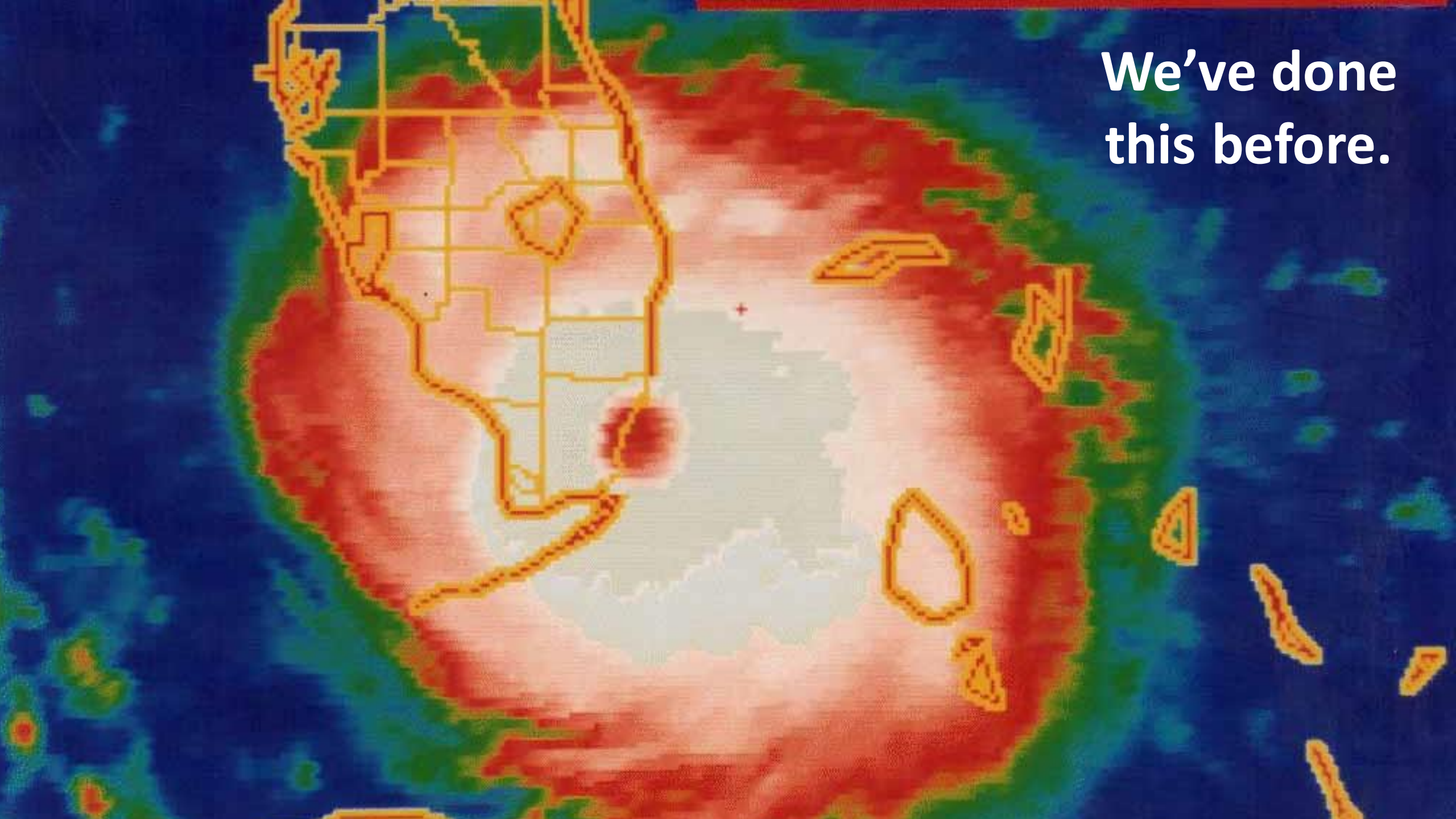

We've done
this before.

