

Readying for Resilience in Broward County, FL: The Economic Case for Action

International Economic Development Council
Leadership Conference

January 29, 2019



Climate Challenges for our Region

- ❑ Sea level rise
- ❑ Extreme rainfall and drought
- ❑ Increased storm intensity
- ❑ Coastal and inland flooding
- ❑ Beach erosion
- ❑ Rising Temperatures
- ❑ Saltwater intrusion
- ❑ Ocean acidification

Tidal Flooding



Inland Flooding



Flood Risk is Prominent, and On the Rise

❑ Climate Impacts

- Rainfall and Storms
- Storm Surge
- Tidal Flooding

❑ Development Trends

- Value of Assets
- Location of People

Climate change 'triple threat' increases severe flooding risk in biggest US cities

Hurricanes are slowing, which could be a big problem



By [Brandon Miller, CNN](#)
Updated 2:40 PM ET, Thu June 7, 2018



Sea Level Rise, Severe Weather and Flood Risk

WEATHER

Sawgrass Mills mall closed for third day because of flooding

Sunrise outlet mall to reopen Saturday

By Peter Burke - Local10.com Managing Editor



2012 A1A Fort Lauderdale – Post Sandy



2016 Fort Lauderdale - Tidal Flooding

2009 Hollywood – 18” rainfall



Reinforcing the Need for a Range of Investments

Increased Free Board



Raise Sea Walls



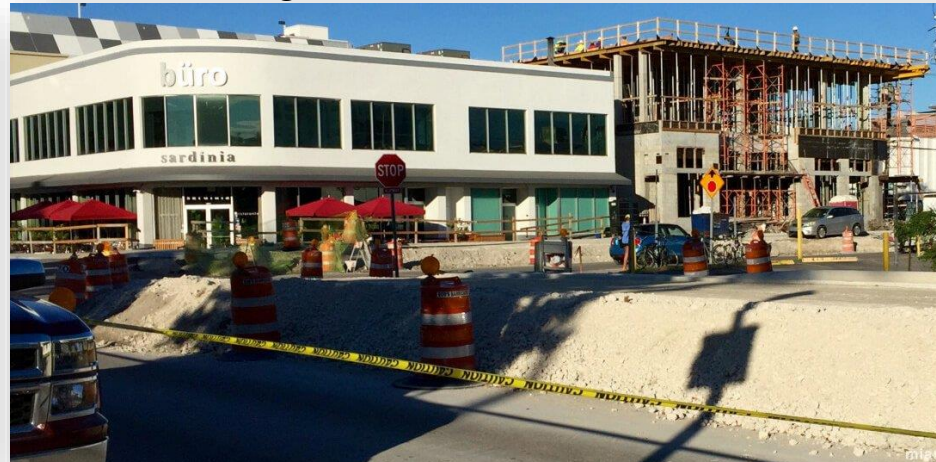
Stormwater Improvements



Regional Water Storage



Elevating Roads and Critical Infrastructure



Active Management



Beyond Infrastructure – Economics of the Environment

SCIENCE • ENVIRONMENT

Red Tide Is Spreading to Florida's East Coast. Here's What to Know About It

f t e

HEALTH

What We Know and What We Don't Know About the Zika Cases in South Florida

By DONALD G. McNEIL Jr. AUG. 19, 2016

Posted October 10, 2016 08:57 am

Matthew devastates Florida sands key to protection, tourism

Comments 6 Share



SCIENCE

Miles of Algae and a Multitude of Hazards

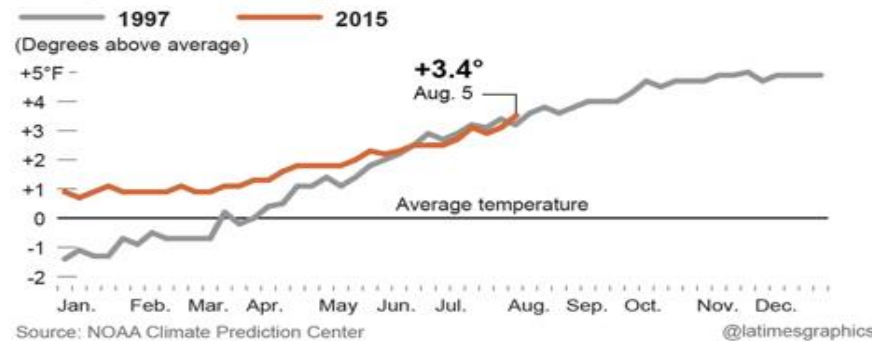
By LES NEUHAUS JULY 18, 2016



THE STATUS OF CORAL HEALTH IN SOUTHEAST FLORIDA



How recent increases in ocean temperatures compare to strongest El Niño on record



