

The Opportunity Lens

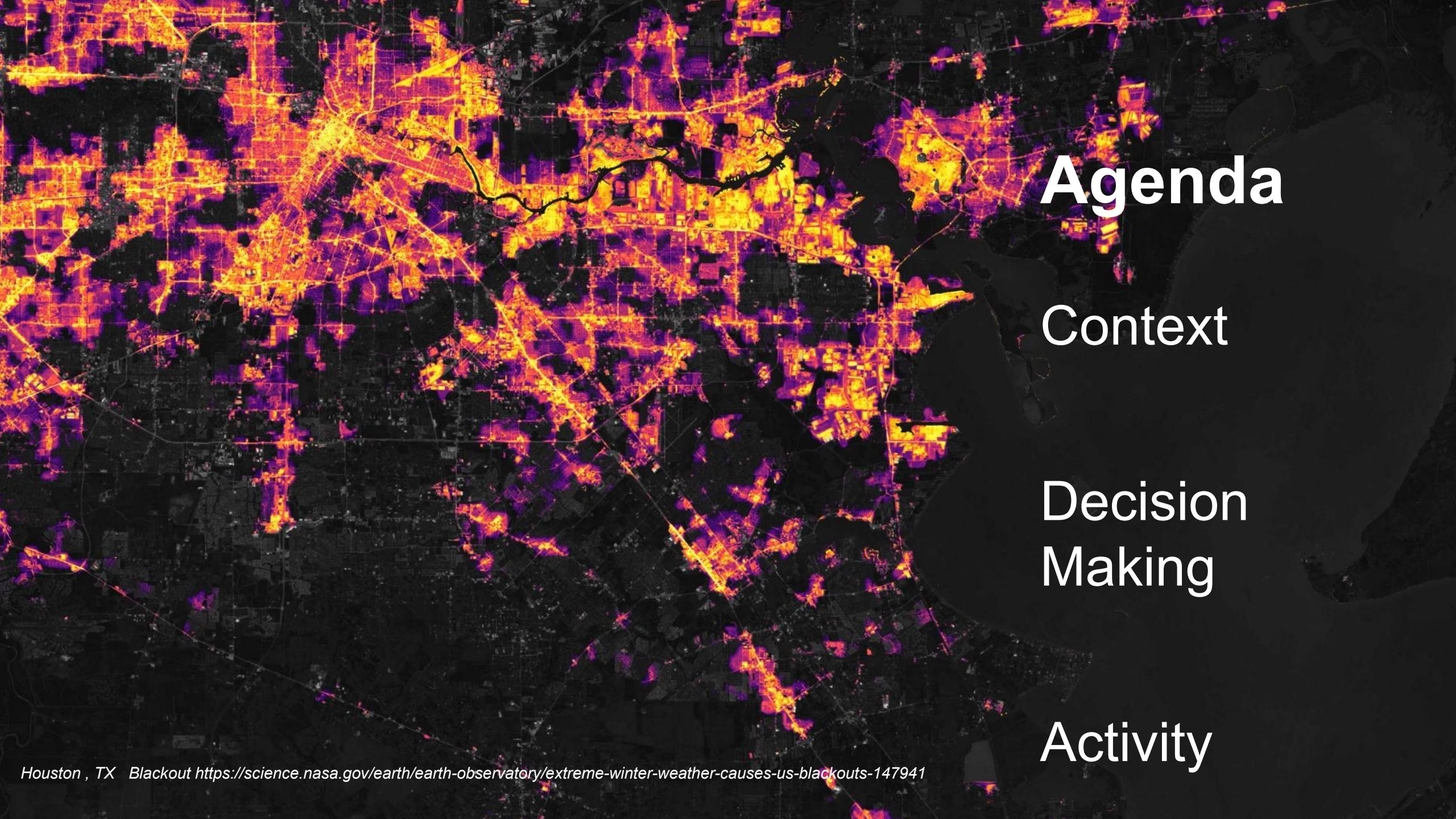
Safeguarding Existing Buildings in Changing Conditions

Ann Kosmal FAIA, LEED AP BD+C, CPHC, PDC
Principal, Firmwide Resilience Lead
HOK



Got Existing Buildings?





