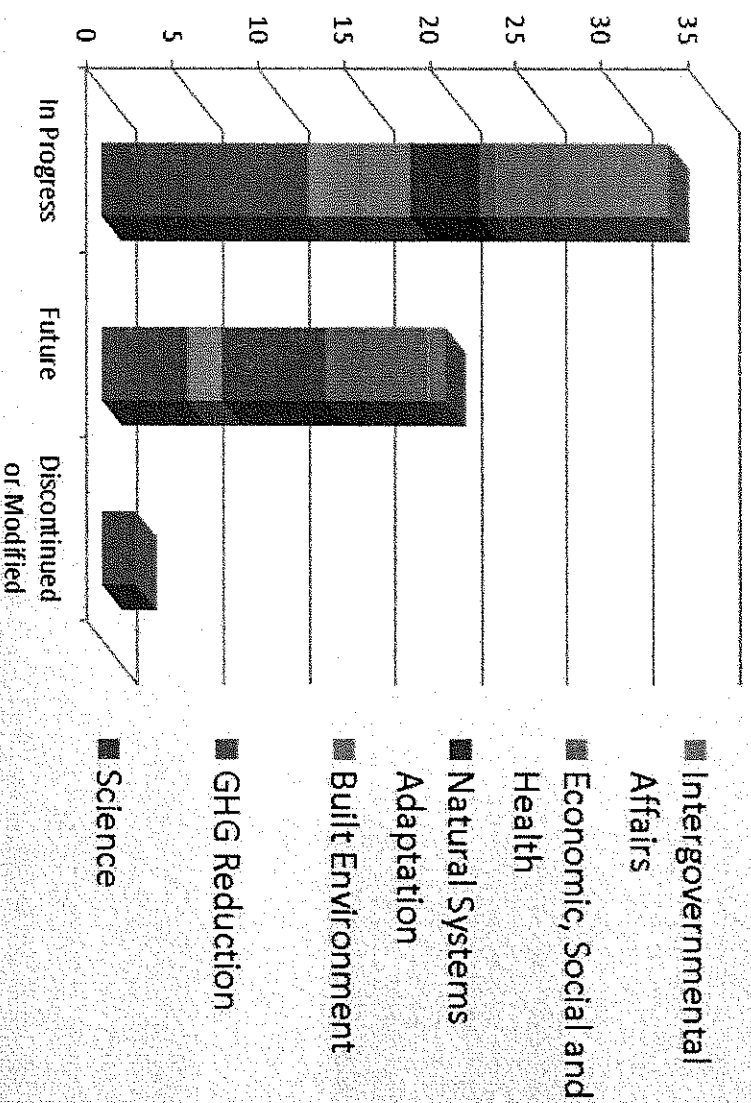
Intergovernmental Coordination



Climate Change Advisory Task Force

2008 – 35 Recs
2010 – 20 Recs

60% In Progress
36% Future Action
4% Discontinued/Modified
29 addressed In GreenPrint
33 addressed in the RCAP



Miami-Dade County Sea Level Rise Task Force
November 21, 2013



Regional Climate Action Plan

Progress Scan

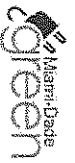


Compact Implementation Workshops: 2013 (2)
2014(8)

Tracking Progress

- Implementation Guide – partners, funding sources, milestones, and progress indicators
- Provides framework for local policies and action
- Recognizes differences in governing structures –
implementation can be tailored to individual needs of partners

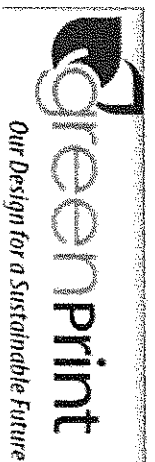
Action #	RECOMMENDATION	PLANNING HORIZON	POTENTIAL PARTNERS	POTENTIAL FUNDING SOURCES	POLICY AND/OR LEGISLATION NEEDED	ESTIMATED RESOURCES REQUIRED	MILESTONES PROGRESS
AS PER REGIONAL CLIMATE ACTION PLAN							
SUSTAINABLE COMMUNITIES AND TRANSPORTATION PLANNING (SP)							
SP-1	Support implementation of the Regional Climate Action Plan by including recommendations from the Plan into existing land use and policy decisions and related elements of the municipal and county Comprehensive Plans, as appropriate; and recognize the Plan as a basis for the development of new goals, objectives and policies through the appropriate local government Comprehensive Plans.	Immediate (0-2 years)	Regional Planning Councils, County and City Agencies, FDEO, Compact	US EPA, NOAA, FDEO, RPOs	Yes	Existing staff resources FLDEO Project of Special Meet	Finalization and Adoption of updated comp plan Develop and apply appropriate models to improve mapping Completion of FLDEO Project of Special Meet