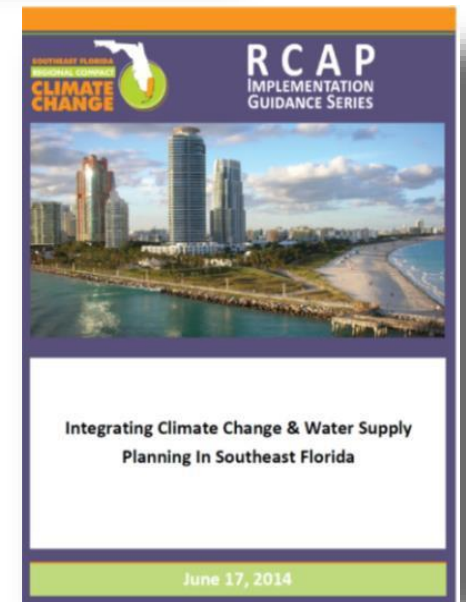
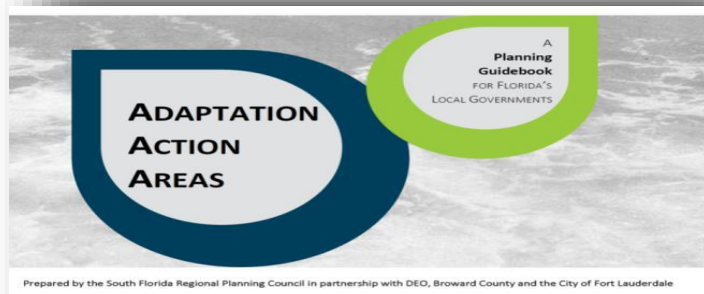
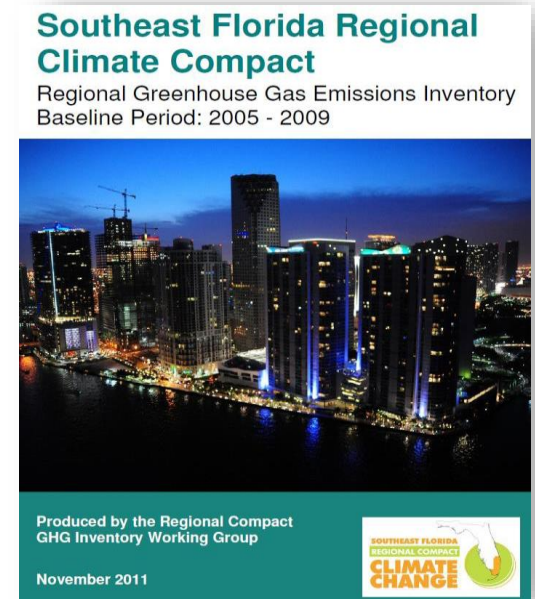
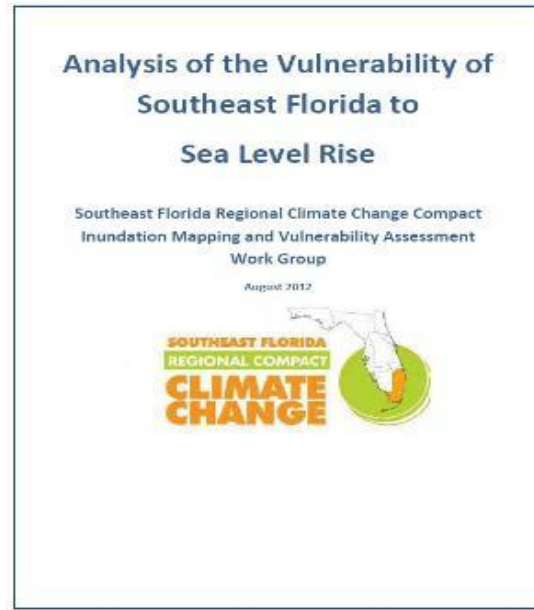
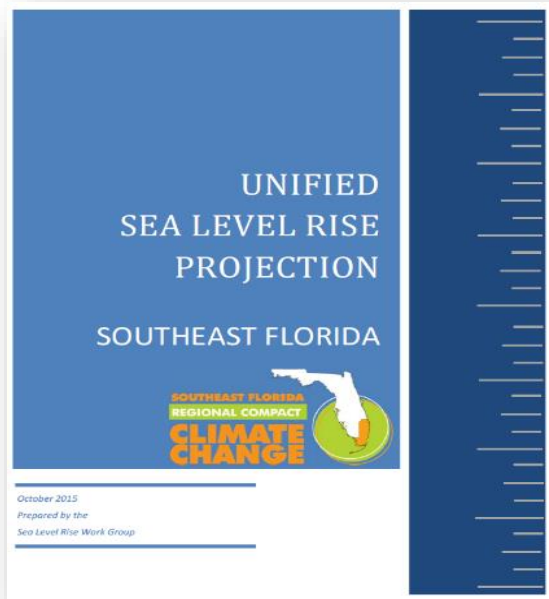
Regional Action on Climate

