Planning for Community Resilience in Satellite Beach: Laying the Groundwork

Audio Options

TO USE YOUR COMPUTER'S AUDIO:
When the Webinar begins, you will be connected to audio using your computer's microphone and speakers (VOIP).

TO USE YOUR TELEPHONE:
If you prefer to use your phone, select "Use Telephone" after joining the Webinar.
About 1000 Friends of Florida:

- Founded in 1986, 1000 Friends of Florida is a 501(c)(3) nonprofit membership organization.
- We work to save special places and build better communities.
- We educate, advocate and negotiate to protect Florida’s high quality of life.
- Our bipartisan board of directors includes advocates and experts from across the state.
- Visit [www.1000friendsofflorida.org/alerts/](http://www.1000friendsofflorida.org/alerts/) to sign up for email alerts!
- Please join us at [www.1000friendsofflorida.org/donate-now/](http://www.1000friendsofflorida.org/donate-now/)
- Follow 1000 Friends on [Facebook](https://www.facebook.com) and [Twitter](https://twitter.com)!
Dr. John M. DeGrove Webinar Series

- May 4, 1924 – April 13, 2012
- Icon of comprehensive planning both in Florida and across the nation
- One of the founders of 1000 Friends of Florida
- First Secretary of the Florida Department of Community Affairs
- His accomplishments recognized with the John M. DeGrove Eminent Scholar Chair in Growth Management and Development at Florida Atlantic University
- To find out more, please visit: www.1000friendsofflorida.org/dr-degrove/
Thank you to the Dr. John M. DeGrove Webinar Sponsors:

**FLORIDA STEWARD**
Archibald Foundation

**FRIEND**
Mr. Ronald Book, PA  
Codina Management, LLC  
Ms. Kimberly A. DeGrove and Dr. William Partin  
William Howard Flowers, Jr. Foundation, Inc.  
The Perkins Charitable Foundation  
Mr. Robert M. Rhodes
Thank you to the Dr. John M. DeGrove Webinar Sponsors:

**SPONSOR**
Thomas J. Baird
Mr. William M. DeGrove
Ms. Susan Trevarthen

**SUPPORTER**
American Planning Association, Florida Chapter
Doug Crowley Insurance Services
Mr. Russell DeGrove
David M. Orshefsky
Ms. Nancy Ellen Stroud
Synovus -- Tallahassee State Bank
Thomson Brock Luger & Company
Seeking additional sponsors to offer future webinars for free!

To underwrite costs associated with Go-to-Webinar, professional certification credits (AICP AND CLE), staff time, etc.

- Florida Guardian -- $5,000
- President’s Club -- $2,500
- Friend -- $1,000
- Sponsor -- $500
- Supporter -- $250
- Other amounts gratefully appreciated!

You may donate on-line at [www.1000friendsofFlorida.org/donate-now/](http://www.1000friendsofFlorida.org/donate-now/) (Designate it for DeGrove Education Fund)

OR

Email vyoung@1000fof.org for more information
The PowerPoint is available at www.1000friendsofflorida.org
This webinar has been approved for:

- 1.5 AICP CM Credits for planners (#9138850)
- 1 CEC for Certified Floodplain Managers
- 2 CLE for Florida attorneys (1708850N- Intermediate)
- .125 CEUs for Florida Environmental Health Professionals.

There is a link to a **BRIEF SURVEY** in the follow-up email you will receive. Please take a few minutes to give us feedback!
Spring 2017 DeGrove Webinars

Each has been approved for professional certification credits for Planners (AICP CM) and Certified Floodplain Managers. 1000 Friends has applied for credits for Florida attorneys (CLE) and Florida Environmental Health Professionals but cannot guarantee they will be offered.

Register Now!

- February 21, 2018 NOTE TIME: 2:00 – 3:30 p.m. -- Planning for Community Resilience in Satellite Beach: Stormwater Infrastructure and LDRs
- March 21, 2018, Noon to 1:30 p.m. -- 2018 Florida Legislative Wrap Up

Visit www.1000friendsofflorida.org/webinar/ to find out more!
If you have sound issues:

1. Adjust the volume on your computer

2. Adjust the audio on Go-to-Webinar
If you have questions:

- Your webinar control panel includes a “Questions” box
- Please click on “+” sign and type any questions in this box
- Please refer to the slide number and/or speaker when you post your question
- Please keep your questions succinct!
- Staff will ask the presenters questions, as time permits
Check out our Legislative Webpage!


This site is:
- Updated weekly (or more often as needed)
- Includes Growth Management, Transportation and Conservation Legislation
- Includes links to the bills
Presenters
Ken Lindeman, Ph.D.

- Professor, Sustainability Program Chair, Florida Institute of Technology.
- With diverse partners, his group uses emerging science and policy tools to advance the sustainable management of coastal systems.
- The Northern Caribbean and Southeast U.S. are the primary focus of 70 publications in over 20 differing science and policy journals, and two books (Smithsonian Institution Press and Duke University Press).
- Resident of four counties and seven cities on East Florida’s coast.
- Employment includes NOAA, University of Miami, several non-profits. PI, Co-PI, 25 applied research or policy grants. Ph.D., University of Miami, Rosenstiel School of Marine and Atmospheric Sciences.
Tara McCue, AICP

- Director of Planning and Community Development at the East Central Florida Regional Planning Council
- Has worked for the past 14 years on a variety of regional and local projects across sectors aimed at creating healthy, resilient and sustainable communities.
- In 2003 she managed the U.S EPA sea level rise project for Volusia and Brevard County, one of the first studies examining sea level rise in the region.
- Since then, she and the RPC have been working with agencies, departments and jurisdictions in Volusia and Brevard Counties, as well as universities and other federal, state and regional agencies and stakeholders to further coastal resiliency in East Central Florida.
- Co-authored two white papers examining land use impacts to rising sea level.
- B.S. in Marine Biology from UNCW and Masters in Environmental Resource Management from Florida Institute of Technology.
Thomas Rupert, Coastal Planning Specialist