Wikipedia Commons, Burmese Pythons in Florida

McKinsey Global Institute

Climate risk and response

Physical hazards and socioeconomic impacts

ENVIRONMENT JANUARY 14, 2020 / 7:07 AM / 6 DAYS AGO

U.S. flood risk model to be publicly available in boon for homebuyers

4 MIN READ

Kate Duguid

NEW YORK (Reuters) - A climate research organization will offer access to a risk model that predicts the probability of flooding for homes across the United States, giving the public a look at the data institutional investors use to gauge risk.

We're not even close to prepared for the rising

Sea Level Rise Will Floo of Cities in the Near Futu

Rolling Stone

CAN MIAMI BEACH SURVIVE GLOBAL WARMING?

Miami real estate is booming as never before—but rising sea levels driven by global warming might mean a major bust. The mayor, climate scientists, and other experts tackle the dilemma.

could lose 15% of its value by 2030 due to sea rise

And it could lose up to 35 percent of its value by 2050, according to a new report.

Newsweek

HOW LONG BEFORE ALL OF FLORIDA IS UNDERWATER?

Project History

- ULI coordinated with the Southeast Florida Regional Climate Change Compact to conduct a new regional analysis examining the economic impacts of sea level rise and flooding, and **economic opportunities associated with investments in resilient infrastructure**.
- Led by the Southeast Florida Business Community in partnership with the four counties.
  - What is the business case for adapting to sea level rise and more frequent flooding?
- Funders & Partners
  - Florida DEP Grant
  - Broward, Miami-Dade, Monroe, and Palm Beach Counties
  - Business Community
  - Philanthropy
  - AECOM, Technical & Modeling Consultant

Urban Resilience at ULI

- ULI is a global membership organization of 45,000 professionals in real estate, land use and built environment industries.
- Mission is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide
- ULI's Urban Resilience program works with members and community partners to strategize on how buildings, communities, and cities can be more resilient to the impacts of climate change
  - Conducting Research
  - Advising Communities through ASPs and TAPs
  - Supporting Local-Level Resilience Work w/ULI's District Council network
  - Convening Leaders in Resilience
- Longstanding relationship working with SEFL communities

Project Purpose

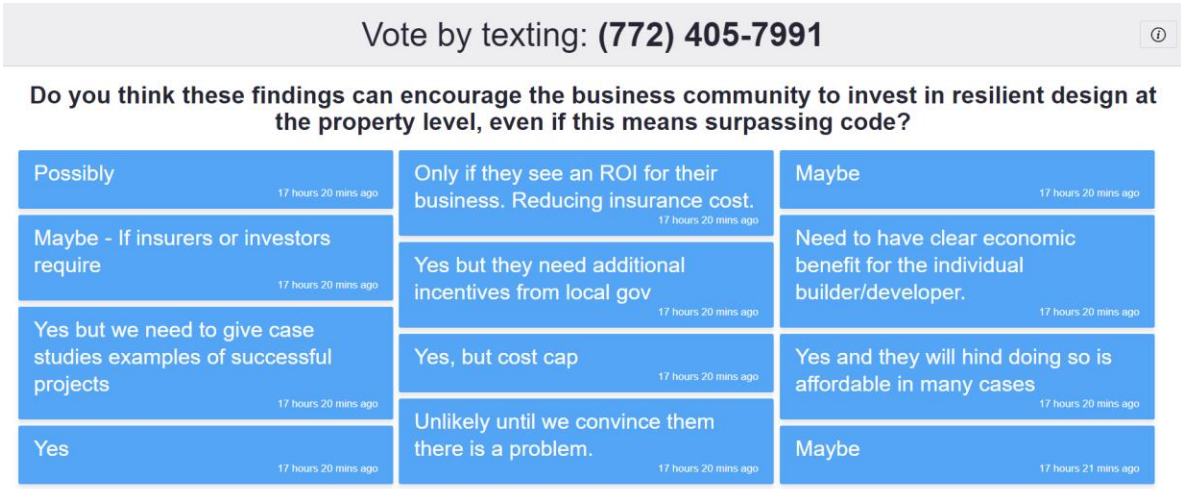
To identify the ***return on investment*** for resilience and adaptation measures in Southeast Florida.

