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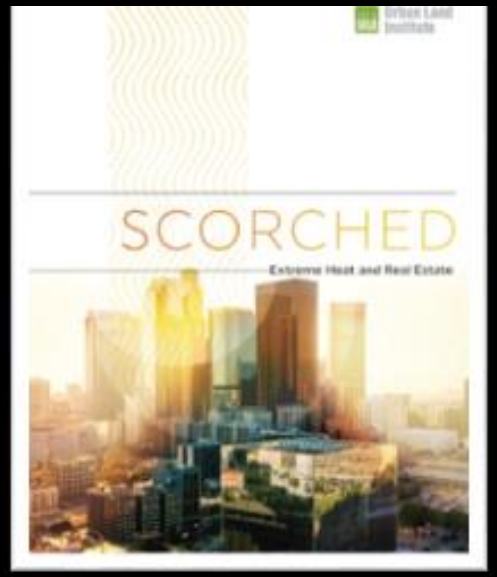
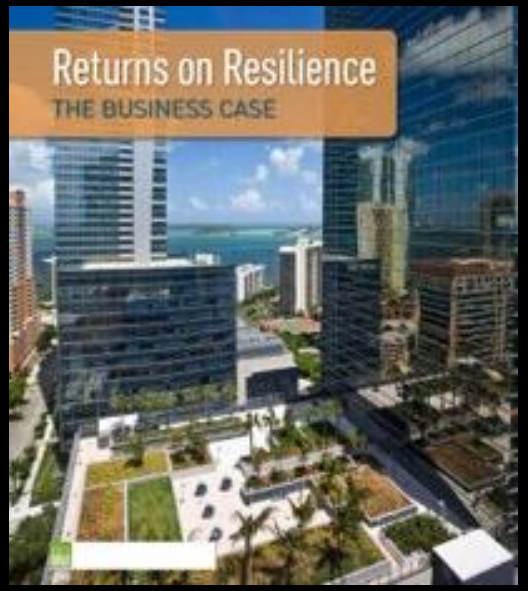
How will be become more climate resilient?

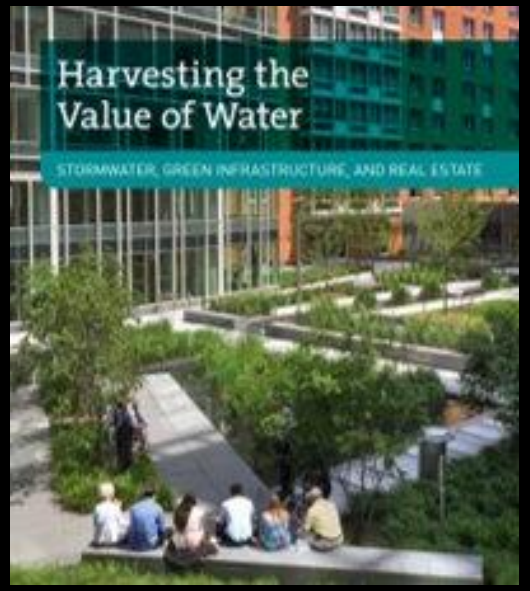
BILLY GRAYSON

EXECUTIVE DIRECTOR, ULI CENTER FOR SUSTAINABILITY AND ECONOMIC PERFORMANCE

ULI POLAND SUMMIT







Urban Resilience at ULI

Climate risk and resilience

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Resilience

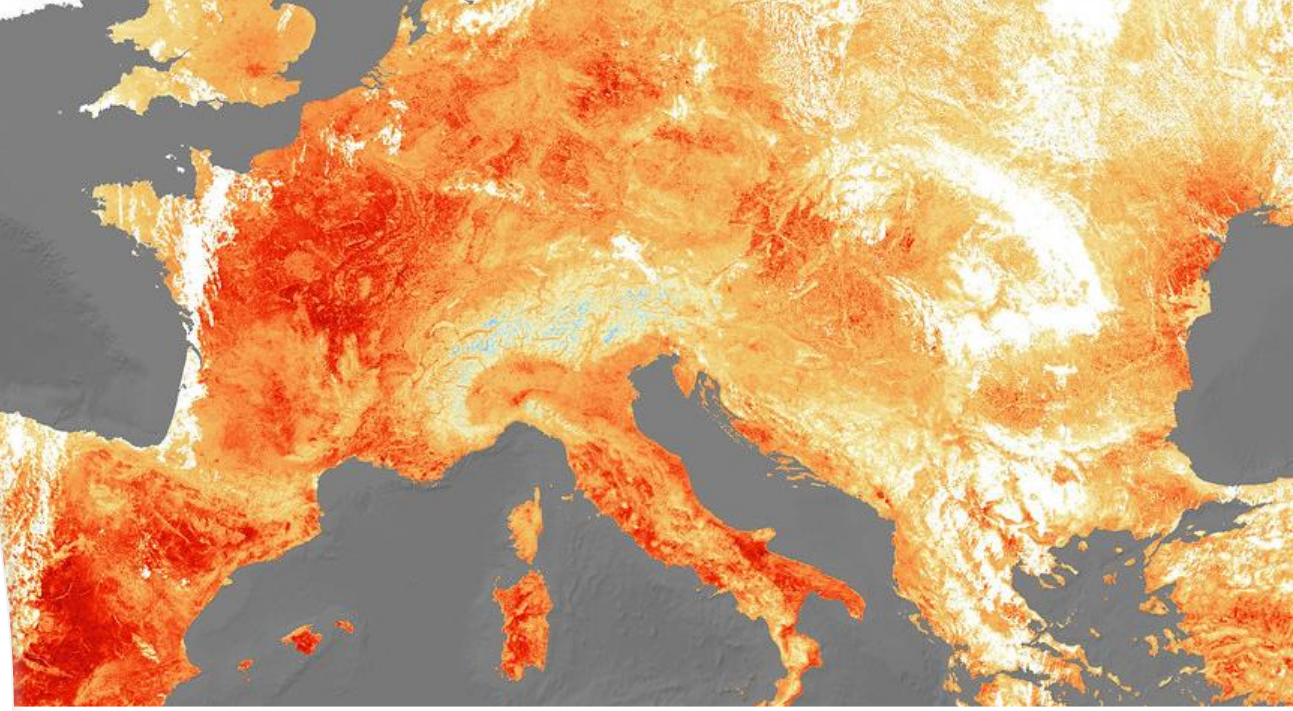
The capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience

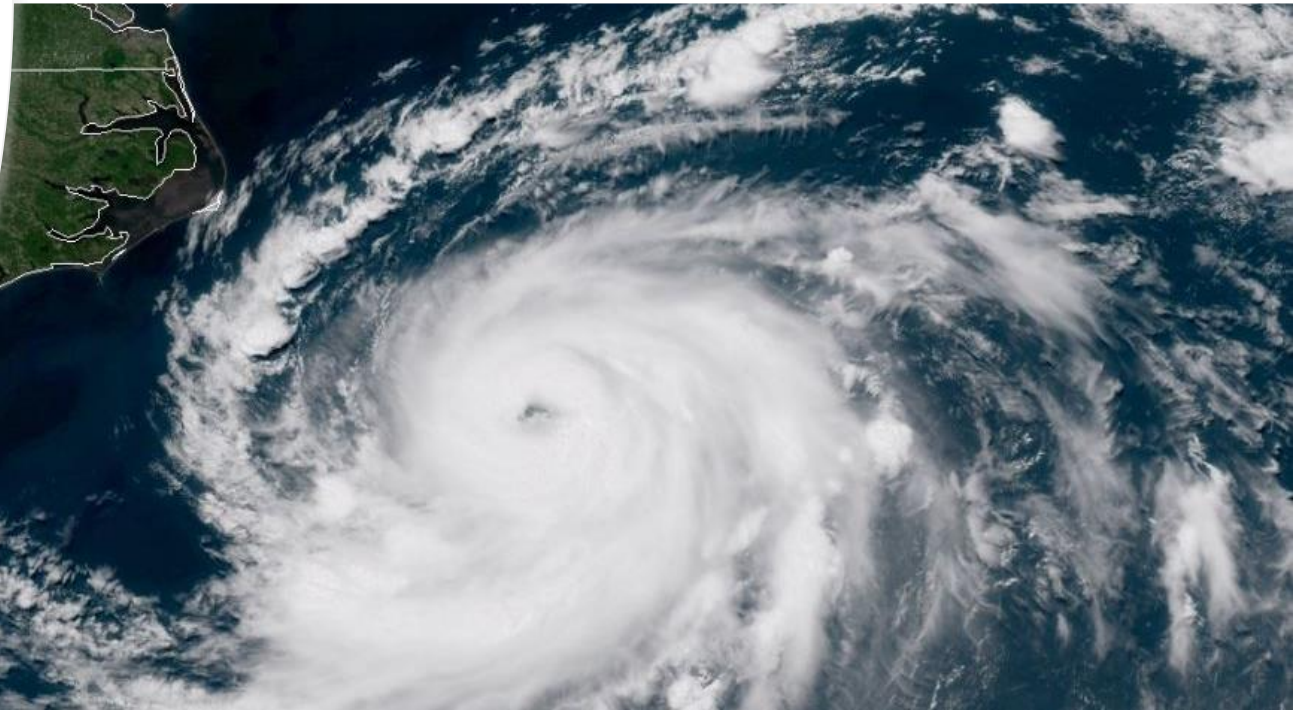
Climate Resilience:

Resilience to extreme weather events, and the impact of climate change

- Heat waves
- Extreme weather events (hurricanes, storm surge, inland flooding)
- Sea-Level Rise
- Ocean acidification
- Increase in wildfires
- Increases in drought