Agenda

Context

Decision Making

Activity

Geographic distribution
Intensity
Duration
Frequency

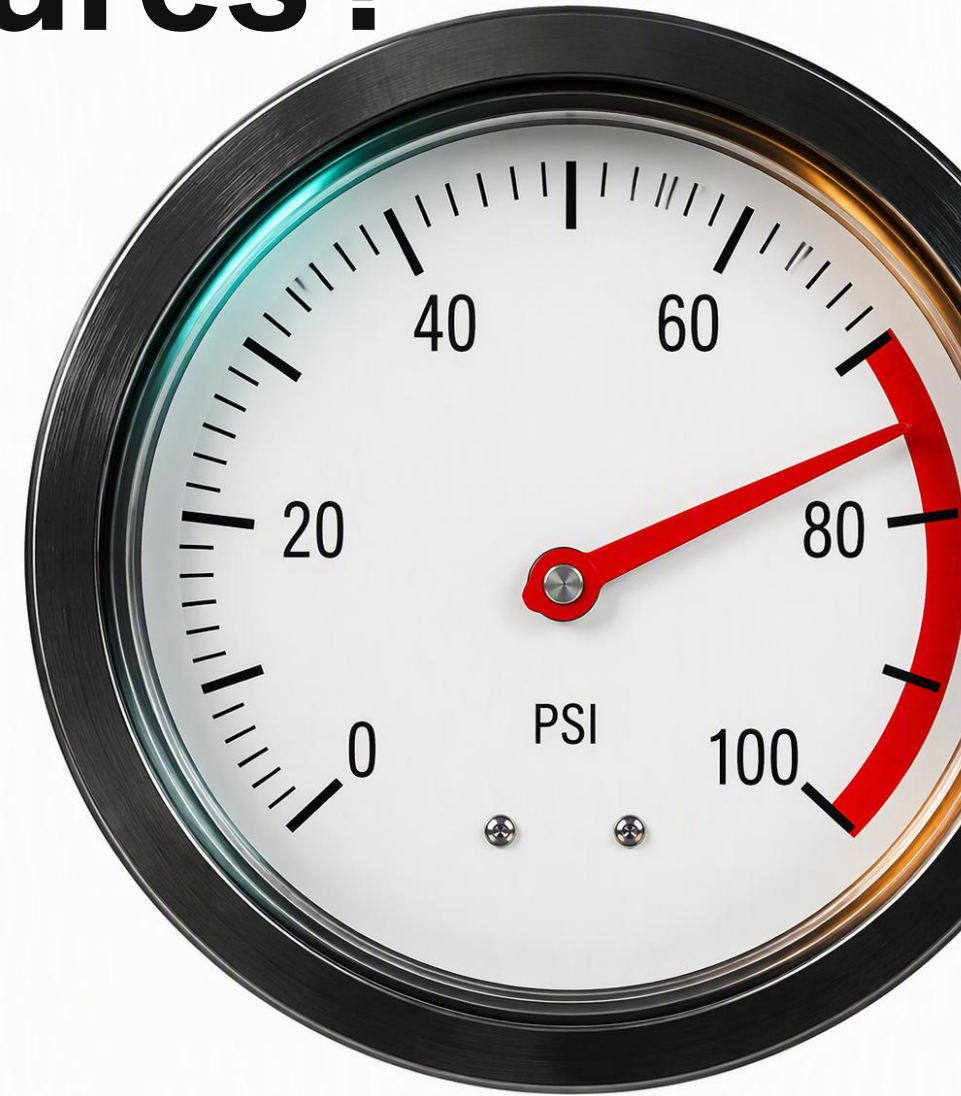


Physical damage
Service disruption
Economic activity

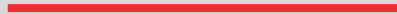


Got observed pressures?

**insurance,
rainfall/flooding,
severe storms,
smoke,
heat/workforce conditions,
continuity,
capital-planning uncertainty**



No one wants disruption.

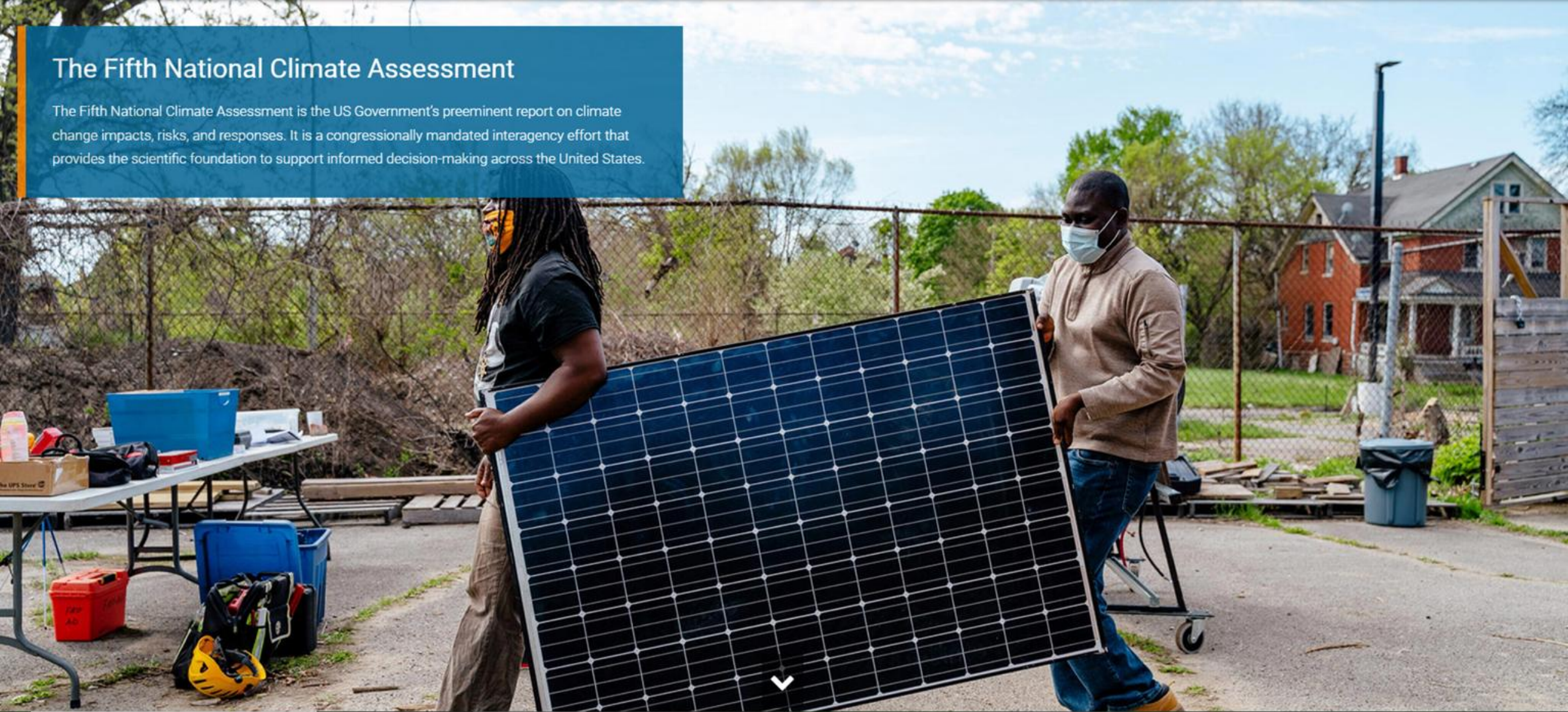


Let's consider: Context



The Fifth National Climate Assessment

The Fifth National Climate Assessment is the US Government's preeminent report on climate change impacts, risks, and responses. It is a congressionally mandated interagency effort that provides the scientific foundation to support informed decision-making across the United States.



Trends

<https://toolkit.climate.gov/NCA5>



Built Environment

 An official website of the United States government [Here's how you know](#) ▾



ABOUT ▾

CHAPTERS ▾

DOWNLOADS ▾

ART × CLIMATE

NCA ATLAS

BUILT ENVIRONMENT



FIFTH NATIONAL CLIMATE ASSESSMENT

12. Built Environment, Urban Systems, and Cities



« PREVIOUS CHAPTER

 VIEW ALL FIGURES

NEXT »

The built environment and cities are major drivers of climate change. Urban development patterns can drive climate impacts, such as increases in heat and flooding, with risks unevenly distributed across populations. Efforts across the country are reducing emissions, adapting to impacts, and collaborating on more inclusive governance, although long-term efforts can be hampered by resource and capacity constraints.