Target Progress by Initiative

August 5, 2013

Future	In Progress	Completed
28	47	10



Water and Energy Efficiency

13	Continue to implement the Water Use Efficiency Plan and the Non-Revenue Water Loss Plan initiatives to meet established reduction targets	75%
14	Incentivize energy efficient development prioritizing walkable, transit-oriented areas	10%
16	Promote and create innovative financing for energy efficiency	10%
17	Create a Miami-Dade Energy Alliance with a diverse group of stakeholders to implement sustainable energy and building management system retrofits and practices that conserve energy, natural resources, and provide reinvestment savings	
18	Continue to implement current campaigns and pursue additional funding	65%
21	Develop and implement a government energy efficiency master plan	20%
22	Continue to implement Energy Star Portfolio Manager Benchmarking of County Facilities	5%
25	Retrofit government facilities, according to water efficiency audit recommendations	15%

Our Environment

31	Implement Wastewater Reuse Projects consistent with the 20-Year Water Use Permit and the Miami-Dade Water and Sewer Department Master Plans to recharge the Biscayne Aquifer	
34	Formalize an inter-agency working group to evaluate and address issues associated with salt water intrusion	
35	Monitor the isochlor line and address spatial gaps in salt intrusion data gathering	60%
36	Construct a water control structure on near the Florida City Canal to isolate this canal from South Florida Water Management District's dry season agricultural drawdown	30%
37	Construct a earthen plug at the Card Sound Road Canal	100%
38	Continue to minimize the impact of development on natural resources such as air, wetlands, Biscayne Bay and coastal habitats, natural forest communities, and trees through regulatory programs	80%
39	Identify dedicated funding sources for beach renourishment projects to maintain quality beaches and minimize the negative impacts of storm events	
40	Continue to enhance and restore coastal habitats important for the health of Biscayne Bay	50%
41	Develop appropriate indicators of the status and health of the resources of Biscayne Bay, through a collaborative approach with academic, government, nongovernmental organizations, and stakeholder entities	50%

A Few Examples

In Progress

- Science Cte Statement of SLR used in development of the Regional Unified SLR Projection (A1)
- Ag Purchase of Development Rights Program – acquired additional \$6.5 million USDA funds (D5)
- Infrastructure planning / design (C-1)
 - 2006 Increase BFE 0.5 feet for the High Level Disinfection project
 - 2010 Increase 1.5 feet above the 100 year flood level for water rec facility
 - Contracts for WASD improvements incorporate SLR
- Transportation Infrastructure – FHWA Vulnerability Pilot Project with 3 MPOs (C-5)
- Survey of Miami-Dade County municipalities to underway (F-1)

A Few Examples

In Progress

- Participation in the “Florida Water and Climate Alliance” - a collaborative effort to assist Florida’s Public Water Supply Utilities in integrating climate change in planning and operation (F-2)
- Drainage improvements to the FL City Canal - installation of an earthen plug within the Old Card Sound Road Canal, including the planting of mangroves to form a wetlands community (D-8)
- WASD/USGS Groundwater/Surface Water Modeling Project
- Use Analysis of 500-year events in Stormwater Master Planning for critical infrastructure/facilities
- Include surge protection criteria in coastal areas for Stormwater Master Planning