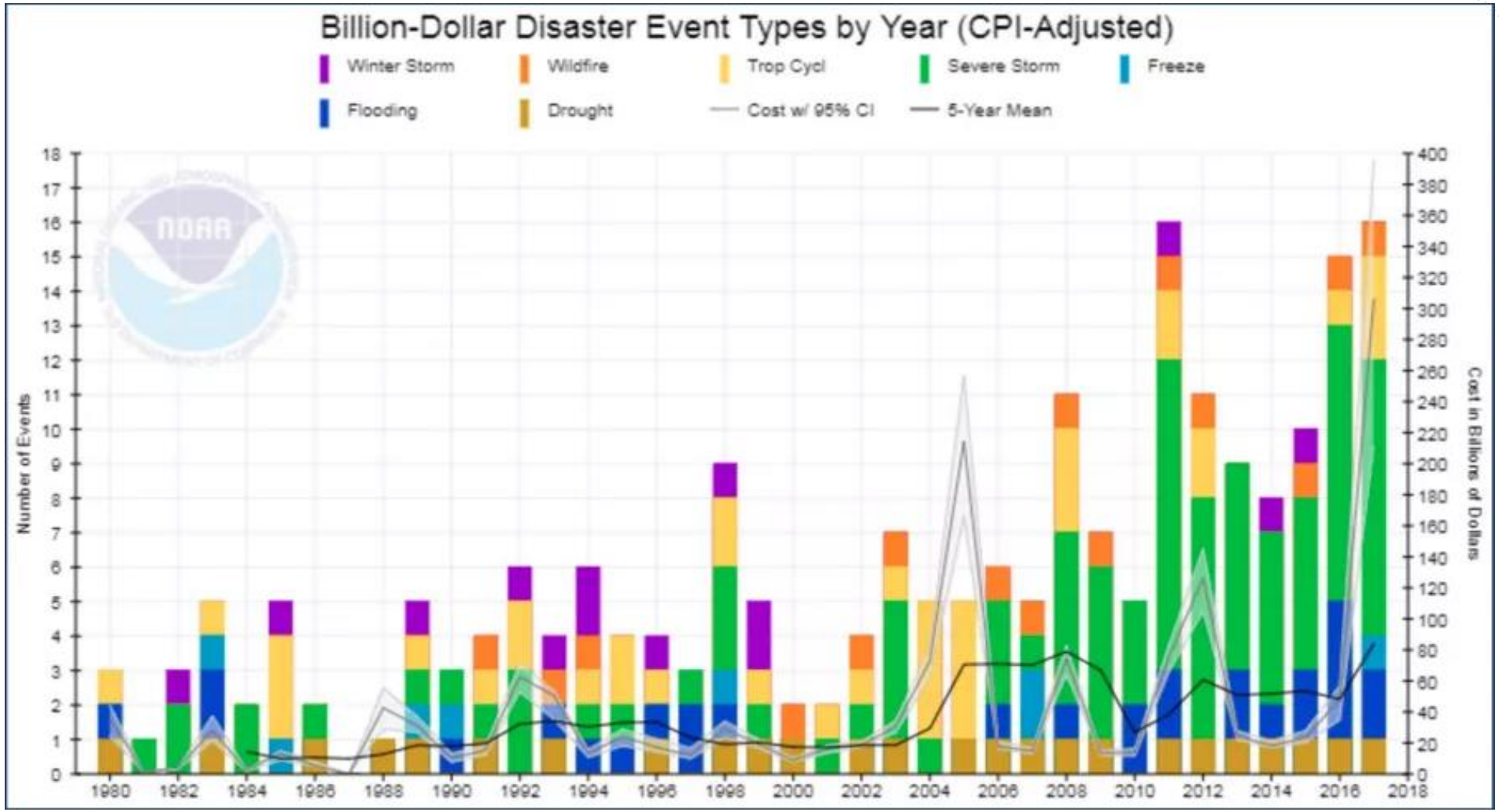
Climate change doesn't "cause" these, but it is driving an increase in their <u>frequency</u> and <u>severity</u>.





Climate change will also be expensive…

By 2050, estimated losses will likely be in the trillions…



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Responding to the climate crisis:
Cities