The Southeast Florida Regional Climate Change Compact

- ❑ 4 Counties
- ❑ Initiated in October 2009
- ❑ Response to shared challenges and needs
- ❑ Commitments
 - Policy coordination
 - Common baseline
 - Regional action plan
 - Annual summits

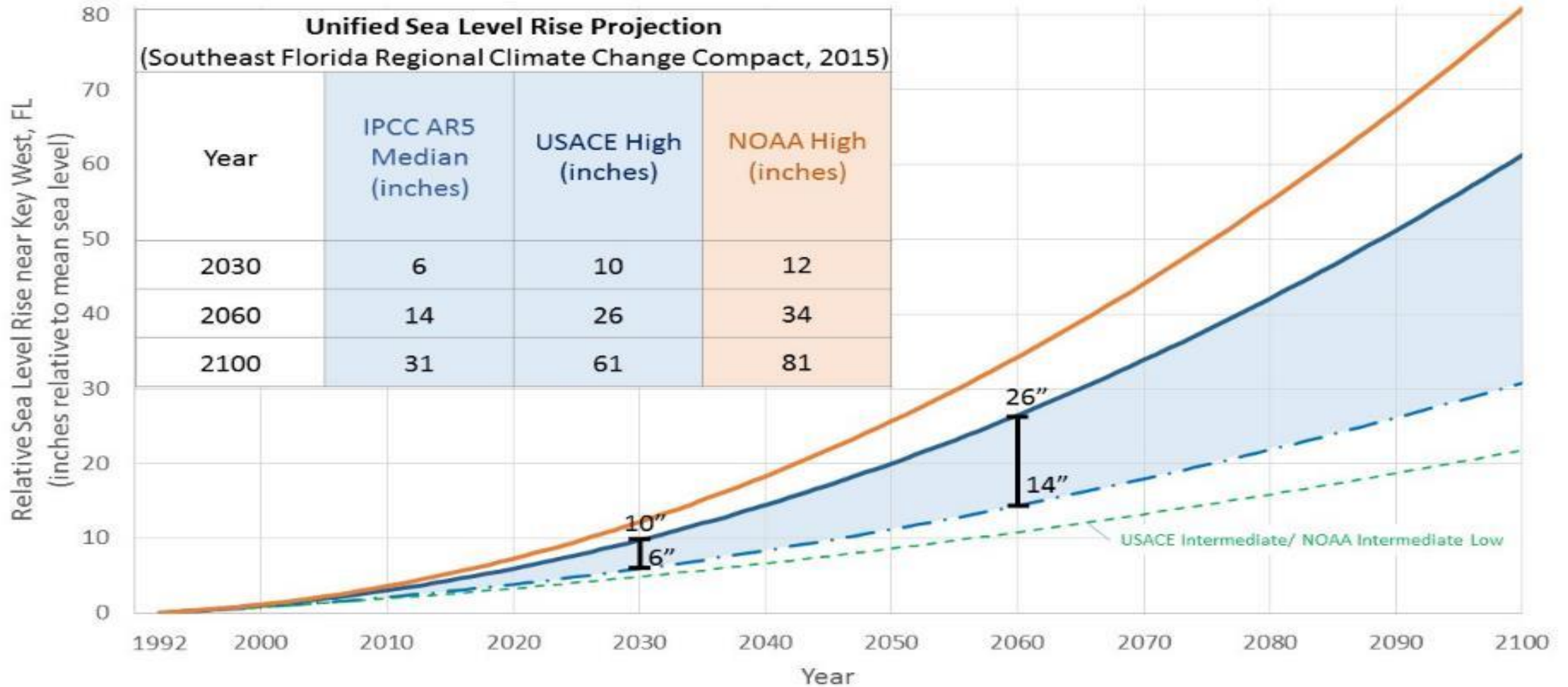


Regional Work Products



All documents available at
<http://southeastfloridaclimatecompact.org/>