- Coastal Planning Specialist at the Florida Sea Grant College Program
- A licensed attorney developing legal and policy analysis for local governments on aspects of adaptive planning for sea-level rise, community resilience, and associated long-term challenges and opportunities for Florida’s coastal communities
- Areas of expertise include federal and state property rights law, beach and coastal policy in Florida, flood insurance, Florida’s Coastal Construction Control Line program, planning law, and coastal and marine permitting programs
- Has worked with over a dozen partners to organize and host legal workshops on coastal issues and flood insurance around the state
- Currently involved with several initiatives within Florida communities planning for sea-level rise
- Maintains a website of original resources at www.flseagrant.org/climatechange/coastalplanning/
Planning for Community Resilience in Satellite Beach, Florida

Ken Lindeman, Ph.D.
Professor, Sustainability Program Chair
Department of Education & Interdisciplinary Studies
Florida Institute of Technology
Planning for Community Resilience in Satellite Beach, Florida

Ken Lindeman, Professor, Sustainability Program Chair
Department of Education & Interdisciplinary Studies
Florida Institute of Technology
Regional Coastal Overview
Regional setting
Climate science trends. Hurricanes.

Satellite Beach Land Use Board and AAAs
Land use board (CPAB) and Sea Level Rise SubCommittee
Adaptation Action Areas

Summary & Resources
Selected take-aways for barrier island city planning
Resource overview
• Florida is a flat, highly exposed marine peninsula, projecting into the northwest Caribbean.

• The limestone bedrock of much of the state is permeable to water.

• Mixture of tropical and temperate biodiversity and weather.
The *Three Capitals*

*capital = assets, resources*
The *Three Capitals*
Have deeper relationships
Scales

Macro, Regional

Meso, County, city

Micro, Individual, family
NASA Climate: Positions by Leading U.S. Scientific Societies

**Statement on climate change from 18 scientific associations**

“Observations throughout the world make it clear that climate change is occurring, and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver.” (2009)

**American Association for the Advancement of Science**

“The scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society.” (2006)

**American Chemical Society**

“Comprehensive scientific assessments of our current and potential future climates clearly indicate that climate change is real, largely attributable to emissions from human activities, and potentially a very serious problem.” (2004)

**American Geophysical Union**

“Human-induced climate change requires urgent action. Humanity is the major influence on the global climate change observed over the past 50 years. Rapid societal responses can significantly lessen negative outcomes.” (Adopted 2003, revised and reaffirmed 2007, 2012, 2013)

**American Medical Association**

“Our AMA... supports the findings of the Intergovernmental Panel on Climate Change’s fourth assessment report and concurs with the scientific consensus that the Earth is undergoing adverse global climate change and that anthropogenic contributions are significant.” (2013)

**American Meteorological Society**

“It is clear from extensive scientific evidence that the dominant cause of the rapid change in climate of the past half century is human-induced increases in the amount of atmospheric greenhouse gases, including carbon dioxide (CO2), chlorofluorocarbons, methane, and nitrous oxide.” (2012)

**American Physical Society**

“The evidence is incontrovertible: Global warming is occurring, if no mitigating actions are taken, significant disruptions in the Earth’s physical and ecological systems, social systems, security and human health are likely to occur. We must reduce emissions of greenhouse gases beginning now.” (2007)

**The Geological Society of America**

“The Geological Society of America (GSA) concurs with assessments by the National Academies of Science (2005), the National Research Council (2006), and the Intergovernmental Panel on Climate Change (IPCC, 2007) that global climate has warmed and that human activities (mainly greenhouse-gas emissions) account for most of the warming since the middle 1950s.” (2006, revised 2010)

**SCIENCE ACADEMIES**

**International academies: Joint statement**

“Climate change is real. There will always be uncertainty in understanding a system as complex as the world’s climate. However, there is now strong evidence that significant global warming is occurring. The evidence comes from direct measurements of rising surface air temperatures and subsurface ocean temperatures and from phenomena such as increases in average global sea levels, retreating glaciers, and changes to many physical and biological systems. It is likely that most of the warming in recent decades can be attributed to human activities (IPCC 2001)” (2005, 11 international science academies)

**U.S. National Academy of Sciences**

“The scientific understanding of climate change is now sufficiently clear to justify taking steps to reduce the amount of greenhouse gases in the atmosphere.” (2005)
AAAS
Since 1848, > 100,000 members

American Association for the Advancement of Science
"The scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society." (2006)

APS
Since 1899, > 50,000 members

American Physical Society
"The evidence is incontrovertible: Global warming is occurring. If no mitigating actions are taken, significant disruptions in the Earth’s physical and ecological systems, social systems, security and human health are likely to occur. We must reduce emissions of greenhouse gases beginning now." (2007)

AGU
Since 1919, > 60,000 members

American Geophysical Union
"Human-induced climate change requires urgent action. Humanity is the major influence on the global climate change observed over the past 50 years. Rapid societal responses can significantly lessen negative outcomes." (Adopted 2003, revised and reaffirmed 2007, 2012, 2013)

Many, many other science orgs...
100s of specific sciences represented by these societies
Nuh-uh. Some guy on Twitter just said you’re wrong.
• In terms of countries globally, Florida has the 17\textsuperscript{th} largest economy as of 2017. \textbf{Top 5\% of GDP of all countries...}

• Florida’ land development economy and related interests comprises one of the larger economic mega-systems on the planet.