Project Collaboration with the Business Community

- ULI convened local representatives from business community and public sector partners over the course of the project to:
  - Share project purpose, overview, and updates.
  - Gather feedback on economic modeling analysis findings and discuss relevance and implications for business community.
  - Workshop key takeaways and gather insights into project recommendations for next steps for the region.

Annotate to indicate the takeaway relevance and importance for the business community in SEFL

Key Takeaway	Strongly Resonates	Lukewarm	Not relevant/Don't understand
Property and real estate values can be preserved and generate value			
Systemic adaptation presents net benefits for the region			
Jobs and economic activity can be preserved and generated			
Damage and losses can be reduced			
Lack of adaptation investment and infrastructure now will have major consequences for the economic well-being of the region			
Social vulnerability must be a priority during adaptation decision making			
Reputational risks for the region can have negative economic impacts			
Co-benefits are key to maximizing adaptation investments			
Further analysis should be done on a project-by-project basis to better design and optimize the benefits that can stem from investment in adaptation			



Study Process

1

Identify Vulnerabilities

Gather existing data and analyze future coastal conditions to identify impacted areas.

2

Determine Costs + Benefits

Calculate avoided damages (i.e., benefits) and costs of proposed adaptation strategies. Identify co-benefits of proposed strategies.

3

Recommend Immediate Steps

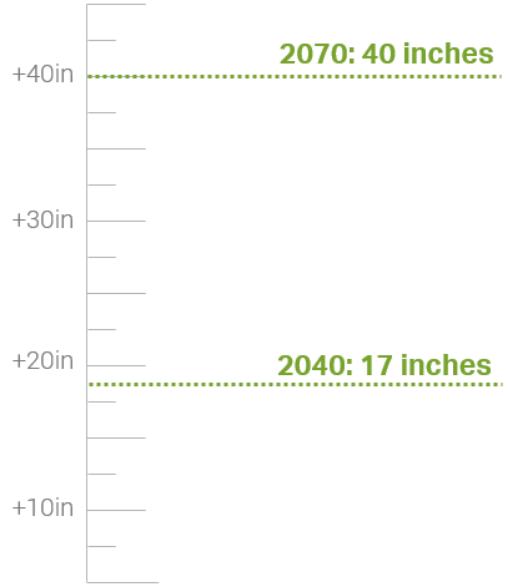
Develop recommendations to advance investment in resilient institutions, infrastructure, and economies.

***Note**: This study represents a high-level regional analysis, leveraging readily available and regionally standardized physical and economic data, replicable analysis techniques, and generalized assumptions.*

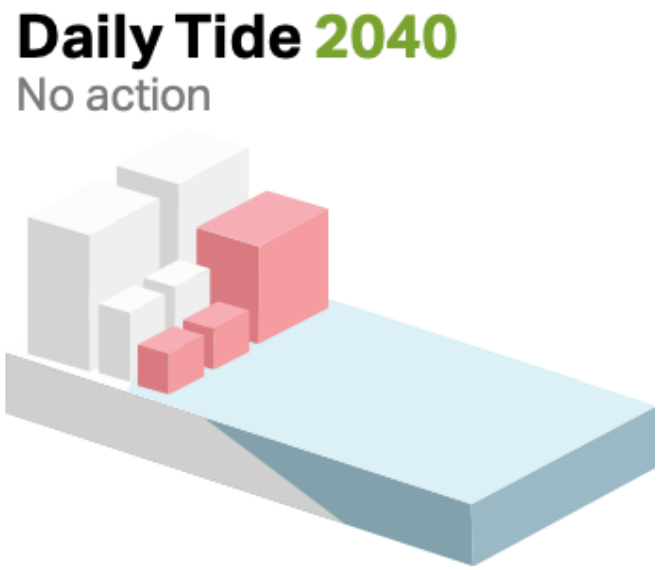
Why Higher Frequency Flooding?