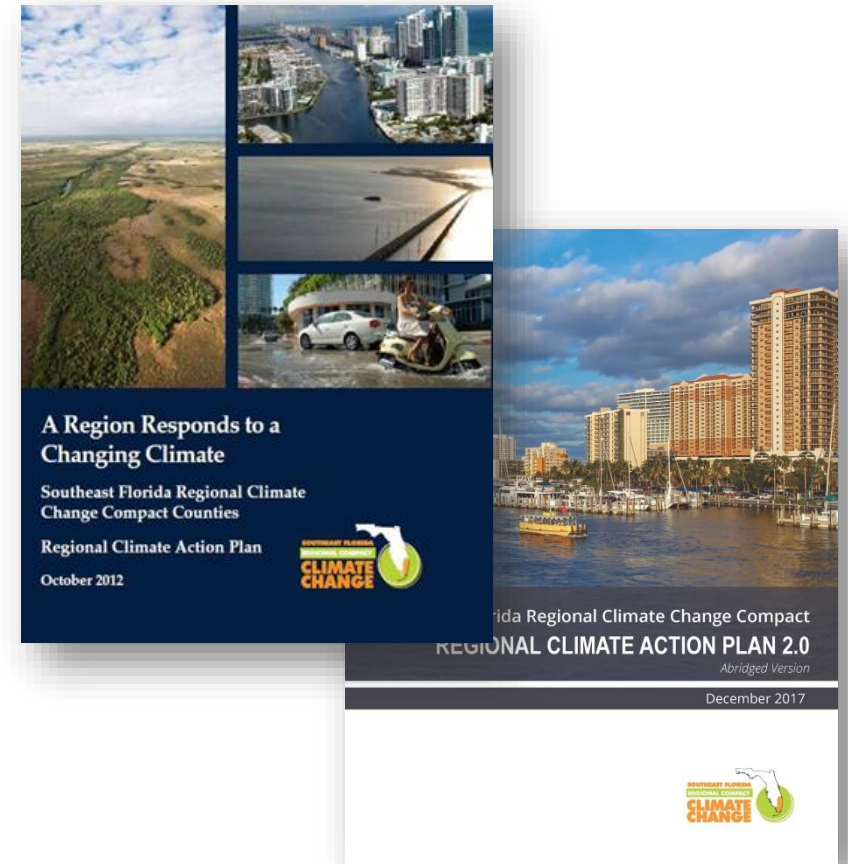
Regional Sea Level Rise Projection



The Regional Climate Action Plan

Focal Areas:

- Economic Resilience
- Sustainable Community and Transportation Planning
- Water Management
- Risk Reduction and Emergency Management
- Energy and Fuel
- Natural Systems
- Agriculture
- Outreach and Public Policy