SECTIONS

Introduction

12.1. Cities Drive Climate Change

12.2. Urban Development Patterns

12.3. Mitigation and Adaptation

12.4. Community-Led Actions

Traceable Accounts

References

Risks to Supply Chains

FOCUS
ON

FIFTH NATIONAL CLIMATE ASSESSMENT

Risks to Supply Chains



◀ PREVIOUS CHAPTER

VIEW ALL FIGURES

NEXT CHAPTER ▶

Focus on Risks to Supply Chains

Damage to supply chain networks caused by [climate change](#) reverberates through people's livelihoods and investments in ways that threaten quality of life and security, often in lasting and inequitable ways. Coordinated efforts can mediate impacts and help communities and companies adapt to these large, interconnected, and recurring risks. However, the pace, scale, and scope of efforts that have been undertaken to transform supply chains are not yet sufficient to meet either current or expected disruptions and costs.



- ▶ Authors
- ▶ Contributors
- ▶ Recommended Citation

SECTIONS

Risks to Supply Chains

Traceable Accounts

References

Glossary



An official website of the United States government [Here's how you know](#)



FIFTH NATIONAL CLIMATE ASSESSMENT
APPENDIX 5. Glossary

« PREVIOUS CHAPTER

VIEW ALL FIGURES

A5.1. Introduction

About the Glossary of Terms

Authors of the Fifth National Climate Assessment (NCA5) were encouraged to briefly define important terms within their chapters. Some terms, however, require more detailed or nuanced definitions. This Glossary was developed to help readers understand key terms and ensure consistency of usage across the report.

Most of the definitions presented here have been adapted from authoritative sources, including other US Global Change Research Program (USGCRP) reports, Intergovernmental Panel on Climate Change (IPCC) assessments, and academic and scientific societies and organizations (e.g., American Meteorological Society). These external sources are indicated with citations. Where definitions have been



- ▶ Editors
- ▶ Contributors
- ▶ Recommended Citation

SECTIONS	
Introduction	
A–D	
E–H	
I–L	
M–P	
Q–T	
U–Z	

Definitions.

Resilience

The **ability** to prepare for threats and hazards, adapt to changing conditions, and withstand and recover rapidly from adverse conditions and disruptions.

Climate resilience

The **capacity** of interconnected social, economic, and ecological systems to **cope** with a climate change event, trend, or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure. Climate resilience is a subset of resilience against climate-induced or climate-related impacts. Related terms: Hazard, Risk, Vulnerability.

Community resilience

Ecological resilience



Attribution and Detection

NATIONAL
ACADEMIES

Sciences
Engineering
Medicine

NATIONAL
ACADEMIES
PRESS
Washington, DC

Attribution of Extreme Weather and
Climate Events and Their Impacts

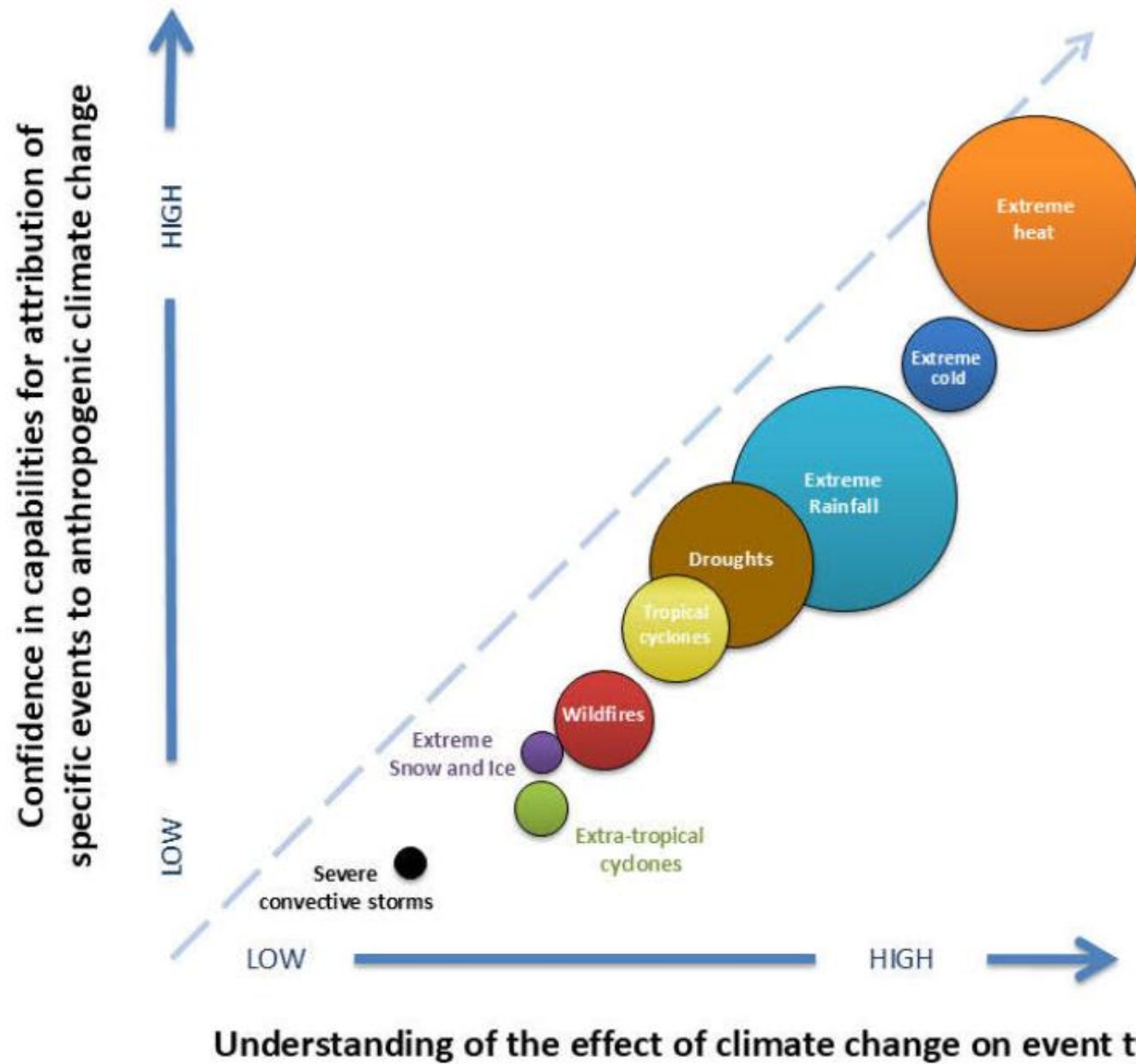
Committee on Attribution of Extreme Weather
and Climate Events and Their Impacts

