



# Financing it All

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August 8, 2019

# Financing it All Workshop Outline

- Introduction: Tools and Challenges—Janet Bowman
- Financing Resilience Scenarios—Professor John Macomber
- Probability and Expected Value Discussion—Professor John Macomber
- Florida Case Study Discussion—Professor John Macomber/Rod Braun

# Challenges of Applying of 20<sup>th</sup> Century Fiscal Tools to Climate Resilience Projects

- Uncertainty of Climate Impacts
- Uncertainty of how Climate Impacts Affect Future Revenue Streams
- Difficulty of Evaluating Risk
- Fairness and Equity Issues

# Price Tag for Adaptation in Florida— Costs of Inaction

- Costs of Inaction--2006 Report “Florida & Climate Change: Costs of Inaction,” Stanton & Ackerman.  
Estimate of \$345 billion dollars by 2100 (in 2006 dollars) based on economic impacts from lost tourism, hurricane impacts, real estate values and impact on electric grid.
- Estimate of \$75.9 billion in 2040 to fund seawalls to protect communities in Florida from chronic flooding. (Center for Climate Integrity)
- Estimate of 1 million Florida homes at risk from sea level rise by 2100. (Union of Concerned Scientists)

# The Limits of Adaptation Funding

“Insufficient funding often hinders adaptation.

At the local level, adaptation planning and assessment have been supported by a mix of local government funds and federal, state, and foundation grants. Full-scale implementation of the proposals resulting from these adaptation planning and assessment activities would require significantly more resources.”

The Fourth National Climate Assessment, Chapter 28.

# Criteria for Evaluating Funding Options

- Potential to Generate Revenue or Capital
- Technical and Political Feasibility
- Efficiency & Flexibility
- Fairness/Equity

# Revenue Growth Foundation of Local Government Financing

- Ad Valorem Property Taxes
- Documentary Stamp Tax
- Tax Increment Financing
- Impact Fees—2019 Changes

# Tax Increment Financing

Tax Increment Financing (T.I.F.) is a method of financing that allows cities and counties to issue revenue bonds that pledge the incremental tax increase in property values resulting from redevelopment projects.

Example: Miami Beach has used TIF to provide \$50-\$100 million dollars in addition to other bond revenue to fund stormwater improvements to address sea level rise.





# Property Tax Roll Impacts of Climate Events—Hurricane Michael Example

- Mexico Beach—26.5% reduction of taxable value from 2018 to 2019 preliminary tax roll.
- Panama City— 13% reduction of taxable value from the 2018 to 2019 preliminary tax roll.
- Bay County—2.2% reduction of taxable value from the 2018 to 2019 preliminary tax roll.
- Bay County & Panama City are considering millage increases to compensate for the decrease in value of the tax roll and fund recovery efforts.

# Sea Level Rise and Potential Real Estate Values Losses by 2045 (Union of Concerned Scientists from Zillow 2018)

Community	Homes at Risk	Value at Risk	Property Tax at Risk
Miami Beach	12,095	\$6,443,424,737	\$91,013,636
Miami	5,718	\$2,115,800,018	\$37,261,591
Upper Keys	3,514	\$1,838,699,914	\$16,273,796
Bradenton	4,368	\$1,837,661,024	\$21,225,539
Key West	3,709	\$1,675,527,450	\$14,684,991
Lower Keys	3,415	\$1,398,112,163	\$12,975,389
West Palm Beach	771	\$1,210,159,069	\$17,281,943

# Federal Revenue Sources

- Programmatic Grants—e.g. NOAA Coastal Resilience Grants
- FEMA Pre & Post Disaster Hazard Mitigation Grants
- US Department of Housing & Urban Development Community Development Block Grants
- EPA Clean Water State Revolving Fund

# State Revenue Sources

- Direct appropriations for projects—member project process. (frequently used for water & sewer infrastructure)
- Revenue Sharing
- Programmatic appropriations:
  - Florida DEP Coastal Resilience Program
  - Beach Restoration
  - Florida Forever
  - Water & Sewer Revolving Grants

# Categories of Local Government Revenue Sources

- Constitutionally Authorized—Ad valorem property taxes.
- State/Local Revenue Sharing—e.g. gas tax
- Local Option Sales Surtaxes —e.g. Infrastructure Sales Surtax, Tourist Development Tax
- Locally Assessed Fees—e.g. impact fees, special assessments. (limitation of specific benefit)



## Infrastructure Sales Surtax

- Local option sales surtax levied by counties at rate of  $\frac{1}{2}$  to 1 cent to fund capital projects, acquire and restore land for conservation & recreation purposes.
- Resilience examples—Tallahassee Cascades Park used to fund downtown redevelopment project that addresses stormwater management problems. Proposal by Alachua County to fund deployment of solar on county land with use of proceeds.
- Equity issues of regressive tax.