*>140 Recommendations
Adaptation and Mitigation*

Economic Assessment

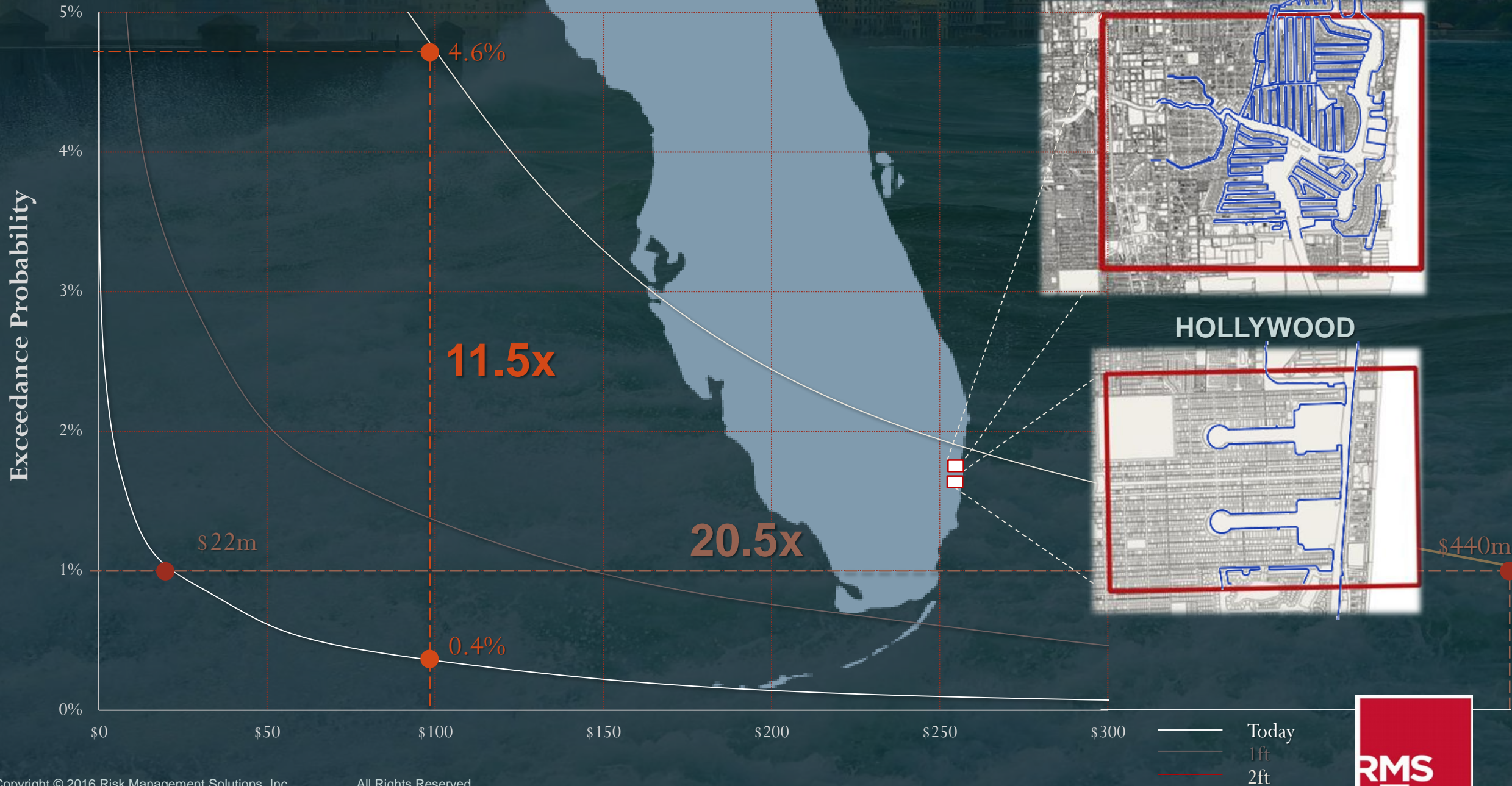
Taxable Value of Property*			
	Monroe	Broward**	Palm Beach
1 foot	\$ 2,763,294,786	\$ 2,723,948,890	\$ 396,618,089
2 foot	\$ 8,388,138,219	\$ 4,616,915,710	\$ 1,251,877,561
3 foot	\$ 15,087,755,147	\$ 11,635,369,780	\$ 3,559,471,158

* Does not reflect impacts to public infrastructure or economic activities

** 2015 property values for Broward County (2011 values for others)



Risk Assessment – Exposure and Tolerance



Flood Insurance and Risk-Rating

- ❑ Risk-based rates on a granular level, nationwide
- ❑ Move to improve transparency and arrive at actuarial rates
- ❑ Roll-out in 2020
- ❑ CRS Credits provide flood policy discounts
 - Planning for SLR
 - Setting higher standards
 - Related activities - Targeted Outreach
- ❑ Resiliency measures vital to reducing risk, and rates!