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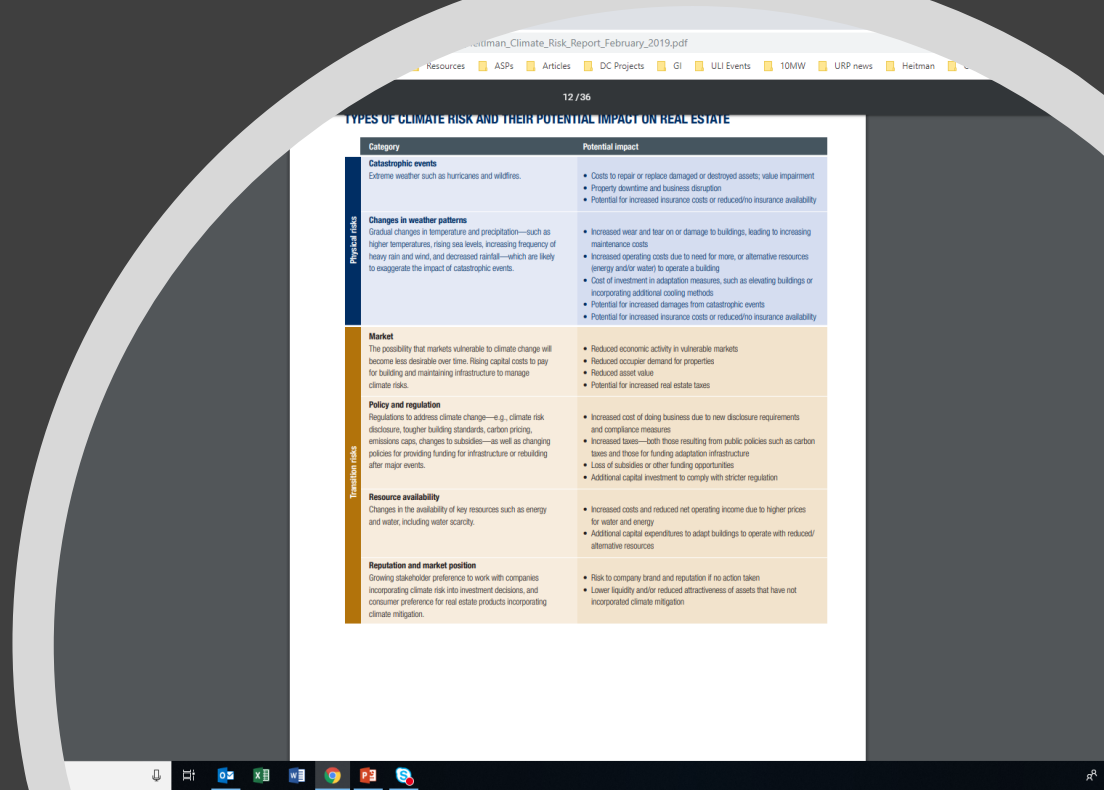
Cities are starting with a risk assessment

- **New tools for physical risk analysis**
- **Better understanding “transition risk”**
- **What else to consider?**
  - Who will pay?
  - How fast should I go?
  - How transparent should I be?



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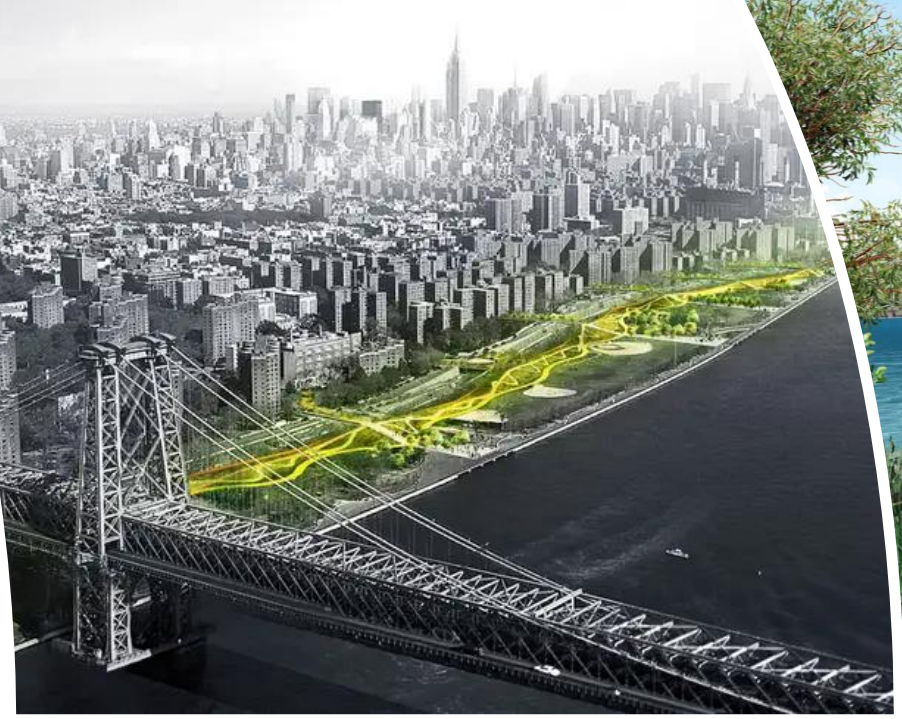
Strategy 1

Hardening

- Flood walls, barriers, gates, levees
- Elevating streets, substations, and other critical infrastructure (ports, airports, power generation)
- Buildings with hurricane-proof exteriors, floodable lobbies, new base flood elevations



Strategy 2:

“Softening”?

- Floodable urban parks
- Living shoreline
- Green infrastructure incentive programs