# Creation of Intergovernmental Entities to Fund Resilience

- The Florida Interlocal Cooperation Act of 1969, Section 163.01, F.S., authorizes local governments to enter interlocal agreements that allow them to exercise certain governmental powers, including “any power, privilege, or authority which such agencies share in common and which each might exercise separately.”
- Entities have the power to issue bonds, issue contracts etc.
- Gulf Consortium example—Established to administer distribution of Deepwater Horizon settlement dollars.

# Debt Financing Alternatives-- Traditional General Obligation Bonds

- Debt issued by local government that is used to finance capital projects and is backed by the full faith and credit of taxing authority.
- Example—City of Miami \$400 million “Miami Forever” Bond that allocates \$192 million for measures to address sea level rise.



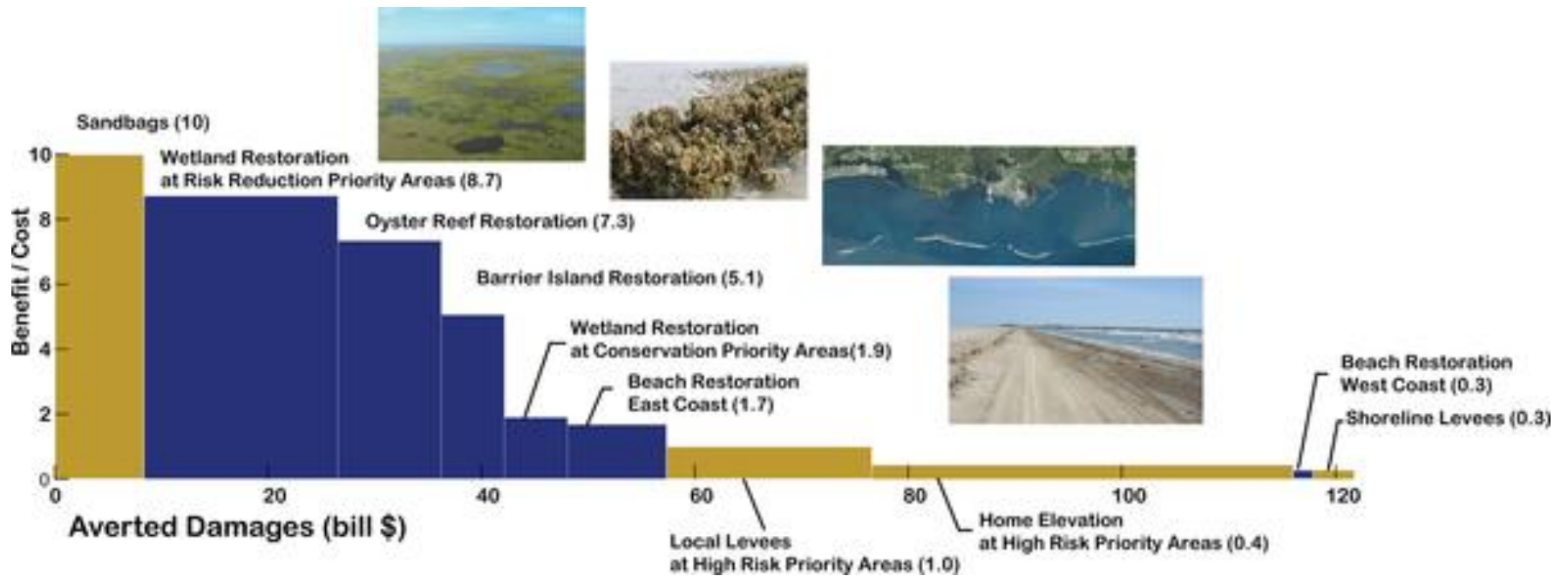
# Green Municipal Bonds

Backed by taxing authority of local government and require 3<sup>rd</sup> party certification.