• With the recovery of the economy in the last years, consider the speed with which remaining open coastal land is being built out. Examples across many coastal cities, 2017-2018.
Dec 2017 – Jan 2018, most of the last available oceanfront lands between Indialantic and Satellite Beach have multi-story condos in construction.
Tracks of 27 of the 29 major hurricanes that have been observed in the Atlantic since Hurricane Wilma. Gaston and Matthew from 2016 are not shown.
2016 - Hurricane Matthew, Cat 3   2017 – Hurricane Irma, Cat 3

(Gamio, Wash. Post, 2016)
Floyd and Dennis hit the Mid-Atlantic back-to-back, causing heavy flooding.

One of the most devastating hurricanes to date.
Regional Coastal Overview
Regional setting
Climate science trends. Hurricanes.

Satellite Beach Land Use Board and AAAs
Land use board (CPAB) and Sea Level Rise SubCommittee
Adaptation Action Areas

Summary & Resources
Selected take-aways for barrier island city planning
Resource overview
Satellite Beach Actions Involving Adaptation/Resilience

From T. McCue, next presentation

Underline = focus of this talk

- Satellite Beach Climate Ready Estuaries Pilot Project
- **Sea Level Rise Subcommittee of CPAB**

2011
- Florida DEO Community Resiliency Initiative Begins
- State Adopts Community Planning Act with Adaptation Action Area Language

2013
- **Initial Adaptation Action Area and Sea Level Rise Policy Adopted**

2014-2015
- FDEP Coastal Partnership Community Resiliency Grant

2016-2018
- Adoption of AAA policies including scenarios
- Florida Sea Grant Project
Citizen Land Use Board and Sea Level Discussions, Satellite Beach, 2009-1013

(Until Jan 2017, land use issues within the Comprehensive Plan were managed by a citizen advisory board, the CPAB: Comprehensive Planning Advisory Board.)

- 2009 grant from the EPA Climate Ready Estuary Program through IRL NEP to City with Dr. R. Parkinson, Space Coast Climate Change Initiative, & T. McCue, ECFPRC.

- 2009: The CPAB created an internal Sea Level Rise Subcommittee.

- SLR Subcommittee met approx. six times from late 2009 through 2010. Input to CPAB in mid-late 2010 included extensive editing of comp plan language.

- Between 2009-13, the CPAB met approx. 19 times, with approx. 12 votes involving the Coastal Element of the city’s Comprehensive Land Use Plan.
Adaptation Action Areas through 2013 adoption of Comp Plan language

- AAAs are present in minutes from Jan 2012 CPAB mtg on multiple Comp Plan revisions, incl 9-1 vote for document that included AAA language.

- Feb 2012, CPAB Mtg : voted 8-0 to send to Council. No City Council action.

- Jan 2013, CPAB Mtg: With a new council in place and working with John Fergus and others, I proposed final AAA text as part of amendments to the comp plan.

- Mar. 2013: The new Council approved the language and sent to DEO, who processed in 2-3 months

- AAAs with DEP review adopted in amended Coastal Element of the City Comprehensive Plan by the City Council by 4-1 votes: Aug 7, 2013.
Satellite Beach Comprehensive Plan: Primary AAA language

Coastal Mgmt/Conservation: Policy 1.12A.1
The City of Satellite Beach designates the Coastal High Hazard Area as “the area defined by the SLOSH model to be inundated from a Category 1 Hurricane”.

Coastal Mgmt/Conservation: Policy 1.12A.2
The City of Satellite Beach designates the Adaptation Action Area (AAA) as that area which includes the CHHA and other areas of the City as may be identified by the City Council in the future as being subject to coastal erosion, flooding, sea level rise, or damage to environmental systems.
Coastal Mgmt/Conservation: Policy 1.4A.1

The City shall initiate a public process to identify Adaptation Action Areas (AAAs) in accordance with Sections 163.3164(1) and 163.3177(6)(g)10 Florida Statutes. The purpose of the AAAs is to increase grant and other funding opportunities and identify creative solutions to achieve the following goals:

- Protect the health, safety and welfare of residents,
- Prevent damage to public and private property, and
- Reduce National Flood Insurance Program premiums to property owners.
Information for Citizens

Information on AAA's

Fl. State Dept. of Economic Opportunity
www.floridajobs.org/community-planning-and-development/programs/technical-assistance/community-resiliency/adaptation-planning

Adaptation Resources Include

Climate Adaptation Knowledge Exchange: http://www.cakes.org/

Georgetown Adaptation Clearinghouse: http://www.georgetownclimate.org/adaptation/clearinghouse

Virtual Climate Adaptation Library: http://research.ftc.edu/sealevelriselibrary/

NOAA's Digital Coast: http://www.csc.noaa.gov/digitalcoast/

SE Florida Regional Climate Compact: http://southeastfloridaclimaticcompact.org/

Climate Science includes (much is for non-scientists)

NASA Climate: http://climate.nasa.gov/

American Geophysical Union:

Skeptical Science: http://www.skepticalscience.com/
Continuing CPAB and AAA activities after 2013 include

**Nov. 2015:** Community Resiliency Comp Plan Amendments

**Jan 2016:** Community Resiliency Comp Plan Amendments

The separate Metroquest Project described by Tara in the next presentation, coupled with discussion in the above CPAB meetings, identified two fundamental categories of AAAs: a) Inland Flooding, and b) Erosional. Work to further develop city AAA applications is covered by subsequent talks.

**May 2017:** CPAB merged with old Planning and Zoning Board to create one new Planning Advisory Board. Comp Plan issues are now handled by the PAB.
Regional Coastal Overview
Regional setting
Climate science trends. Hurricanes.