Earth Systems and Resources Program Area

Center for Health, People, and Places



*ATTRIBUTION OF EXTREME WEATHER AND
CLIMATE EVENTS AND THEIR IMPACTS*



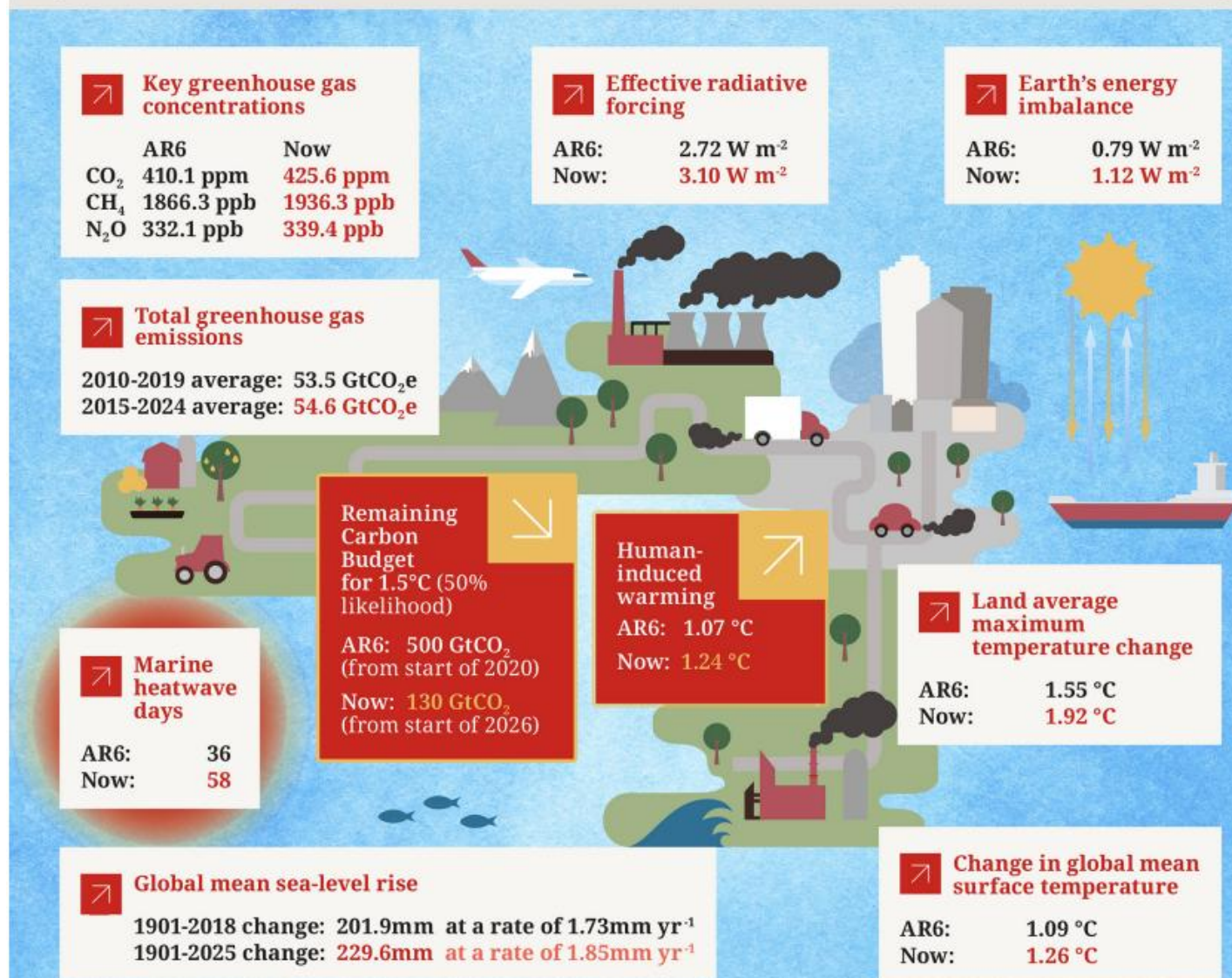
Indicators of Global Climate Change 2025: annual update of key indicators of the state of the climate system and human influence 2026!



<https://doi.org/10.5194/essd-18-3889-2026>
© Author(s) 2026. This work is distributed under
the Creative Commons Attribution 4.0 License.

Key indicators of global climate change 2025: What's changed since AR6?

Human induced warming is increasing at a rate of about 0.27°C per decade, the result of greenhouse gas emissions being at an all-time high over the last decade, as well as reductions in the strength of aerosol cooling.



This is not one risk.