Broward County:

- 204,211 flood policies (12% state total)
- 22 participating CRS cities and county



Milliman to design new flood risk rating plan for NFIP

⚡ 16th November 2017 - Author: Staff Writer

The Federal Emergency Management Agency (FEMA) has selected flood risk innovator Milliman to design a new rating plan for National Flood Insurance Programme (NFIP) policies nationwide.

The U.S. government programme to provide homeowners with flood insurance, NFIP, has recently been reauthorised and is undergoing reforms after it was hit with an estimated \$7-10 billion in claims from hurricane Harvey, triggering its \$1 billion of reinsurance cover.

Milliman will use its technology and analysis for sophisticated modelling and pricing techniques for FEMA, as the government agency initiates the

redesigning of flood insurance products used across the National Flood Insurance Programme (NFIP).



Premiums **double** every foot below base flood elevation



Slide originally presented at RCAP Workshop #9 on 4/28/2016 by L.Vialpando

Economic Basis for Action

- ❑ Protect infrastructure
- ❑ Reduce flood risk and losses
- ❑ Protect credit ratings
- ❑ Improve insurance affordability
- ❑ Protect property values/tax base

Environmental risks
Evaluating the impact of climate change on US state and local issuers

Your coastal property has already lost value to sea rise. This site can tell you how much

BY ALEX HARRIS

JULY 25, 2018 07:00 AM, UPDATED JULY 26, 2018 04:07 PM

MOODY'S
INVESTORS SERVICE

Bloomberg
South Florida's Real Estate Reckoning Could Be Closer Than You Think

Moody's Warns Cities to Address Climate Risks or Face Downgrades

By **Christopher Flavello**
November 29, 2017 4:00 AM
From **Climate Changed**



Bloomberg

**BUSINESS
INSIDER**

Cities and states could see their credit ratings crash if they don't start preparing for climate change



Jeremy Berke
© Dec. 1, 2017, 9:16 AM 2,407

Expanding the Conversation: Focus on Economic Resilience

2016 Discussion

- ❑ Regional economics workshop
- ❑ Sea level rise forum

2017 Collaboration

- ❑ Business resilience committees
- ❑ Summit theme “Business of Resilience”
- ❑ Statement of Collaboration

2018 Action

- ❑ Perform regional risk assessment
- ❑ Identify priority capital improvements
- ❑ Business case ROI

Business Roundtable



Broward Resilience Roundtable



2017 Compact Summit



Public-Private Collaboration Economic Resilience



Resiliency Delivers Immediate Returns

Is South Florida Doomed By Sea-Level Rise? Experts Say No. In Fact, They're Optimistic

By KATE STEIN • MAR 27, 2018






National Benefit-Cost Ratio Per Peril <small>*BCR numbers in this study have been rounded</small>		Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio		6:1	4:1
 Riverine Flood		7:1	5:1
 Hurricane Surge		Too few grants	7:1
 Wind		5:1	5:1
 Earthquake		3:1	4:1
 Wildland-Urban Interface Fire		3:1	4:1

Table 1. Benefit-Cost Ratio by Hazard and Mitigation Measure.

Understanding the \$316 billion climate adaptation economy

Jocelyn Timpertley
Friday, March 4, 2016 - 12:35am



Getting Ahead of the Curve for a Resilient Economy:

An Introduction to Risks and Opportunities of Climate Change for Top Business Sectors in Southeast Florida



Returns on Resilience

ULI's Urban Resilience Program works to help communities prepare for increased climate risk in ways that not only allow a quicker, safer return to normalcy after an event, but also enable them to thrive going forward.

The Returns on Resilience project showcases real estate developments that incorporate resilient design measures, with positive financial, operational and other business outcomes. To suggest a project for inclusion, email resilience@uli.org.