Satellite Beach Land Use Board and AAAs
Land use board (CPAB) and Sea Level Rise SubCommittee
Adaptation Action Areas

Summary & Resources
Selected take-aways for barrier island city planning
Resource overview
- Committed Council majority is essential (no movement w/o)
- Committed staff are essential
- Committed citizens are essential (15 citizens on CPAB, 2009-13)
- Start-up & follow-up grants with partners: extremely valuable...
- Political timing is critical... many examples, even in small towns
- New emergence events can occur, e.g., City Sustainability Brd
- The new Sust. Brd then produced the region’s first sustainability plan for a barrier island city.
Coastal Construction Control Line (CCCL)
There are still germane issues from a comprehensive CCCL review (Ruppert (2008) that have not been addressed. Examples include:

- The CCCL and its regulations do not take sea level rise into account.

- Requiring easements when permitting seawalls is not routine. This tool ensures the public will have later access across permitted seawalls where the public has established an easement by custom to use the beach.

- Other issues as detailed in the summary of Ruppert (2008)

Many resources available to aid local government climate adaptation and resilience planning
Resources include

- South Florida Climate Change Compact
- Local Governments for Sustainability (ICLEI)
- 100 Resilient Cities
- NOAA Digital Coasts
- APA and FL state chapter
- Environ. Land Use & Law Section, Fl. Bar
- Regional Planning Councils
- National Estuary Program Offices
- Water Management Districts
- DEP: DEO and others

- Leagues of Cities – *per county*
- The Counties and Cities themselves
- The nonprofits (e.g. Climate Central, Surging Seas) … … …
- Multiple sectors of the Business Community … … …
- Climate Adaptation Knowledge Exchange
- Adaptation Clearinghouse, Georgetown
- Virtual Climate Adaptation Library, F.I.T.
- Natural Capital Project
- And multiple other resources
PROTECTING FLORIDA’S COMMUNITIES

Land Use Planning Strategies and Best Development Practices for Minimizing Vulnerability to Flooding and Coastal Storms

FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS
DIVISION OF COMMUNITY PLANNING and DIVISION OF EMERGENCY MANAGEMENT

DCA, 2005
Florida Tech Virtual Climate Adaptation Library (just search sealevelriselibrary)
Over 170 reports on climate adaptation & resilience just for Florida – by region

Coastal Climate Change: Adaptation and Resilience
Searchable archives on local through international coastal climate planning:
- Over 2700 reports, articles, and guidance documents in 15 directories with >90 global subdirectories, above.
- Coastal planning guidelines in >10 languages can be downloaded. Quality documents from journal or grey literature sources are welcome in any language (see below).
- The Climate Communications directory has >100 reports on ready-to-go messaging and underlying socio-behavioral components.
- The Virtual Climate Adaptation Library is an unfunded service of the students and faculty of the F.I.T. Sustainability Program.

English and Spanish infographic summaries of coastal adaptation alternatives in Florida are now available. These four-page infographic documents can be used for multiple adaptation and education purposes.

The NOAA Climate Program Office and the Rutgers Sea Level and Climate Program supported this work.

Other Adaptation Planning Resources - U.S. and Global
Wide arrays of related resources are also available at the Climate Adaptation Knowledge Exchange, Ecosystem-based Management Tools Network, Climate Central, Georgetown’s Adaptation Clearinghouse, Climate.gov, NOAA’s Digital Coast, Storm Smart Coasts, and other sources.

Submissions and Additional Information
We thank many colleagues who have contributed files from diverse regions since 2009. If you have documents on coastal climate adaptation and resilience to contribute, please forward to slr@fityfi.edu. Use of copyrighted material is restricted to nonprofit educational purposes only and is not intended for commercial use. The Virtual Climate Adaptation Library is an unfunded service of the students and faculty of the F.I.T. Sustainability Program.

Please address any questions to slr@fityfi.edu.
Thank you:

All CPAB members.

City of Satellite Beach staff, including C. Barker, M. Crotty, L. Olexa, J. Finch, and others.

Dr. John Fergus has been on this before, during, and after.

The elected officials we worked with in and outside of SB.

Dr. R. Parkinson, T. McCue, T. Ruppert and other technical experts.

A. Otto, Z. Eichholz, A. Miller, and other Florida Tech students.
Community Based Planning for Coastal Resiliency

Tara McCue, AICP
Director of Planning and Community Development
East Central Florida Regional Planning Council
The Long Road of Resiliency

2009-2010
- Satellite Beach Climate Ready Estuaries Pilot Project
- Sea Level Rise Subcommittee of CPAB

2011
- Florida DEO Community Resiliency Initiative Begins
- State Adopts Community Planning Act with Adaptation Action Area Language

2013
- Initial Adaptation Action Area and Sea Level Rise Policy Adopted

2014-2015
- FDEP Coastal Partnership Community Resiliency Grant

2016-2018
- Adoption of AAA policies including scenario
- Sea Grant Project
Creating a Resilient Community Project

Overview

- Florida Department of Protection Grant Program – Coastal Partnership Initiative

Project Goals

- Identify “other areas of the City” and/or criteria for Adaptation Action Areas as per Comprehensive Plan.
- Set the foundation to bring in Adaptation Action Areas to the community and the City Council as a tool for improving community resilience.
- Engage the public to help develop strategies and priorities for the City to implement and address.
• PROJECT LEAD TEAM
  • City of Satellite Beach
  • East Central Florida Regional Planning Council
  • Brevard County
  • Florida Institute of Technology
  • Florida Department of Economic Opportunity
  • UF – Florida Sea Grant

• TECHNICAL ADVISORY TEAM
  • City of Satellite Beach
  • East Central Florida Regional Planning Council
  • Brevard County
  • Volusia County
  • Florida Institute of Technology
  • Florida Department of Economic Opportunity
  • UF – Florida Sea Grant and GeoPlan
  • Space Coast TPO
  • River to Sea TPO
  • FDOT
  • NOAA – Melbourne Office
  • Environmental Remediation
  • USACE
  • Coastal Tech
First Public Workshop

• September 23, 2014
• Over 60 attendees
• Speakers from Florida Sea Grant, City of Ft. Lauderdale, City Emergency Management Director
• Public Engagement Activities and Discussion
Public input on vulnerability concerns, strategies and opportunities

- “When you think about the environmental, social and economic aspects of the City, what are the biggest **opportunities** over the next 50 years?”
- “When you think about the environmental, social and economic aspects of the City, what are the biggest **challenges** over the next 50 years?”
- “What **approaches** would you like the City to take to address the opportunities and challenges identified in the previous questions?”