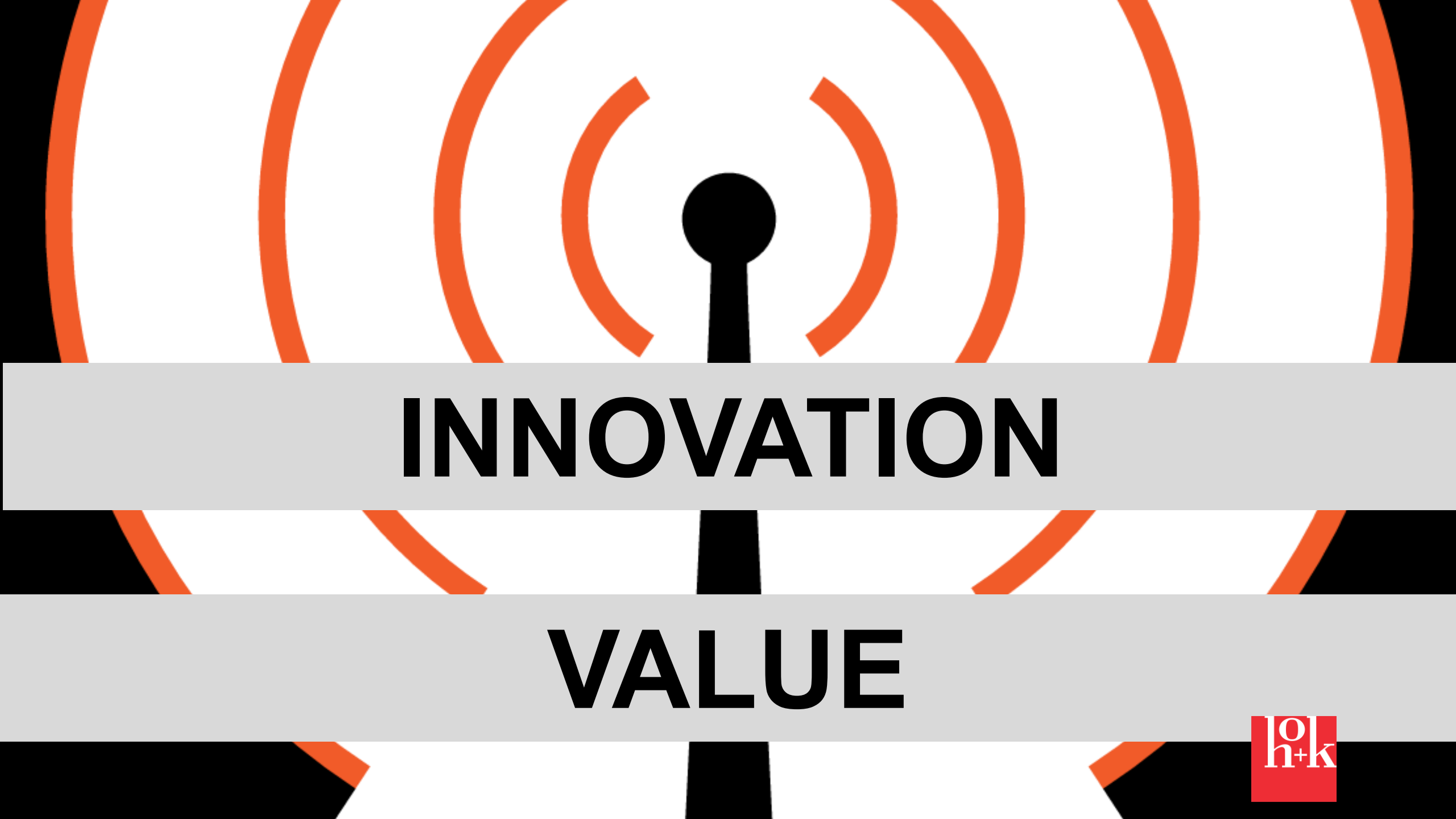
It is a decision environment.

Lived experience.