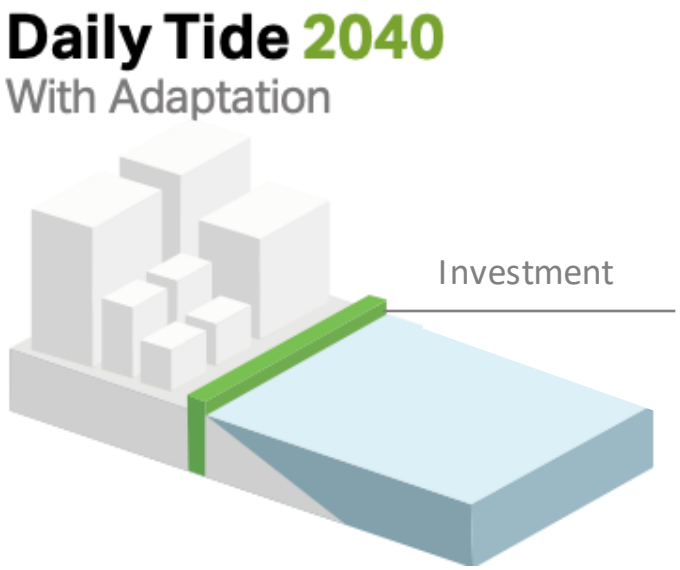
This study examines flooding that occurs often and is not associated with large catastrophic events.

- This study examines events that occur frequently, where the economic implications are not readily understood.
- Adaptation can reduce flooding from higher frequency events.
- These events will get noticeably worse as sea levels rise.



Understanding Flood Events and Adaptation





Examined: Daily Tide, 1-Year Tide (King Tide), and 10-Year Storm Tide

Key Terms

- *Mean Higher High Water:* Average of the highest of the two high tides occurring each day. Referred to in this study also as daily inundation.
- *1-Year Tide:* The annual highest tide, also referred to as the King Tide.
- *10-Year Storm Tide:* A tide with a 10% chance of occurring in any given year. This event represents high frequency conditions of temporarily elevated water levels due to coastal storms.

Graphics provided by AECOM.

② Calculating Avoided Damages

Impacts were modeled for parcels where

25%

or more of the parcel footprint is exposed to the modeled coastal conditions.

Temporary Storm Damages	Permanent Damages from Rising Sea Levels
Direct Property Impacts • Structure and content damages • Relocation costs	**Direct Property Impacts** • Property value loss
Business and Employment Impacts • Sales output loss • Income loss • Job impacts	**Business and Employment Impacts** • Sales output loss • Income loss • Job impacts
Fiscal Impacts • Sales tax loss • Tourist development tax loss	**Fiscal Impacts** • Property tax loss • Sales tax loss • Tourist development tax loss

2

2040 Highlight of Avoided Damages

	Temporary Storm Damages	Permanent Damages from Rising Sea Levels
Direct Property Impacts	**$3.2bil** In structure and content losses from one **10-year tide** event under 2040 conditions.	**$4.2bil** In property value exposed to **daily tidal inundation** in 2040.
Business and Employment Impacts	**360 jobs** Impacted by a **10-year tide** in 2040.	**720 jobs** Impacted by **daily tidal inundation** in 2040.
Fiscal Impacts	**$2mil** Sales & tourism tax losses from **10-year tide** in 2040.	**$28mil** Fiscal loss from **daily tidal inundation** in 2040.

**Results shown here are not adjusted to account for financial discounting. Parcels impacted by daily tidal inundation are excluded from the 10-year tide damages. The 10-year tide results account for the impacts of one storm event and are not adjusted for probability of the storm event occurring.*

2

2070 Highlight of Avoided Damages

	Temporary Storm Damages	Permanent Damages from Rising Sea Levels
Direct Property Impacts	**$16.5bil** In structure and content losses from one **10-year tide** event under 2070 conditions.	**$53.6bil** In property value exposed to **daily tidal inundation** in 2070.
Business and Employment Impacts	**1,300 jobs** Impacted by a **10-year tide** in 2070.	**17,800 jobs** Impacted by **daily tidal inundation** in 2070.
Fiscal Impacts	**$8mil** Sales & tourism tax losses from **10-year tide** in 2070.	**$384mil** Fiscal loss from **daily tidal inundation** in 2070.