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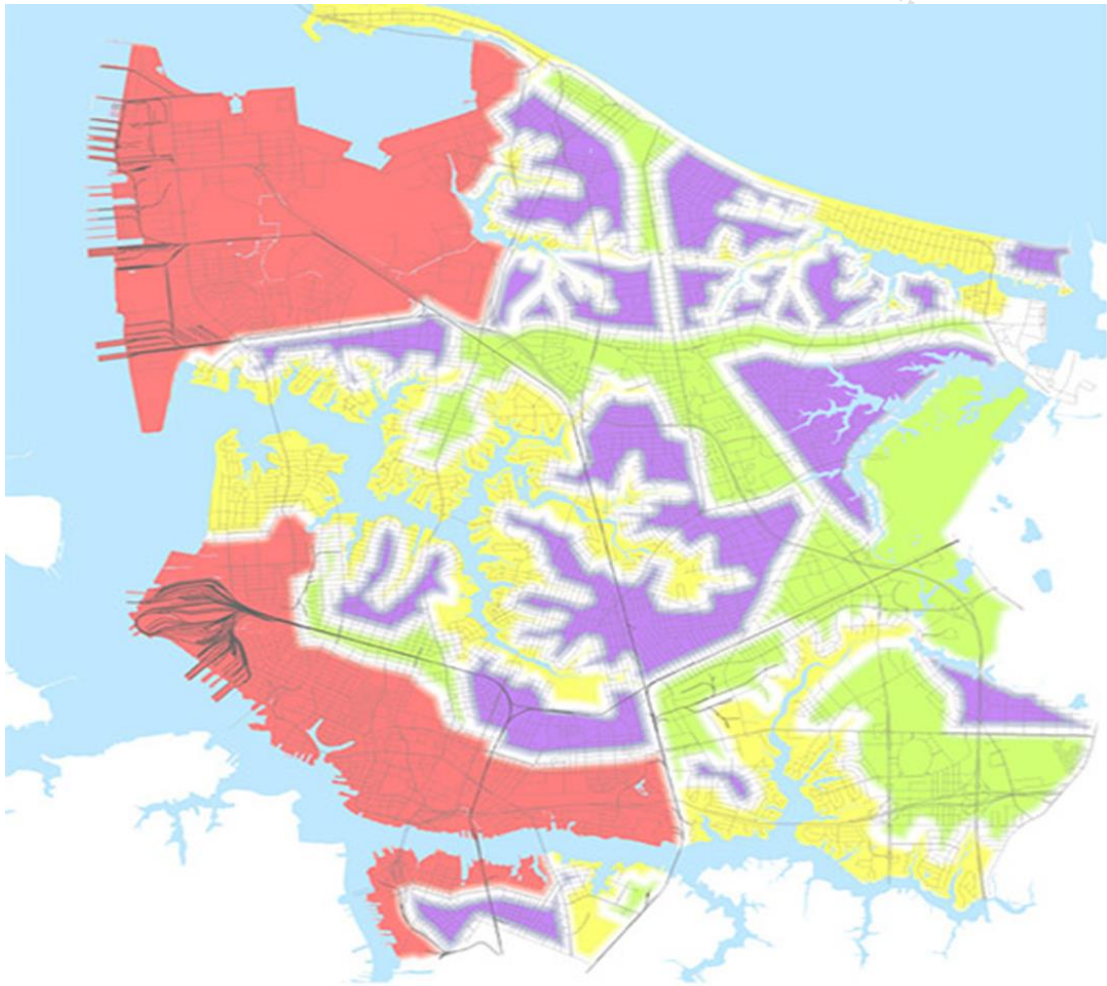
Strategy 3:

Managed Retreat

Managed Retreat – the strategic relocation of buildings and communities out of harm's way

Florida Keys Deliver a Hard Message: As Seas Rise, Some Places Can't Be Saved

Credit: Marinas.com; New York Times



Strategy 4

Climate Mitigation

EU and other European countries - a pathway to 50% GHG reduction by 2030, and net zero carbon by 2050.

- Emissions trading and a price on carbon (EU-wide)
- Green Stimulus (Germany)
- Building energy performance standards (UK), net zero new construction (Sweden, Denmark, Germany).
- Renewable energy investments (EU-wide)
- Moving procurement to push for Task Force on Climate Related Disclosure (TCFD) reporting – including leased federal real estate.

Cities are fighting resilience headwinds…that COVID-19 is making worse…

- **Physical impact**:
  - Public health impact
  - Social distancing impact
  - Construction and O&M impact
  - Growing vulnerable population even more at-risk from extreme weather events.

- **Financial Impact:**
  - Insurance
  - Credit and bond ratings
  - The power to tax (to pay for infrastructure)
  - Political will to take expensive short-term action on a long-term risk
  - Level of support from the federal government

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Responding to the climate crisis:
Real estate investment