Infrastructure stress
System failures
Operational downtime

Cascading effects
Interdependencies





INNOVATION

VALUE

From Risk Register to Opportunity Register



**Protect
Reduce Disruption
Create Flexibility**

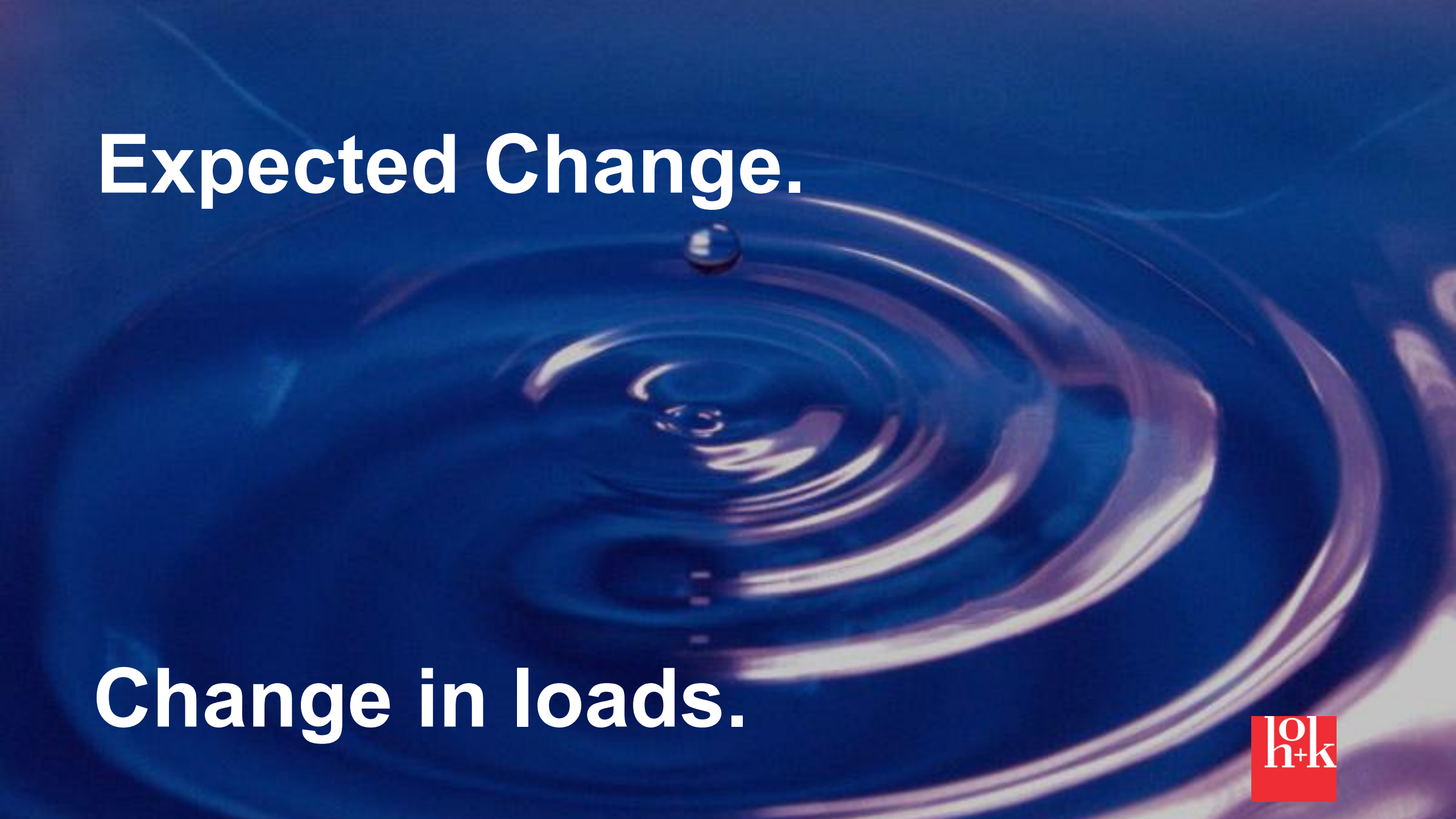


**The opportunity is not to
predict the future perfectly.**

**It is to stop pretending the
past is enough.**

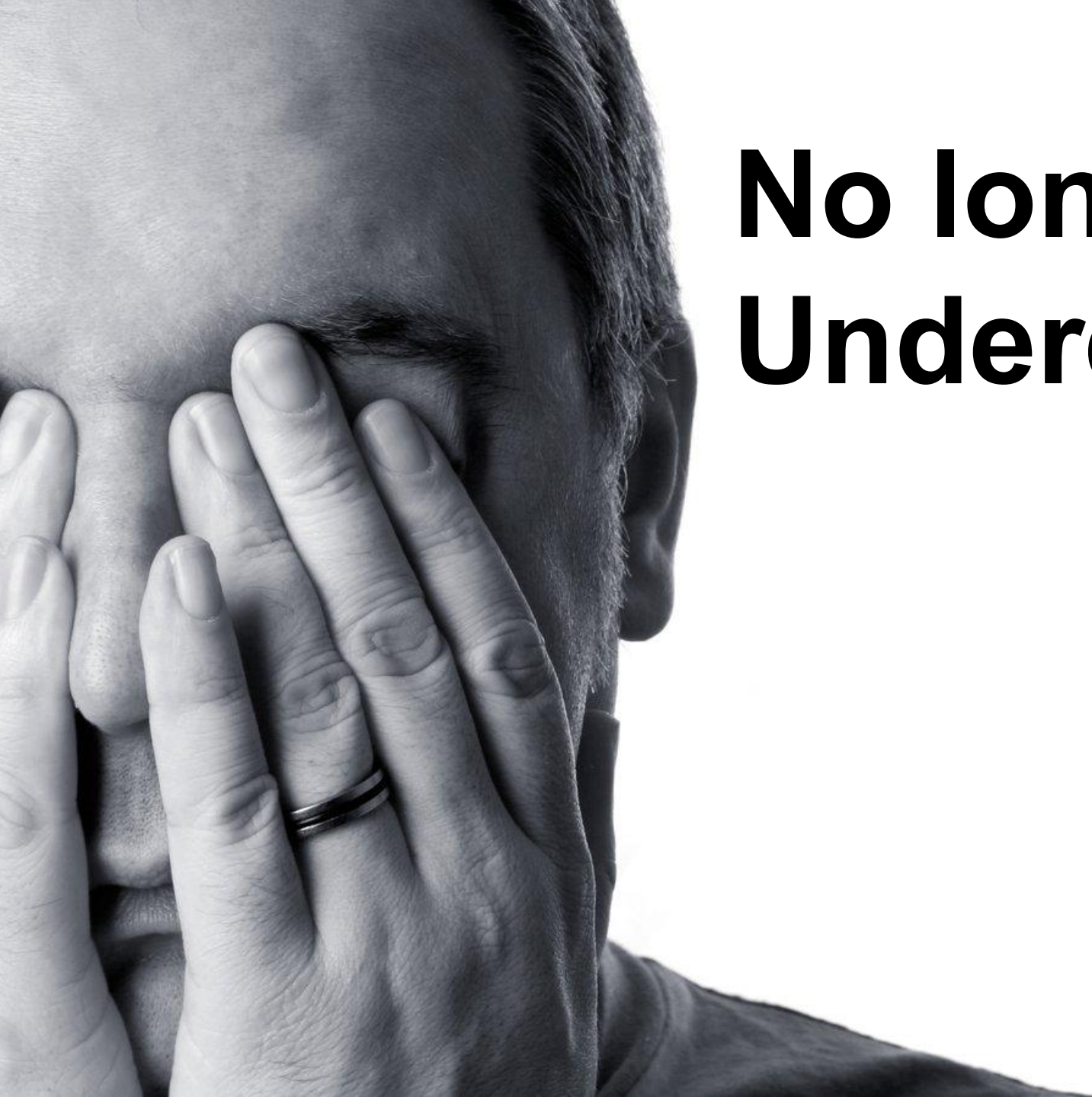
**Let's consider:
Practice
+
informed design.**



A blue background with a water droplet creating concentric ripples.

Expected Change.

Change in loads.



**No longer predictive
Underestimated risk**



**Increased fragility
Reduced performance
over service life**

**Decisions made today shape
decades of exposure.**



Health/Safety/Welfare

**Informed client.
Informed design.**



Client Drivers

Tailored solutions responsive to changing conditions.

Insurability
Asset Management
Business Continuity



USF Health Morsani College of Medicine,
Tampa, FL



Cedar Hill Regional Medical Center,
Washington, DC

Client Drivers

Tailored solutions responsive to changing conditions.

Extreme Weather
Readiness

Reduced Impacts

Faster Recovery

Back-up Infrastructure



**The client makes the risk
determination.**





Building Codes Flood Maps



New Redwood City Life Sciences Campus, Redwood City, CA

Exposure Informed



New Redwood City Life Sciences Campus, Redwood City, CA

Exposure Informed

Protect the Science

**Rhode Island State Health Lab
Providence, RI**

AVAILABLE LAND

PROPOSAL MATERIALS

COMMUNITY UPDATES

195 DISTRICT PARK

Rhode Island State Health Lab, Providence, RI

Client provided?
Third party ?



Occupancy, Mission, Business

1. Highly secure Biosafety Level 2 and 3 facility (Risk Category IV)
2. Rhode Island's first life science incubator, Ocean State Labs, powered by Portal Innovations with financial support from the RI Life Science Hub, the 195 District and Brown University.
3. Three floors available for lease by private companies.