**Results shown here are not adjusted to account for financial discounting. Parcels impacted by daily tidal inundation are excluded from the 10-year tide damages. The 10-year tide results account for the impacts of one storm event and are not adjusted for probability of the storm event occurring.*

Our Regional Economy is At-Risk

Without adaptation investment, our economy will suffer.

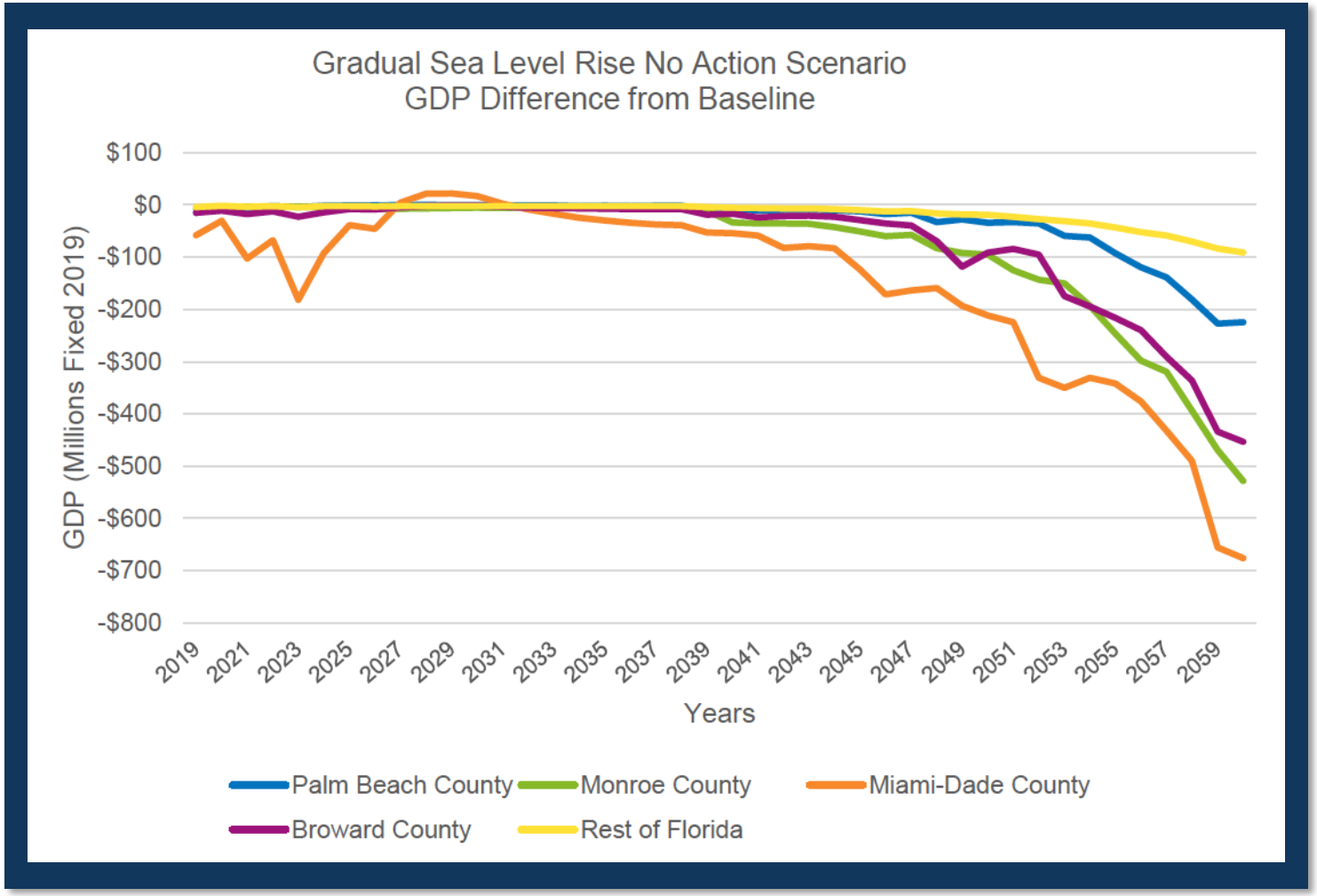


Image from AECOM Technical Report.