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	Category	Potential impact
Physical risks	**Catastrophic events** Extreme weather such as hurricanes and wildfires.	• Costs to repair or replace damaged or destroyed assets; value impairment • Property downtime and business disruption • Potential for increased insurance costs or reduced/no insurance availability
Physical risks	**Changes in weather patterns** Gradual changes in temperature and precipitation—such as higher temperatures, rising sea levels, increasing frequency of heavy rain and wind, and decreased rainfall—which are likely to exaggerate the impact of catastrophic events.	• Increased wear and tear on or damage to buildings, leading to increasing maintenance costs • Increased operating costs due to need for more, or alternative resources (energy and/or water) to operate a building • Cost of investment in adaptation measures, such as elevating buildings or incorporating additional cooling methods • Potential for increased damages from catastrophic events • Potential for increased insurance costs or reduced/no insurance availability
Transition risks	**Market** The possibility that markets vulnerable to climate change will become less desirable over time. Rising capital costs to pay for building and maintaining infrastructure to manage climate risks.	• Reduced economic activity in vulnerable markets • Reduced occupier demand for properties • Reduced asset value • Potential for increased real estate taxes
Transition risks	**Policy and regulation** Regulations to address climate change—e.g., climate risk disclosure, tougher building standards, carbon pricing, emissions caps, changes to subsidies—as well as changing policies for providing funding for infrastructure or rebuilding after major events.	• Increased cost of doing business due to new disclosure requirements and compliance measures • Increased taxes—both those resulting from public policies such as carbon taxes and those for funding adaptation infrastructure • Loss of subsidies or other funding opportunities • Additional capital investment to comply with stricter regulation
Transition risks	**Resource availability** Changes in the availability of key resources such as energy and water, including water scarcity.	• Increased costs and reduced net operating income due to higher prices for water and energy • Additional capital expenditures to adapt buildings to operate with reduced/alternative resources
Transition risks	**Reputation and market position** Growing stakeholder preference to work with companies incorporating climate risk into investment decisions, and consumer preference for real estate products incorporating climate mitigation.	• Risk to company brand and reputation if no action taken • Lower liquidity and/or reduced attractiveness of assets that have not incorporated climate mitigation

Cities and private real estate are starting with a risk assessment

- **What geographic locations present the highest risk?**
- **Risk as physical and transitional**
  - Financial impact of extreme weather event
  - Erosion of value from persistent impacts (king tide, extreme heat, drought, sea level rise)
  - What happens to city bond rating, insurance, and demographics as conditions worsen?
- **What else to consider?**
  - Who can best handle cost of resilience (public or private sector?)
  - How to move quickly in resilience, without destabilizing markets

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Geophy/427 REIT Physical Climate Risk

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Screening Heitman's Portfolio with Big Data Through 427

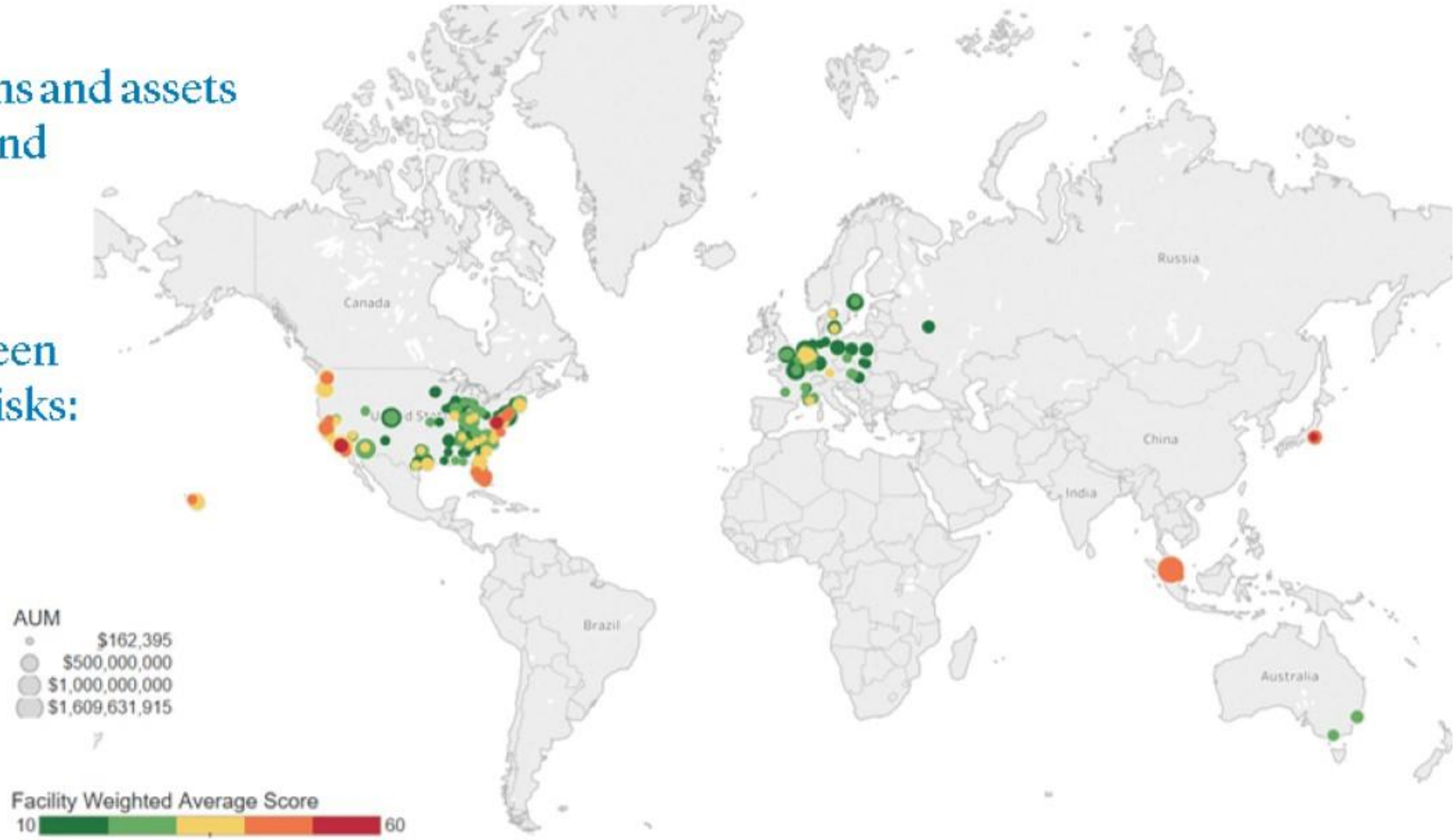
HEITMAN

PROPERTY RISK SCREENING

Heitman screens new acquisitions and assets under management on climate and environmental locational risks through Four Twenty Seven