- **Greater Orlando Aviation Authority** issued a \$924 million green bond in 2017 to finance implementation of LEED Version 4 standards in the construction of five new buildings. Project designed achieve 20% energy efficiency improvements compared to existing buildings.
- **City of Tampa** issued \$84.6 million green bond in 2018 to finance improvements to stormwater management system and reduce surface and groundwater pollution.

# Models for Funding Natural Infrastructure for Resilience

# Cost-Benefit Analysis of Nature-Based Resilience Solutions

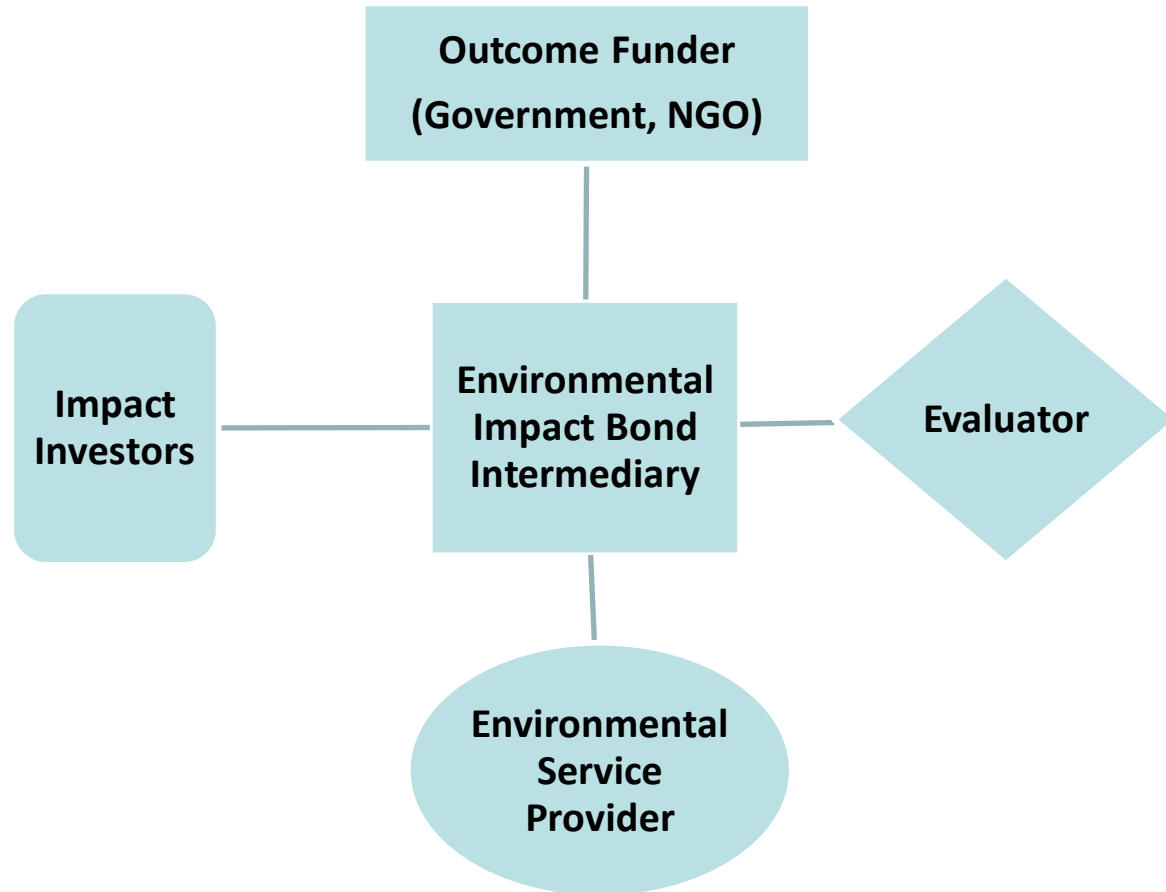


Reguero BG, Beck MW, Bresch DN, Calil J, Meliane I (2018) Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States. PLOS ONE 13(4): e0192132. <https://doi.org/10.1371/journal.pone.0192132>  
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0192132>

# Environmental Impact Bond for Green Infrastructure

- TNC funded EDF to develop an EIB proposal to address coastal resilience in Louisiana to address land loss caused by storms, erosion & SLR.
- An EIB differs from a typical bond in that investors are repaid a “performance payment” tied to achievement of a specific outcome in addition to principal and interest.
- In case of EIB for Louisiana wetlands restoration, the proposed metric was avoided land loss as proxy for flood risk and flood damage reduction.