**Map exercise:**
- Vulnerable Areas Vs Valued Areas
Results of Public Workshop

- **Opportunities:**
  - Do Nothing at all
  - Clean up the Lagoon
  - Move utilities underground/lighting
  - Grow tax base away from high hazard areas
  - Better Beach Restoration Plan
  - Go green

- **Issues:**
  - Implementing efficient zoning ordinances
  - Cost of living in the City
  - Revenue generation
  - Belief in Scientific Hoaxes

- **Strategies:**
  - Underground utilities
  - Address needs of seniors
  - Maintain healthy beach and dune system
  - Solar energy
  - Get tax base into lower risk areas
  - Create more access to the river
  - Encourage renewable energy
  - Wider pipes
**Public Input Survey**

Creating a Resilient Community

**Welcome** Creating a Resilient Community

As a coastal city, Satellite Beach is vulnerable to various natural hazards. Residents, business owners, and the City need to work together to turn challenges into opportunities for a thriving and resilient future for our City.

Creating a Resilient Community

Resiliency is the ability of a community to adapt and prepare to withstand and recover from damaging events (e.g., hurricanes) and processes (e.g., coastal erosion), and preserve desirable natural, social and economic features of the community.

The City of Satellite Beach strives to ensure all its services and activities are accessible to individuals with disabilities. If you need assistance in navigating and/or completing the City’s Creating a Resilient Community survey, please contact City Hall at (321) 773-4407.
• 479 validated City respondents
• 3 months of input
• Events/Community Center
Top 2 strategies with the most support for each Vulnerability

1 - Loss of Power/Utilities:
1) Work with utility companies to determine the feasibility of moving pole-mounted utilities underground.
2) Move critical utilities (electric trunk line and substation, sewer force main, etc.) to higher ground west of A1A

2 - Coastal Erosion:
1) Plant native coastal vegetation such as sea oats
2) Implement policies to direct development away from high-risk areas

3 - Storm Surge:
1) Increase construction setbacks from the shoreline
2) Implement policies to direct development away from high-risk areas.
4 - Flooding:
1) Install larger drainage pipes and structures as the system undergoes maintenance and repair.
2) This strategy would recognize periodic flood may block access to the roadway, but the roadway would be built to withstand the prolonged exposure to water.

5 - Sea Level Rise:
1) Identify areas subject to hazards of sea level rise that would benefit from long term strategies
2) Consider sea level rise projections in policies regarding infrastructure, zoning and construction standards

6 - None:
1) Plan for only storms (rainfall and hurricanes) and coastal erosion without considering climate change or sea level rise
2) None of this is necessary and we should stop all efforts towards planning for a climate resilient community
USACE Low, Intermediate and High Projection Rate Curves
Planning Horizon: 2040, 2070, 2100
Vulnerability Assessment

- Impacts of
  - Sea Level Rise
  - Storm Surge
  - Flood (FEMA Flood Plain)
  - Coastal Erosion

- On:
  - Financial Exposure
  - Land Use and Building Exposure
  - Critical Facility Exposure
  - Environmental/Ecological Exposure
Low USACE Projection Rate Curve

- 2040:
  - 9-36 inch inundation using MHHW (Atlantic),
- 2070:
  - 12-39 inch inundation using MHHW (Atlantic),
- 2100:
  - 14-41 inch inundation using MHHW (Atlantic),
Intermediate USACE Projection Rate Curve 2040

- **2040:**
  - **11-38** inch inundation using MHHW (Atlantic),

- **2070:**
  - **18-45** inch inundation using MHHW (Atlantic),

- **2100:**
  - **27-54** inch inundation using MHHW (Atlantic),
High USACE Projection Rate Curve 2040

- 2040:
  - 19-46 inch inundation using MHHW (Atlantic),
- 2070:
  - 39-66 inch inundation using MHHW (Atlantic),
- 2100:
  - 66-93 inch inundation using MHHW (Atlantic),
Adaptation Action Area Policies

- Proposed AAA Policies for consideration by the City to move through the public vetting and adoption process

- Policies proposed 2 AAA areas
  - Inland Flooding
  - Erosion

- Areas of Focus
  - Location description
  - How it functions and what its purpose is
  - Review of new data/updates
  - Way out
  - Works to establish process of determining extent of benefits

Resiliency Strategies

- Based upon public input and comments
- Continuation of public input
- Implementation
Open House

• June 9, 2015
• Over 40 attendees
• Breakout Areas for each vulnerability
• Islamorada Team
• Brevard County – Coastal Initiatives
From the Bottom Up: Implementing Resiliency at the Local Government Level 2016-2018

- Grant from Sea Grant (Stetson University, Florida Sea Grant, ECFRPC, UF GeoPlan and Deady Law) to conduct detailed flood risk modeling of infrastructure, and consider additional policy and strategy development, and public outreach/education.
Working with Local Governments on Resilience and Sea-Level Rise: Satellite Beach

Thomas Ruppert, Coastal Planning Specialist
Florida Sea Grant
Working with Local Governments on Resilience and Sea-Level Rise: Satellite Beach