Each asset receives a score between 0-100 for each of the following risks:

- Flood
- Hurricanes / Typhoons
- Sea-level rise
- Water stress
- Heat stress
- Earthquakes
- Wildfires (2019)



Courtesy Heitman "Climate Risk and Real Estate Investment", ULI Fall, 10/10/18.

Identifying and pricing **physical** and **transition** risks

PHYSICAL DAMAGE

INSURANCE PREMIUM REPRICING

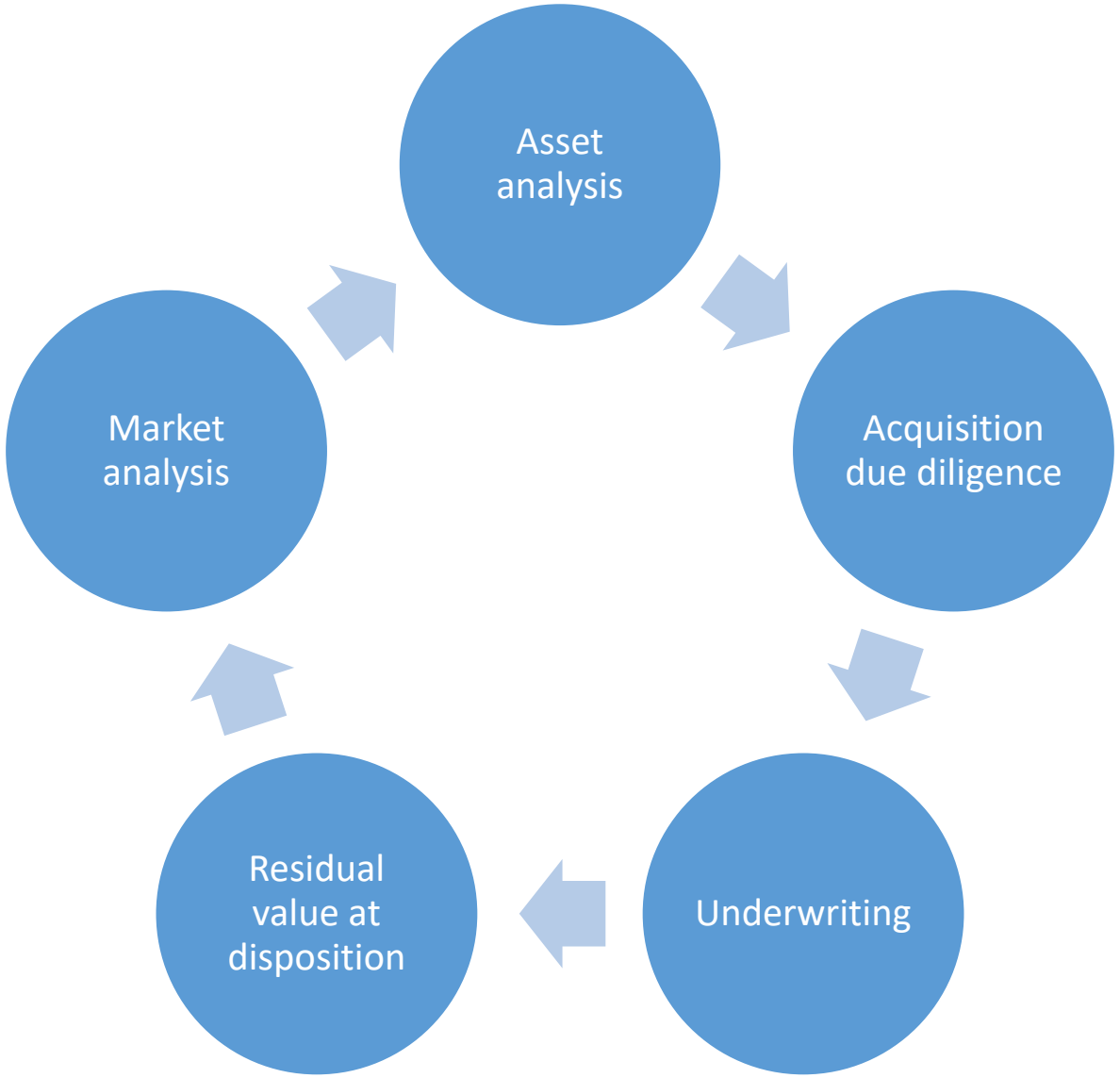
TAX INCREASES TO FUND INFRASTRUCTURE

INVESTMENT LIQUIDITY REDUCED

ECONOMIC & DEMOGRAPHIC DAMAGE

ABANDONMENT OF RISKIEST/ LEAST-RESILIENT LOCATIONS

Incorporating Resilience into the deal lifecycle



Climate Risk = Investment Risk

HEITMAN

Climate risks can cause increased investment by landlord and potentially decreased demand from investors and tenants