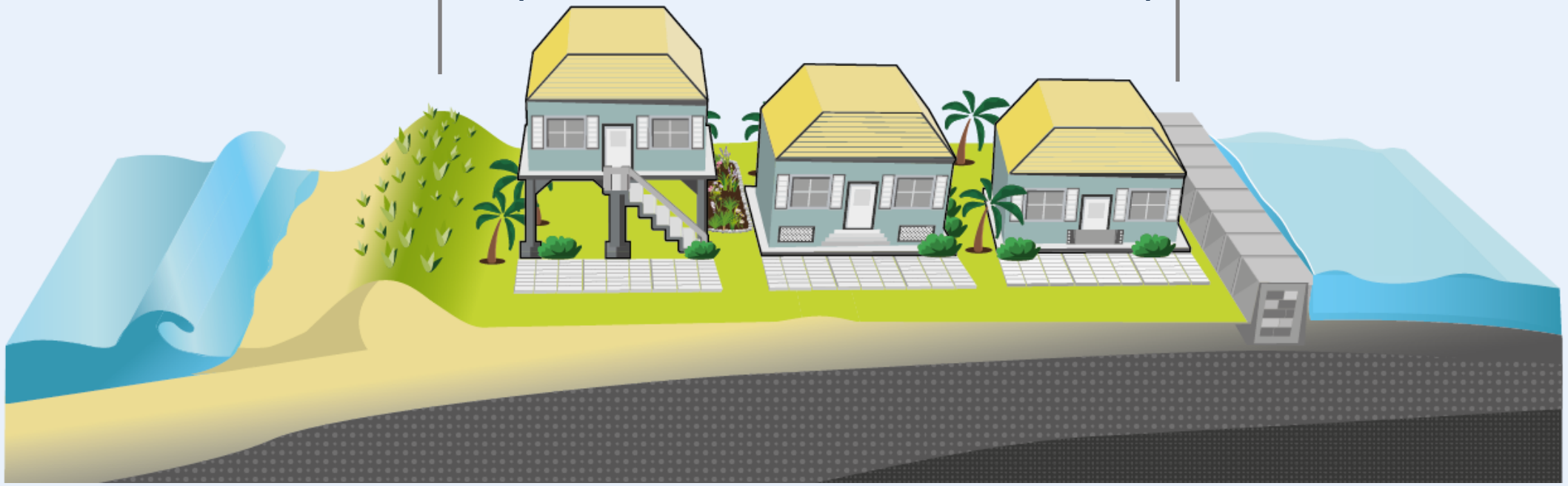
There is a **compelling** business case for the region to make significant investments in resilient infrastructure **now** and to collaboratively coordinate within the region applicable methods to address these threats.

Community-wide Adaptation

A combination of soft and hard engineering investments at the open coast, intracoastal, and inland areas.

Building-level Adaptation

A combination of structural improvements to property itself.



Note: Building-level adaptation will not provide benefit to regional infrastructure or to coastal resources such as beaches.

Building-Level Adaptation

	CUMULATIVE IMPACTS AVOIDED	CUMULATIVE ADAPTATION COSTS	NET IMPACTS	BENEFIT-COST RATIO
BROWARD	$4.5 billion	$1.5 billion	$3 billion	3.04
MIAMI-DADE	$9.2 billion	$1.8 billion	$7.5 billion	5.18
MONROE	$459 million	$598 million	-$139 million	0.77
PALM BEACH	$3.3 billion	$545 million	$2.8 billion	6.08

FOR THE REGION

Benefits **$17.6BIL** ÷ Costs **$4.4BIL** = Benefit-Cost Ratio **3.97**

Job Years Supported **56,000**

One Job  x *Ten Years*  = *Ten Job Years* **10**

*Results presented in net present value terms using a 5 percent discount rate over the period of analysis from 2020 to 2070
**Presented in terms of job years. Job years is equivalent to one year of work for one person; for example, a new construction job that lasts two years will equate to two job years. Estimated job years supported due to direct investment spending in the four counties of analysis