Thomas Ruppert
Coastal Planning Specialist
Overview

• Background
  – Why Florida Sea Grant was seen as a resource

• How Florida Sea Grant has been involved
  – Outlining legal issues and liability
  – Sharing approaches of other communities
  – Assisting in policy innovation & development

• Lessons learned
Why Florida Sea Grant was viewed as a resource
Eroding Long-Term Prospects for Florida’s Beaches: Florida’s Coastal Management Policy

By:
Thomas K. Ruppert, Asst. in Envt’l Law, University of Florida Institute for Food and Agricultural Sciences

and

Levin College of Law Conservation Clinic
Thomas Ankersen, Legal Skills Professor, Director, Levin College of Law Conservation Clinic

Christine Covington, J.D. Candidate, UF College of Law
Ryan Feinberg, J.D., UF College of Law
Yee Huang, J.D., UF College of Law
Michael McDonnell, J.D., UF College of Law
Andrew Miller, J.D., UF College of Law

August 19, 2008

Full report and appendices available at https://www.law.ufl.edu/academics/dynamic-habitat-accommodation-the-policy-framework-for-migrating-shorelines
Legal & Policy Products

Use of Future Interests in Land as a Sea-Level Rise Adaptation Strategy in Florida

This three-page document examines the prospects of using future interests in land for adaptation purposes in Florida. James Titus of the U.S. EPA has advocated for rolling easements for years, and his 2011 primer on the topic extensively covers the concept. Specifics in Florida law have limited the usefulness of this flexible concept. However, Florida law has provided more flexible options than

Environmentally Compromised Road Segments—A Model Ordinance

The legal case of Jordan v. St. Johns County, Case No. CA05-694 (Fla. 7th Jud. Cir. May 21, 2009), aff’d in part, rev’d in part by Jordan v. St. Johns County, 63 So. 3d 835, 837 (Fla. 2011), brought into stark relief for local governments in Florida the physical, legal, and financial dangers of coastal hazards. The model ordinance presented here developed from a concern about how erosion, and other coastal hazards being exacerbated by sea-level rise,ordinance seeks to provide property rights and access, resources may counsel

Reasonable Investment-Backed Expectations: Should Notice of Rising Seas Lead to Falling Expectations for Coastal Property Purchaser?

This article, published in Volume 26 of the Journal of Land Use & Environmental Law, delves into the concept of “reasonable, investment-backed expectations in federal takings law. This leads into analysis of the importance of “notice” in evaluation of reasonable, investment-backed expectations. The importance of notice—and issues of fairness and personal responsibility—coalesce to support the idea that local governments could institute notice or disclosure ordinances for coastal hazards. The article cites to examples of disclosure or notice in other contexts and makes recommendations for drafting of a local notice ordinance.
Legal & Policy Products

**Drowning in Place: Local Government Costs and Liabilities for Flooding Due to Sea-Level Rise**

This article, published in the November 2013 issue of the Florida Bar Journal, discusses the potential legal liabilities and context for local government maintenance and upgrading of drainage system in response to decreasing efficacy of such measures in Florida. The article likely explores the legal issues and implications of sea-level rise on local government infrastructure and liability.

**The Link Between Future Flood Risk and Comprehensive Planning**

Comprehensive planning has formed a key part of community management in Florida for decades. This article traces some recent history as Florida begins to consider climate change and sea-level rise in comprehensive planning. The article then goes on to discuss the consideration of sea-level rise, among other flood vulnerabilities, in Florida's Comprehensive Plans. Next, the article discusses how the National Flood Insurance Program and sea-level rise, and looks at federal policy initiatives to address future flood risk.

**Sea-Level Rise Adaptation Financing at the Local Level in Florida**

Adaptation to sea-level rise is already proving itself an expensive endeavor. The City of Miami Beach has embarked on a project to raise roads and replace gravity-flow drainage systems with pumps and valves—at a cost estimated to reach between $400 and $500 million for the multi-year project. How can local governments pay for such expensive infrastructure work? While some funds may come through state or federal government through grants or as part of related projects for infrastructure belonging to state and federal government, much of the cost will be borne by local governments. This paper examines some of the strategies that local governments may use for adapting to sea-level rise.

**Elevation as an Adaptation Strategy**

This very short document divides elevation strategy into elevation of land area and elevation of structures and highlights a few of the issues with each, including likely legal stumbling blocks.
Legal & Policy Products

**Questions and Answers About Flood Insurance**

Not sure where to start with purchasing flood insurance for your home? This new frequently asked questions guide answers any questions you might have about the National Flood Insurance Program in an easy-to-read format. Visit the following link to learn more: [Questions and Answers](#)

---

**Example Sea–Level Rise Language & Case Studies**

Adaptation to sea-level rise (SLR) typically begins with a vulnerability assessment, progresses to policy development, and finally moves into implementation. While many communities in the United States and around the world have begun or completed vulnerability analysis, far fewer have developed SLR policies and even fewer have reached the stage of implementing SLR policies. This section, which is currently under development and being further populated as time permits, provides resources and links for examples of SLR policy development and implementation.
The Florida Sea Grant Coastal Planning Program supports Florida Sea Grant’s mission of using academic research, education and extension to foster a sustainable coastal economy and environment.

The Coastal Planning Program assists and provides resources for local governments addressing coastal hazards through their planning process, including land use planning, hazard mitigation planning, and emergency planning.

Florida’s coastlines define Florida for many residents and visitors. Even as Florida’s coastal areas offer great beauty and diverse natural habitats, they also present many potential hazards to human development and communities.

This website provides information and resources on coastal hazards for the local government attorneys, land use planners, and coastal managers that address these hazards in their work. The focus here is on sea-level rise and adaptation with additional information on the related hazards of storms and storm surge, coastal flooding, and erosion. Florida Sea Grant is building a cache of resources for local governments that incorporates both original research and links to resources from other organizations and researchers.