RISHL SITE CONTEXT



Observed Record

Tidal River

Low elevation

1938 Great Hurricane

1954 Hurricane Carol

*Hurricane Carol 1954
View from City Hall*



Fox Point Hurricane Barrier



📷 The Fox Point Hurricane Barrier stands open on Monday, July 1, 2024. The 25-foot barrier is meant to keep storm surges from flooding downtown Providence. (Christopher Shea/Rhode Island Current)

Credit: <https://rhodeislandcurrent.com/2024/07/01/hurricane-season-is-here-smiley-outlines-how-providence-is-prepared-for-whatever-comes/>



2.6 Flood Resilience Standards

**NOT AVAILABLE
DURING DESIGN**

B. GROUND-FLOOR DESIGN FLOOD ELEVATION (DFE-1)

DFE-1 is intended to elevate new development above the impacts of current riverine and future tidal flood risk from which the Fox Point Hurricane Barrier does not provide protection.

1. Required Minimum Elevation

DFE-1 shall be at a minimum elevation of 9.3' NAVD88, which is the highest recorded level of precipitation-related flooding in the Providence River.

Protect the Science







Protect the Science



RISHL Flood Resilience

Critical Operational Occupancy (during flood)

What needs to happen before and during?

Rapid Occupancy (post flood)

How soon after flood do labs need to be re-occupied?

RISHL Values

Avoided cost of disruption

Continuity of mission

Asset protection

Protect Science Staff

Recovery

Obligation and standing

Protected Utilities

Emergency Generator
Emergency Electrical Room
Fire Pump Room
Fire Command Center
Water Service Room
Main Electrical Room



Key Decisions

Design Flood Elevation

**An informed owner drives
better outcomes.**

Cincinnati: A Readiness Story





cincinnati wildfire smoke
© WLWT

Cincinnati's Most Accurate
WLWT5
WEATHER

SEVERE THREAT TOMORROW

MARG. SLIGHT ENH. MOD. HIGH

CHICAGO
FORT WAYNE
CLEVELAND
BLOOMINGTON
INDIANAPOLIS
DAYTON
COLUMBUS
SPRINGFIELD
ST. LOUIS
EVANSVILLE
CINCINNATI
LEXINGTON
CHARLESTON

WLWT5

Updated: 9:36 AM EDT Jul 20, 2026 | [Editorial Standards](#)



Adam Burniston



Meteorologist



EXTREME HEAT WARNING

NOW - THURSDAY 8PM



Local Pressures

severe storms

extreme rainfall

river and local flooding

heat

smoke and air quality

insurance

changing demand

OFFICE OF ENVIRONMENT & SUSTAINABILITY

CLIMATE MIGRATION

Office of Environment & Sustainability / Resilience and Climate Adaptation / Social Cohesion / Climate Migration

OFFICE OF ENVIRONMENT & SUSTAINABILITY MENU

- Climate Action
- Green Cincinnati Plan
- Equity
- Buildings and Energy
- City Operations
- Community Activation
- Food
- Mobility

Climate Migration



In a time of intensifying climate pressures, the impacts of climate change may influence where people move. People are relocating from highly impacted areas, like those facing drought or coastal flooding, to areas they view as safer. **These people, called climate migrants, are reshaping migration flows in the U.S. and abroad.**

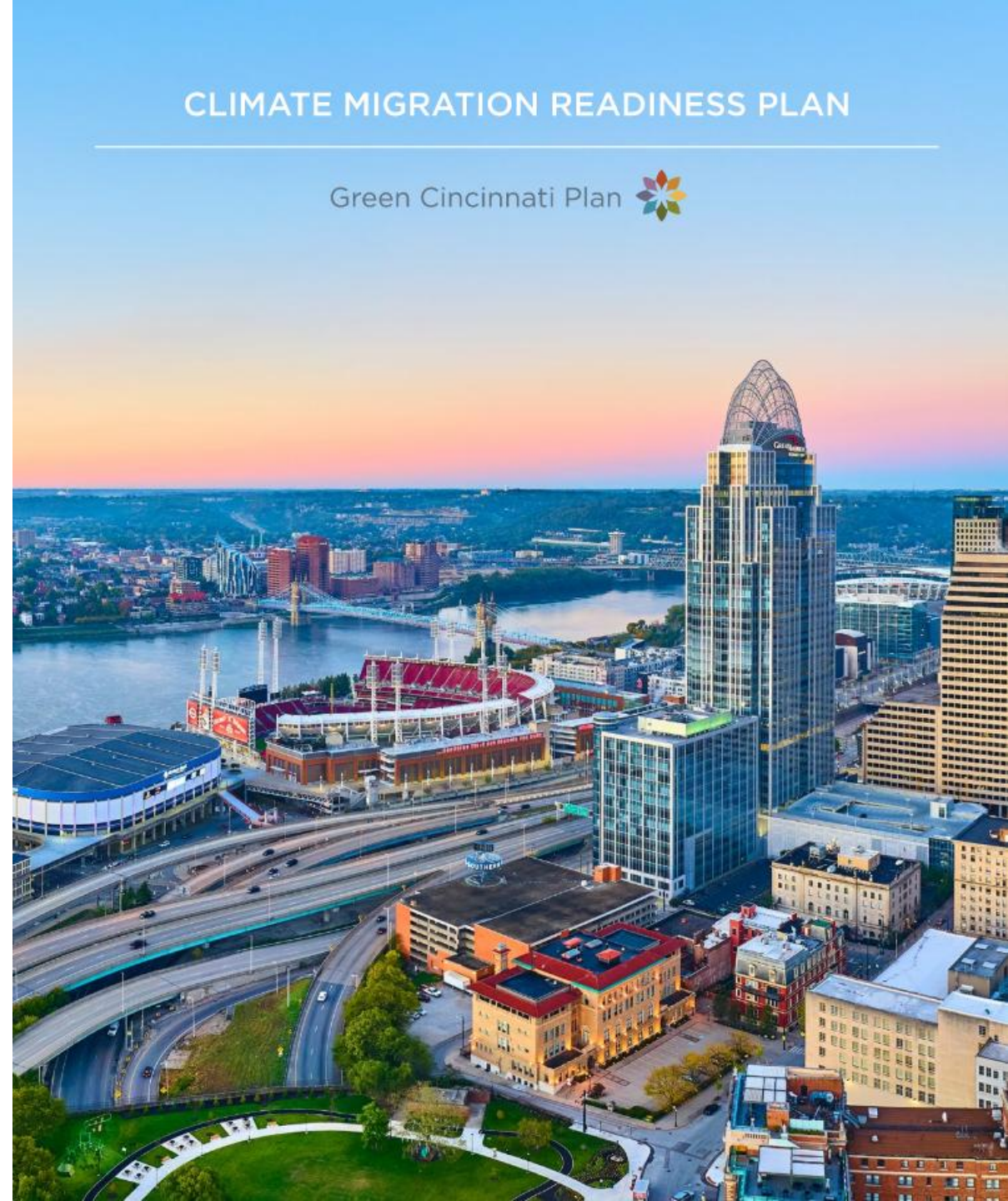
Cincinnati, with our relative affordability, low risk of natural disaster, and abundance of water, may be a destination for climate migrants. While it's unclear if climate migrants will arrive and what their impact could be, Cincinnati needs to prepare now for any outcome.