# Environmental Impact Bond Business Model



# Revenue-Based Environmental Impact Bond

- Focuses on cost saved from accelerating restoration project.
- Example of Louisiana Wetland Restoration under Louisiana Master Plan--A \$40 million EIB could result in 60 million acres of wetland restoration 10 years earlier to save issuer (state) \$20 million. Savings from avoided cost of restoration from additional SLR and inflation of construction expenses.
- Performance payment estimated as between \$3.5 million to \$8 million.

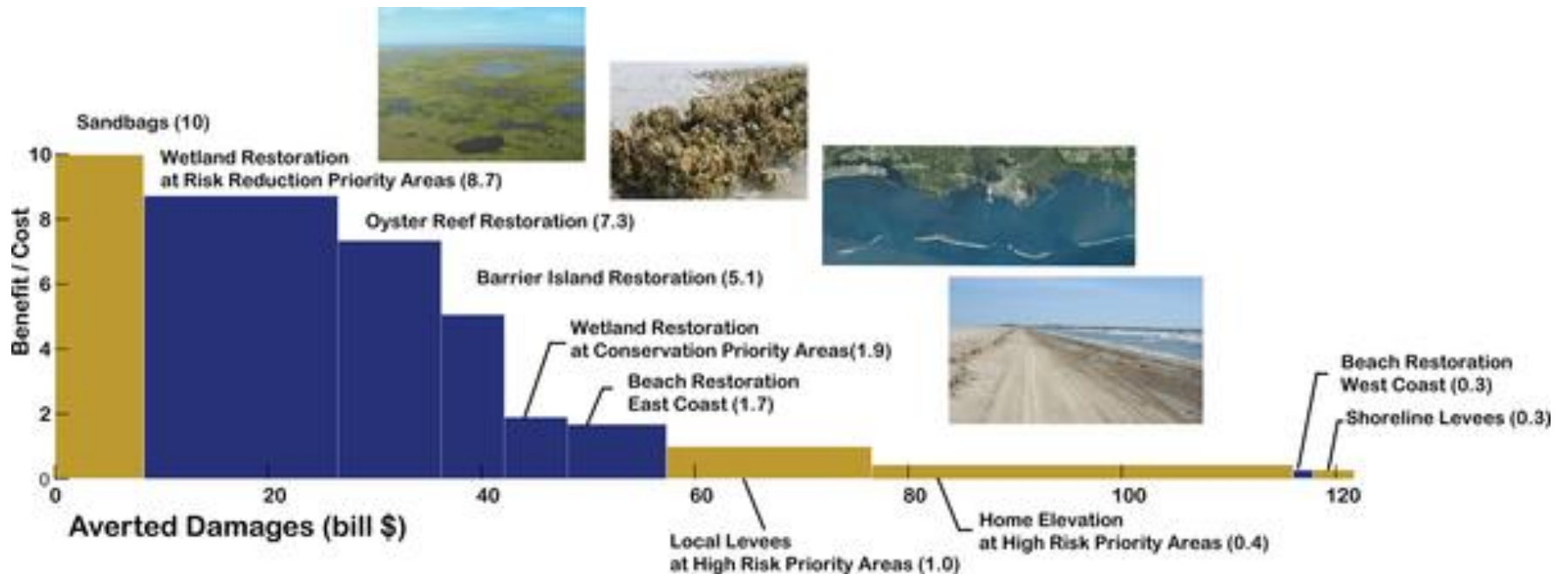
# Discussion Slides

# Concepts for State Resilience Funding

- Dedicated state revenue source that could be used by local governments to finance resilience projects for climate adaptation and mitigation.
- Creation of a state revolving resilience loan fund—revenue source from legislative appropriations or bond proceeds
- Florida Future Fund—Authorize new increment of state documentary stamp tax revenue to back bonds issued by the state with the proceeds used to fund resilience projects.



# Natural Climate Solutions Discussion



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