PHYSICAL RISKS

- Earthquake
- Hurricane
- Flood
- Wildfires
- Storm surge/sea-level rise
- Heat stress
- Water stress

TRANSITION RISKS

Capital Markets

- Reduced investor interest

Rental Revenue

- Reduced occupier demand

Operating Expenses

- Increased operating expenses (maintenance and resource costs)
- Increased insurance
- Increased real estate taxes

Capital Improvements

- Increased capital expenditures

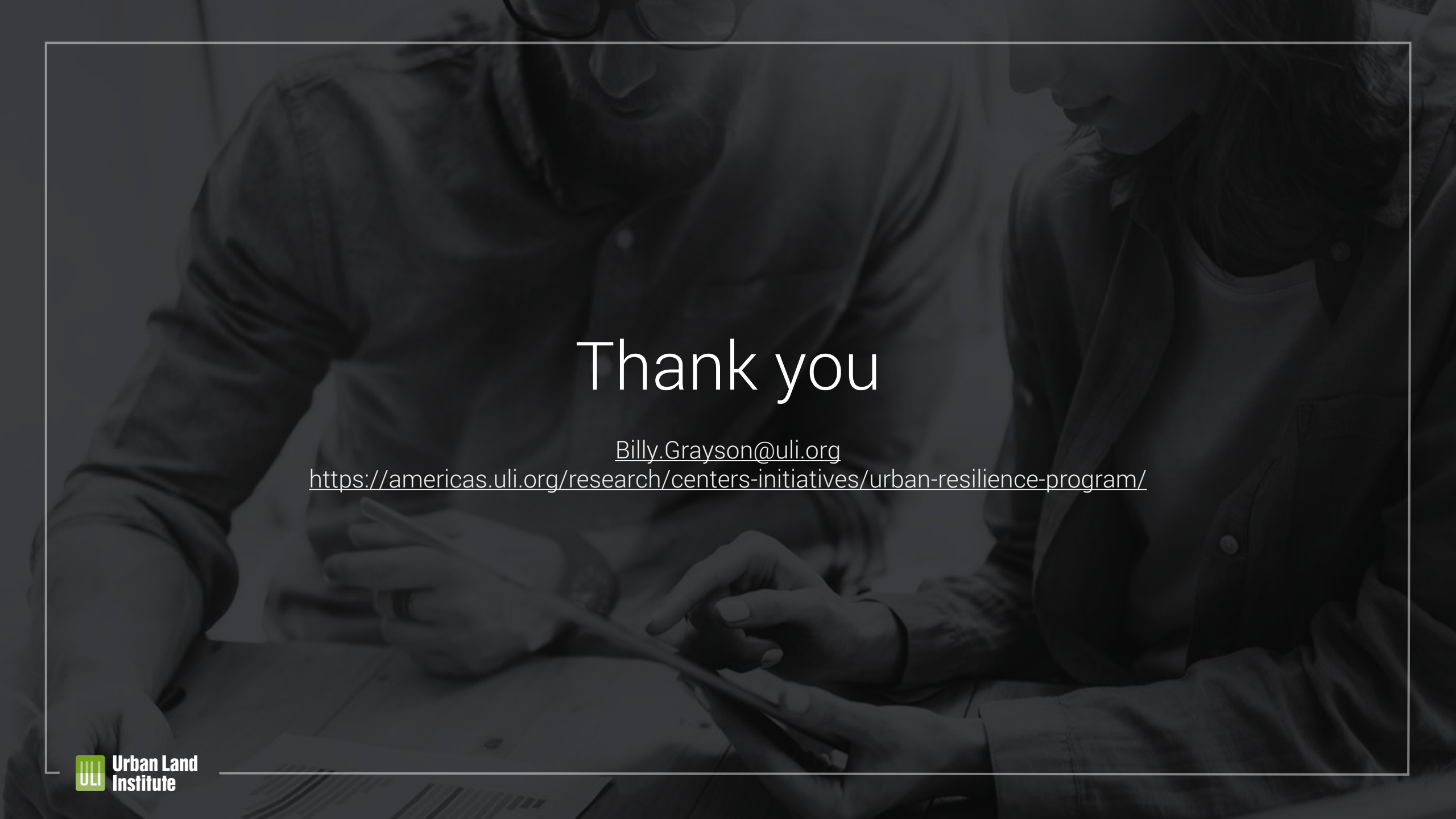
APARTMENT FINANCIALS

\+ Residential Rental Revenue

\− Landlord
Operating Expenses
Insurance
Real Estate Taxes
Capital Improvements

= Apartment Cash Flow

Courtesy Heitman “Climate Risk and Real Estate Investment”, ULI Fall, 10/10/18.



Thank you

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https://americas.uli.org/research/centers-initiatives/urban-resilience-program/

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