Community-Wide Adaptation

	CUMULATIVE IMPACTS AVOIDED	CUMULATIVE ADAPTATION COSTS	NET BENEFITS	BENEFIT-COST RATIO
BROWARD	$9.601 billion	$4.128 billion	$5.473 billion	2.33
MIAMI-DADE	$19.461 billion	$2.101 billion	$17.360 billion	9.26
MONROE	$3.182 million	$7.669 billion	-$4.487 billion	0.41
PALM BEACH	$5.613 billion	$4.325 billion	$1.288 billion	1.30

FOR THE REGION

Benefits **$37.9BIL** ÷ Costs **$18.2BIL** = Benefit-Cost Ratio **2.08**

Job Years Supported **85,000**

One Job x *Ten Years* = *Ten Job Years* **10**

*Results presented in net present value terms using a 5 percent discount rate over the period of analysis from 2020 to 2070
**Presented in terms of job years. Job years is equivalent to one year of work for one person; for example, a new construction job that lasts two years will equate to two job years. Estimated job years supported due to direct investment spending in the four counties of analysis

Recommendations

Key Strategy Highlights

5. Engage with and Provide Support to the **Small Business Community**

40-60% of small businesses never reopen following a disaster.*

90% of the **Region's Businesses** have fewer than 20 employees. **

Key Steps:

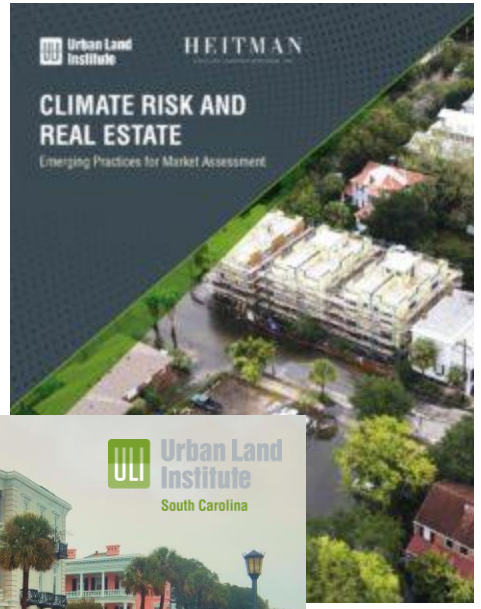
- Dedicated resources to **bolster preparedness**
- Assistance with **continuity planning**
- Streamlined **access to capital**