NEW: Florida Trend Report: Reality, Risk and Rising Seas
Florida Sea Grant is at the leading edge of actionable research to improve the
Response: Professional Dev. Workshops

SEA-LEVEL RISE AND FLOODING: PLANNING & LAW FOR LOCAL GOVERNMENTS

Professional Credits
Registration includes professional credits:

- 5 CMs for AICP planners (estimated)
- 5.5 CECs for Floodplain Managers
- 7 CLEs for attorneys
- 0.7 CEUs (7 PDH credits) for engineers (estimated)
How Florida Sea Grant has been involved
Adaptation Action Areas

- New, permissive legislation in 2011
- Work with partners
  - Satellite Beach (CPAB, Lindeman, Fergus, etc.)
  - ECFPRC
- Review and provide input
  - Encourage focus on flood insurance and long-term financial viability
Satellite Beach

Objective 1.4A The City shall strive to reduce the exposure of human life and public and private property to natural hazards while reducing the cost of flood insurance.

Policy 1.4A.1 - The City shall initiate a public process to identify Adaptation Action Areas (AAAs) in accordance with Sections 163.3164(1) and 163.3177(6)(g)10 Florida Statutes. The purpose of the AAAs is to increase grant and other funding opportunities and identify creative solutions to achieve the following goals: • Protect the health, safety and welfare of residents, • Prevent damage to public and private property, and • Reduce National Flood Insurance Program premiums to property owners.
Increasing heavy rainfall events
NOAA: ‘Nuisance flooding’ an increasing problem as coastal sea levels rise

Study looks at more than 60 years of coastal water level and local elevation data changes

July 28, 2014

Eight of the top 10 U.S. cities that have seen an increase in so-called “nuisance flooding”—which causes such public inconveniences as frequent road closures, overwhelmed storm drains and compromised infrastructure—are on the East Coast, according to a new NOAA technical report.

This nuisance flooding, caused by rising sea levels, has increased on all three U.S. coasts, between 300 and 925 percent since the 1960s.

The report, Sea Level Rise and Nuisance Flood Frequency Changes around the United States, also finds Annapolis and Baltimore, Maryland, lead the list with an increase in number of flood days of more than 920 percent since 1960. Port Isabel, Texas, along the Gulf coast, showed an increase of 547 percent, and nuisance flood days in San Francisco, California increased 364 percent.

“Achieving resilience requires understanding environmental threats and vulnerabilities to combat issues like nuisance flooding,” said Ben Sherman, NOAA’s program coordinator for the report.

The study notes that the most frequent nuisance flooding is due to a combination of high tides and extreme storm surges, though sea level rise also has a significant contribution.

The study also notes that nuisance flooding is a growing problem for U.S. coastal communities, and offers insights into coastal flooding processes and trends. It recommends the need for further research on how sea level rise may affect coastal and riverine flooding, and the potential for synergistic impacts with other processes such as extreme storms.
Liability Takes Many Forms

- Potential liability for permitting risky dev.
- Liability if local gov’t causes flooding
  - Tort (civil damages) or “taking” of property (Drake v. Walton County, 6 So. 3d 717, 720-21 (1st DCA 2009))
  - Can be due to development approval
- Liability for infrastructure & maintenance costs of infrastructure in at-risk areas
- Increased costs for flood insurance
“Takings” in the U.S. Constitution

“. . . nor shall private property be taken for public use, without just compensation.”
Bert J. Harris Act (Ch. 70)

• Inordinate burden on property
  – Lots of confusion due to similar language
• Focus on two types of “existing use”
  – Current
  – Future: rsbly foreseeable, non-spec, suitable for property, and compatible with adjacent land uses
• Definitions of “suitable” and “compatible” but no *in pari materia* interpretation
• Safest to regulate floodplains and flooding
Jordan et al. v. St. Johns County
• Claims:
  – Taking
  – Duty to maintain road

• 5th DCA
  – Discretion not absolute
  – County must provide “reasonable level of maintenance” that results in “meaningful access”
  – How can County fight the ocean?
Overview of Model Ordinance

Environmentally challenging location

- Envt’ly Compromised Local Rd. Segment (avg. cost over 3 yrs > 4x usual cost OR 1 yr. cost more than 6x usual)
- Envt’ly Compromised Collector Rd. Segment (avg. cost over 3 yrs > than 5x usual cost OR 1 yr. cost more than 8x usual)

Financial threshold

Notice and signage posted.

- Maint. stds based on cost rather than LOS. Spend equivalent max of designation threshold plus 25% subject to limitations.

If no meaningful access, property owners request assistance to negotiate access. If not successful, local gov’t disavows liability for lack of access.

Varying processes for abandonment.

Option for landowners to seek MSBU to increase funding for maintenance.
• No duty of local gov’t to provide drainage
  – As with many services, *authority* or *power* to provide, but not duty (fire, police, etc.)
• However, if provided, duty to maintain arises
  – Maintenance must be done with reasonable care
  – Liability for failure to maintain
• Distinction between maintenance and planning
The Day the Banks Abandon Florida
http://m.dailykos.com/story/2015/12/20/1462300/-The-Day-the-Banks-Abandon-Florida

Moody's Warns Cities to Address Climate Risks or Face Downgrades
RECOMMENDATION FOR A UNIFIED PROJECTION OF SEA-LEVEL RISE IN THE TAMPA BAY REGION

Tampa Bay Climate Science Advisory Panel
Summary and Commentary on Sea-Level Rise Adaptation Language in Florida Local Government Comprehensive Plans and Ordinances

By: Thomas Ruppert, Esq. & Alexander Stewart

July, 2015


I. Introduction ........................................................................................................................................... 3

II. Counties ................................................................................................................................................. 8

1) Brevard County ......................................................... ........................................................................ 8

2) Broward County ......................................................... ........................................................................ 8

3) Charlotte County ......................................................... ..................................................................... 16

4) Collier County ......................................................... ........................................................................ 17

5) Dade County ......................................................... ........................................................................ 17

6) Monroe County ......................................................... ..................................................................... 19
Lessons Learned. . . .
Is It Fair?
REASONABLE INVESTMENT-BACKED EXPECTATIONS: SHOULD NOTICE OF RISING SEAS LEAD TO FALLING EXPECTATIONS FOR COASTAL PROPERTY PURCHASERS?