A Few Examples

Future

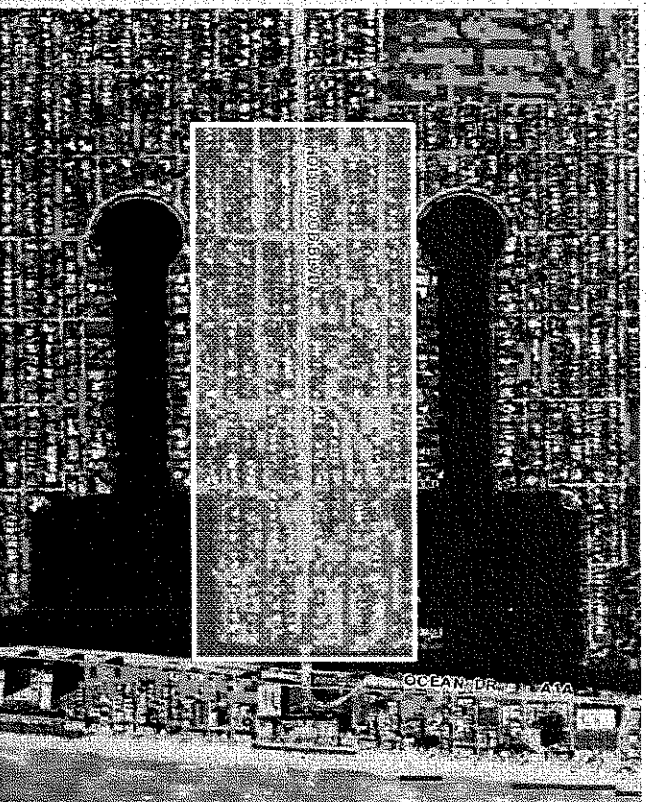
- Develop Vital Signs (D-9)
- Consider SLR in design, location, and development of infrastructure and public facilities
- All County department plans include adaptation strategies
- Create a plan to locate infrastructure and dev. outside coastal or flood hazard prone areas using projections of SLR to identify those areas (D-4)
- Direct future population concentrations away from vulnerable areas

Implementation Tool

Adaptation Action Areas (AAA)

1-Foot

SLR Scenario



LEGEND



Example
AAA

Florida Law now allows local governments to:

- Designate AAA for the purpose of
 - Identifying areas of SLR/Coastal flooding concern
 - Prioritizing funding for adaptation
- Working regionally on a "how to" guide
- Working with Ft. Lauderdale on pilot implementation

A word from the Chair...

“For the plans that are developed or that will be developed for the infrastructure construction, I want to bring to your attention the importance that it has to include the possibilities of the sea level rise in every detail of the infrastructure. We have seen that it’s happening in Miami-Dade County. We see that the State of Florida is placed on the map as one state that is in incredible danger because of the changes in climate and in weather. If we don’t spend our money the proper way, creating the infrastructure that is necessary taking into consideration sea level rise we will be misspending that money because we will have to come back and we will have to fix the infrastructure. Now is the moment to have that into consideration for a safe Miami-Dade County and for spending the money safe.”

<http://miamidade.gov/wps/portal/Main/webcasting>

Miami-Dade Board of County Commissioners Meeting

November 19, 2013

Agenda Item 1B6 – Update by the Water and Sewer Dept. on the Infrastructure Program



Miami-Dade County Sea Level Rise Task Force

November 21, 2013



SLR Task Force

Purpose and Deliverables

- Purpose: Review the relevant data and prior studies, assessments, reports, and evaluations of the potential impact of sea level rise on vital public services and facilities, real estate, water and other ecological resources, water front property, and infrastructure,
- Deliverables:
 - Provide a comprehensive and realistic assessment of the likely and potential impacts of sea level rise and storm surge over time
 - Develop a set of recommendations relative to amendments to the Comprehensive Development Master Plan, capital facilities planning, budgetary priorities and other County programs



Discussion & Next Steps

- What are the gaps, additional information needed to complete “review of relevant information”?
- What information is needed to recommend:
 - Rate of estimated sea level rise and timing?
 - Method to establish vulnerability and priority adaptation areas?
 - Implementation strategies for CDMF Policies, capital facilities planning, budgetary priorities?
 - Priorities and propose a schedule or trigger mechanism for policy and project implementation?