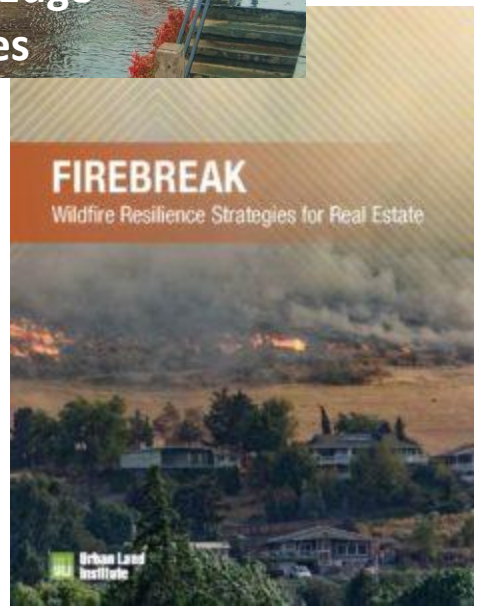
* FEMA
** Regional Census Data

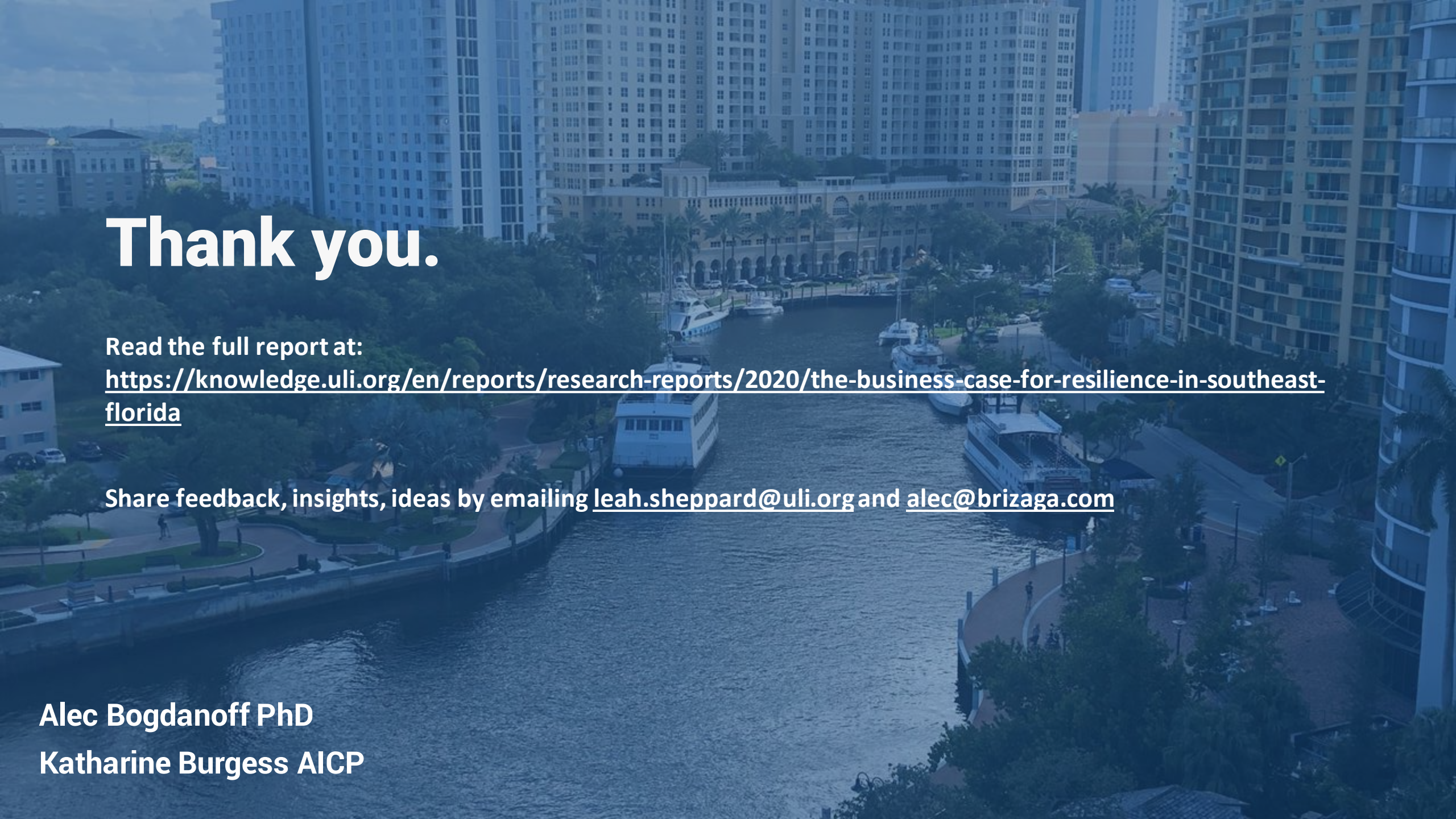
Complementary Work from ULI

- Climate Risk and Real Estate: Emerging Practices for Market Assessment
  - This report demonstrates that leading investors are developing approaches to better understand climate risk at the city or market scale, rather than focusing primarily on risk at the asset level.
- Living on the Edge
  - This web-based series was designed to develop a deep understanding of the current practice for assessing and mitigating climate risk in real estate and land use along the South Carolina coast and to learn from best practices across the industry.
  - Timely content given USACE Charleston Peninsula Storm Surge Study
- Firebreak
  - This report explores how the real estate industry is responding to wildfire risks with building design, land use policy, and community resilience solutions.

All resources are available via ULI's Knowledge Finder at https://knowledge.uli.org/







Thank you.

Read the full report at:
https://knowledge.uli.org/en/reports/research-reports/2020/the-business-case-for-resilience-in-southeast-florida

Share feedback, insights, ideas by emailing leah.sheppard@uli.org and alec@brizaga.com

Alec Bogdanoff PhD
Katharine Burgess AICP