Are you engaged?



CLIMATE MIGRATION READINESS PLAN

Green Cincinnati Plan 



What We're Watching

Cincinnati may not know if or when newcomers will arrive, but we can build a system that sees it coming. This section establishes a robust monitoring system to project population shifts early, track system readiness in real time, and activate the right response before stress becomes crisis.

The monitoring system watches five distinct dimensions of city readiness.

DIMENSIONS:

National Climate Impacts ►

Early Migration Signals ►

Neighborhood Housing
Demand ►

Social Services ►

Infrastructure Thresholds ►

MONITORING:

Conditions deteriorating in origin regions

First signs of population movement toward Cincinnati

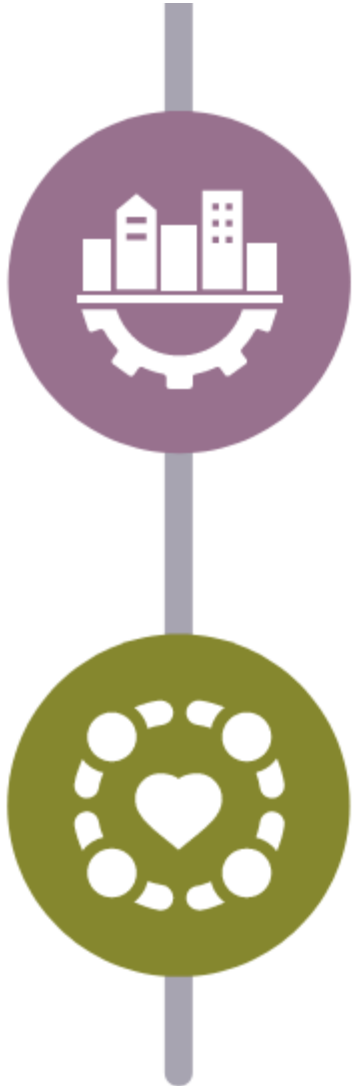
Block-by-block capacity and affordability pressure

Whether services can absorb new demand

Schools, roads, water, power approaching limits

Thresholds!





4. Invest Ahead of Stress

- Our infrastructure has capacity limits that could be surpassed if population grows. Monitoring infrastructure now means we can be proactive with adaptation, instead of reactive to stressors.
- **Building on:** This plan connects current infrastructure investment, such as transit, green infrastructure, resilience hubs, and community partnerships, to data on emerging demands.

5. Stay Welcoming and Inclusive

- As Cincinnati evolves, the City should demonstrate inclusive leadership by ensuring all residents have equitable access to services, civic life, and economic opportunity.
- **Building on:** Cincinnati's commitment to welcoming principles is exhibited by immigrant-friendly programs, culture-bridging arts and festivals, and partnerships like Cincinnati Compass that advance inclusion of immigrants and refugees. These efforts help turn welcoming principles into visible, city-wide practice.

Are you part of this work?

CLIMATE MIGRATION

» in Cincinnati »

WHAT IS CLIMATE MIGRATION?

"persons or groups of persons who, predominantly for reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad"

WHY MIGRATE?

extreme weather can cause migration away from an area:

- wildfires
- rising sea levels
- extreme heat
- hurricane
- floodings
- drought
- tsunami
- earthquake

more affordable housing, job opportunities, and other environmental amenities also attract migrants to new cities

HOW MANY MOVERS?

1 in 4 people

2.1 billion people could be displaced by climate change by 2050

WHAT'S NEXT?

The next step is to create a Climate Migration Response Plan that includes mitigation and resilience strategies to slow the effects of climate change and make our communities better equipped to respond. This plan will also include adaptation efforts to prepare for a future of climate migration to Cincinnati.

mitigation

- Energy Efficiency
- Mobility
- Zero Waste
- Food Systems
- Natural Environment
- Community Action

resilience

- Stormwater and Heat Adaptation
- Community Planning and Social Cohesion
- Pollution Reduction and Adaptive Land Use

adaptation

- Climate Migration Response Plan
- Affordable Housing
- Resilience Hubs
- Green Infrastructure
- Green Workforce

City of Cincinnati

Check out the 2023 Green Cincinnati Plan to follow the environmental initiatives of the city

<https://www.cincinnati-oh.gov/oes/climate/climate-protection-green-cincinnati-plan/>

Green Cincinnati Plan 2023

Growth as a Resilience Opportunity

implications for existing buildings, services, infrastructure, healthcare, research and employment facilities.





Where are the opportunities?

in 15 minutes

From resilience idea to practical action

Use a building you already influence

15 minutes

Groups of 3

Stay seated

Turn to the 2 people nearest you.

Table activity instructions

2 people nearest you. Everything you need HERE! Capture short phrases, not perfect answers.

1 Your three

2 min

Name and firm

One building you touch

2 Two questions

8 min

What must keep running?

And for whom, and for how long

What work is already planned?

Renewal, renovation, maintenance, capital

3 One sentence

5 min

One answer per group

Reporter stands to deliver it

The two questions

1 What must keep running?

Name the function, who depends on it, and how long it can be unavailable.

2 What work is already planned?

Renewal, renovation, maintenance or capital work the opportunity can attach to.

Build one sentence.

Start with the value. One answer. Keep it specific.

To _____
organizational value

we can use _____
planned work or opportunity

at _____
building / function

EXAMPLE

To keep the emergency department open during a river flood, we can use the switchgear replacement already in the capital plan at the XYZ campus, by relocating it above the design flood elevation.

Reporter stands

60 seconds per group

**Make practical innovation for
organizational value.**



Adapting together!



www.linkedin.com/in/ann-kosmal-faia