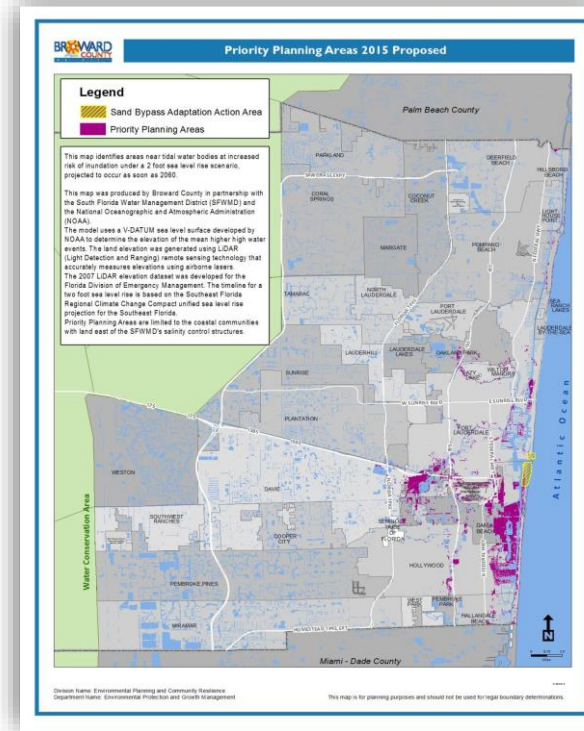
Advancing Resilient Design

❑ Modernized standards for planning and infrastructure

- Comprehensive Planning
- Land use planning
- Hazard mitigation plans

❑ Updating Standards

- Drainage infrastructure (2017)
- Seawalls and banks (2018)
- Flood elevations (2019)



Priority Planning Areas

- 2-foot SLR

Drainage Standards

- 2060-2069
- 2 feet SLR
- 9 % ↑ Rainfall

Top Elevations

- 4 feet NAVD - 2035
- 5 feet NAVD - 2050



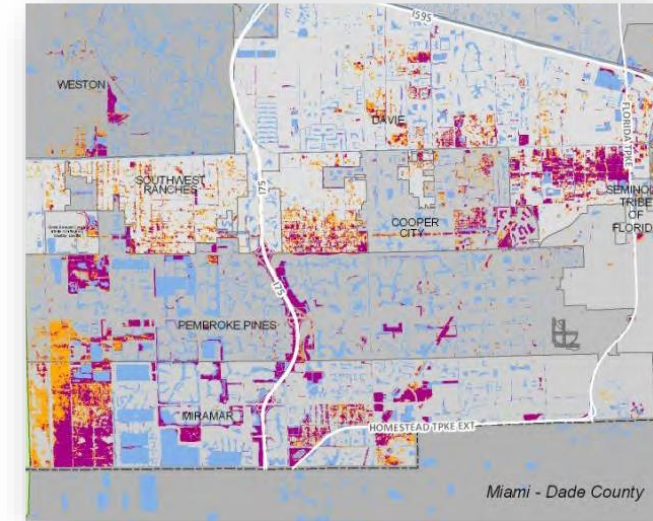
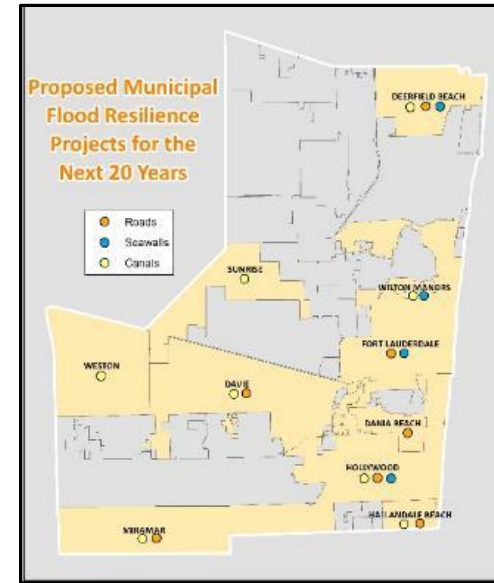
The Path Forward



Action Items:

- ✓ Business Case for Resilience – In Progress
- ✓ Perform regional risk assessment
- ✓ Identify priority capital improvements
- ✓ Develop a coordinated, resilient infrastructure investment plan
- ✓ Include economics
- ✓ Communicate

#ResilientTogether



Broward Leaders Resilience Roundtable

5/24/2018

Questions?

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