THOMAS RUPPERT*

I. INTRODUCTION ................................................................. 239
II. RISING SEAS: THE NEED TO CONFRONT
    COASTAL CHANGE ....................................................... 242
III. TAKINGS BACKGROUND .................................................. 243
IV. THE EVOLUTION OF REASONABLE INVESTMENT-BACKED
    EXPECTATIONS .............................................................. 246
    A. Introduction to Reasonable Investment-Backed
        Expectations and Penn Central .......................... 246
    B. Kaiser Aetna ......................................................... 247
    C. Nollan ................................................................. 248
    D. Lucas ................................................................. 249
    E. Palazzolo v. Rhode Island .................................. 250
    F. Tahoe Sierra ......................................................... 252
    G. The State of RIBE Today .................................. 253
V. THE IMPACT OF “NOTICE” ON RIBE ............................... 256
VI. EXAMPLES OF NOTICE STATUTES AND RELATED CASES ... 260
    A. Examples of Notice Statutes ............................... 260
    B. Coastal Hazards Notice in Case Law .................... 266
VII. DRAFTING THE BEST POSSIBLE NOTICE REQUIREMENT .... 267
    A. What Property Is Affected ................................. 268
    B. Which Property Transactions Are Affected .......... 271
    C. Timing and Process Related to the Notice ......... 271
    D. Content and Form of Notice ............................... 272
    E. Results of Compliance with Notice Requirements ..... 274
    F. Results of Non-Compliance with
        Notice Requirements ....................................... 274
VIII. CONCLUSION AND RECOMMENDATIONS ......................... 275
Bay St. Louis, Miss., officials want **high-water markers** placed by the state at Mississippi Highway 603 and Interstate 10 camouflaged so they no longer commemorate the tragedies of **Hurricane Katrina** in 2005.

The **Sea Coast Echo** reports there are two high-water markers at the intersection, one facing north and the other facing south on Mississippi 603. They were placed there following Katrina to commemorate the area's comeback from the killer storm. In Katrina, water ran up the roadway so...
Is It Fair? -- Reprise

• When there’s loss, who should pay?
• Why?
• What if it requires changing the law?
  – Is it a taking?
• Should the law evolve?
“At the center of today’s debate [about property] . . . Lies a collective failure on our part to think clearly and intently about the institution [of property], how it works, why it exists, and many shapes it can take, in terms of landowner rights and responsibilities. . . . In operation, [the right to property] is less an individual right than a tool society uses to promote overall social good. Important truths about this arrangement have largely passed from our collective memory. We need to regain these truths.”

-Eric Freyfogle, On Private Property: Finding Common Ground on the Ownership of Land
“...when [our current idea of property] emerged in the nineteenth century, it was greeted with considerable dissent and resistance. Far from being timeless, our image of ownership reflects the dominant values and aspirations of the industrial, frontier era. Lawmakers of that era revised ownership norms to help them achieve the development goals that then prevailed.”

“[A] foolish man . . . built his house on sand. The rain came down, the streams rose, and the winds blew and beat against that house, and it fell with a great crash.”

Matthew 7: 26-27
Questions and Answers
If you have questions:

- Your webinar control panel includes a “Questions” box
- Please click on “+” sign and type any questions in this box
- Please refer to the slide number and/or speaker when you post your question
- Please keep your questions succinct!
- Staff will ask the presenters questions, as time permits
The PowerPoint is available at www.1000friendsofflorida.org
This webinar has been approved for:

- **1.5 AICP CM Credits for planners (#9138850)**
- **1 CEC for Certified Floodplain Managers**
- **2 CLE for Florida attorneys (1708850N- Intermediate)**
- **.125 CEUs for Florida Environmental Health Professionals.**

There is a link to a **BRIEF SURVEY** in the follow-up email you will receive. Please take a few minutes to give us feedback!
Upcoming Dr. John M. DeGrove Webinars

Spring 2017 DeGrove Webinars
All webinars are noon to 1:30 unless otherwise noted.

Each has been approved for professional certification credits for Planners (AICP CM) and Certified Floodplain Managers. 1000 Friends has applied for credits for Florida attorneys (CLE) and Florida Environmental Health Professionals but cannot guarantee they will be offered.

Register Now!

- February 21, 2018 NOTE TIME: 2:00 – 3:30 p.m. -- Planning for Community Resilience in Satellite Beach: Stormwater Infrastructure and LDRs
- March 21, 2018, Noon to 1:30 p.m. -- 2018 Florida Legislative Wrap Up

Visit [www.1000friendsofflorida.org/webinar/](http://www.1000friendsofflorida.org/webinar/) to find out more!
Check out our Legislative Webpage!

Available at: 
www.1000friendsofflorida.org/2018-florida-legislative-session-custom/

This site is:
- Updated frequently
- Includes Growth Management, Transportation and Conservation Legislation
- Includes links to the bills
Please support 1000 Friends of Florida:

www.1000friendsofflorida.org/donate-now/

If you would like your donation to support 1000 Friends’ webinars, please allocate your donation to the DeGrove Education Fund

AMAZON SMILE

http://smile.amazon.com/ch/59-2761163