

GREEN+ 2026

Session 2 - Design for Resilience



THE GREEN+ INITIATIVE

Mission: Advance the built and social environment of marginalized communities at the intersection of climate risks, energy poverty, housing affordability and sustainability.

Vision: Sustainability is understood and practiced in every community, in every generation.



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THE GREEN+ INITIATIVE

GREEN+

2026

SUSTAINABLE DEVELOPMENT
10 TRAINING SESSIONS

hosted and supported by

TEXAS ASSOCIATION OF COMMUNITY
DEVELOPMENT CORPORATIONS

Why Do We Need a Green CDC Training in Texas?

- Nearly one-third of Texans face high energy burdens, with low-income, minority, and rural communities disproportionately affected due to aging homes and inefficient infrastructure.
- Rising utility costs, grid upgrades, and new industrial demands like data centers threaten to worsen affordability and reliability across the state.
- While conservation and clean energy is a potential solution, public understanding is low and opinions are deeply divided along partisan lines, highlighting a need for broader education and policy focus on both supply and demand.
- Nearly 45% of households pay over \$200 a month on average for summer electricity. About one-third of Texans spend 7% or more of their income on energy — surpassing the high energy burden threshold of 6%.





Intro to Green Building and
Overview of Types of 3rd
Party Certifications

Session 1
Today - January 13



Designing For Resilience

Session 2
February 10th



March 29 - 31
TACDC Conference



Passive Solar Design in
Texas

Session 4
April 14



Basic Energy Modeling &
Why We Do It

Session 5
May 12



Renovation & Reuse: The
Hidden Power of Existing
Buildings

Session 6
June 9



LEED & The Living Building
Challenge

Session 7
July 14



WELL, Fitwell, & Healthy
Materials

Session 8
August 11



Net Zero Energy (NZE)

Session 9
September 8



Carbon/Electrification & A
Year In Review

Session 10
October 13

What is Sustainability?

Sustainability is a holistic approach that aims to meet our present needs while safeguarding the ability of future generations to thrive. By striking a balance between economic, environmental, and social considerations, we can create a more resilient and equitable world for all.



Meeting Present Needs

Fulfilling the current requirements of individuals, communities, and societies without depleting resources or causing environmental harm.



Preserving for Future Generations

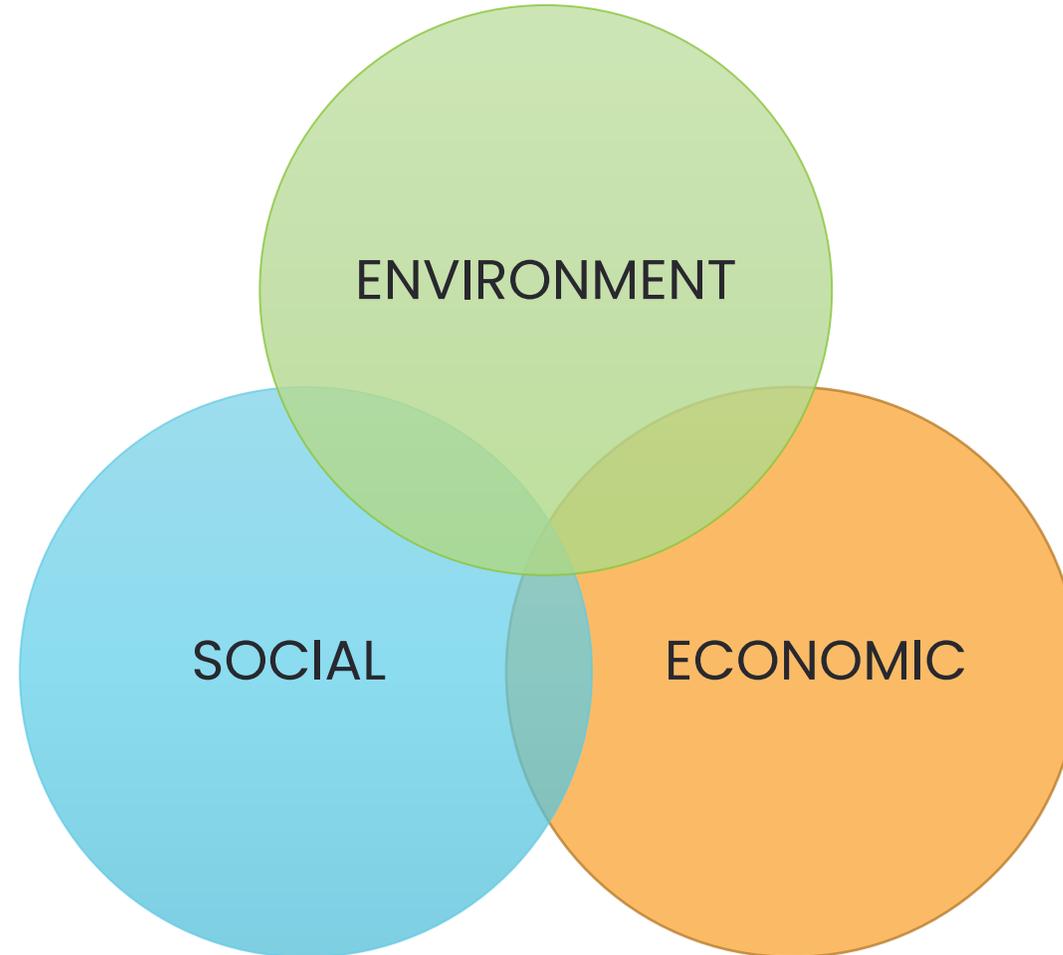
Ensuring that future generations have the ability to meet their own needs and maintain a healthy, livable planet.



Balancing Priorities

Striking a balance between economic, environmental, and social factors to create a sustainable and equitable future.

Sustainability Interconnection & Complexity





Sustainable design and green building certifications offer a comprehensive framework to create healthier, more eco-friendly, and socially-conscious communities. By embracing these principles, organizations can enhance the quality of affordable housing projects, unlock funding opportunities, and foster greater community well-being. The journey towards a more sustainable future starts with taking the first steps to incorporate these practices and certifications into your development plans.



Session 2 Designing for Resilience

Texas communities are increasingly challenged by hurricanes, flooding, extreme heat, unexpected winter storms, and power disruptions. This session will explore how affordable housing and community projects can be designed to withstand and recover from these events. We'll discuss practical design strategies—from site planning and material selection to passive survivability and backup systems—that enhance resilience without breaking budgets. Attendees will gain tools to anticipate risks, improve community safety, and ensure long-term durability and livability for residents, even in times of crisis.



Presenters



Beth Brant, AIA,
LEED AP BD+C, LFA

bbrant@dsgn.com

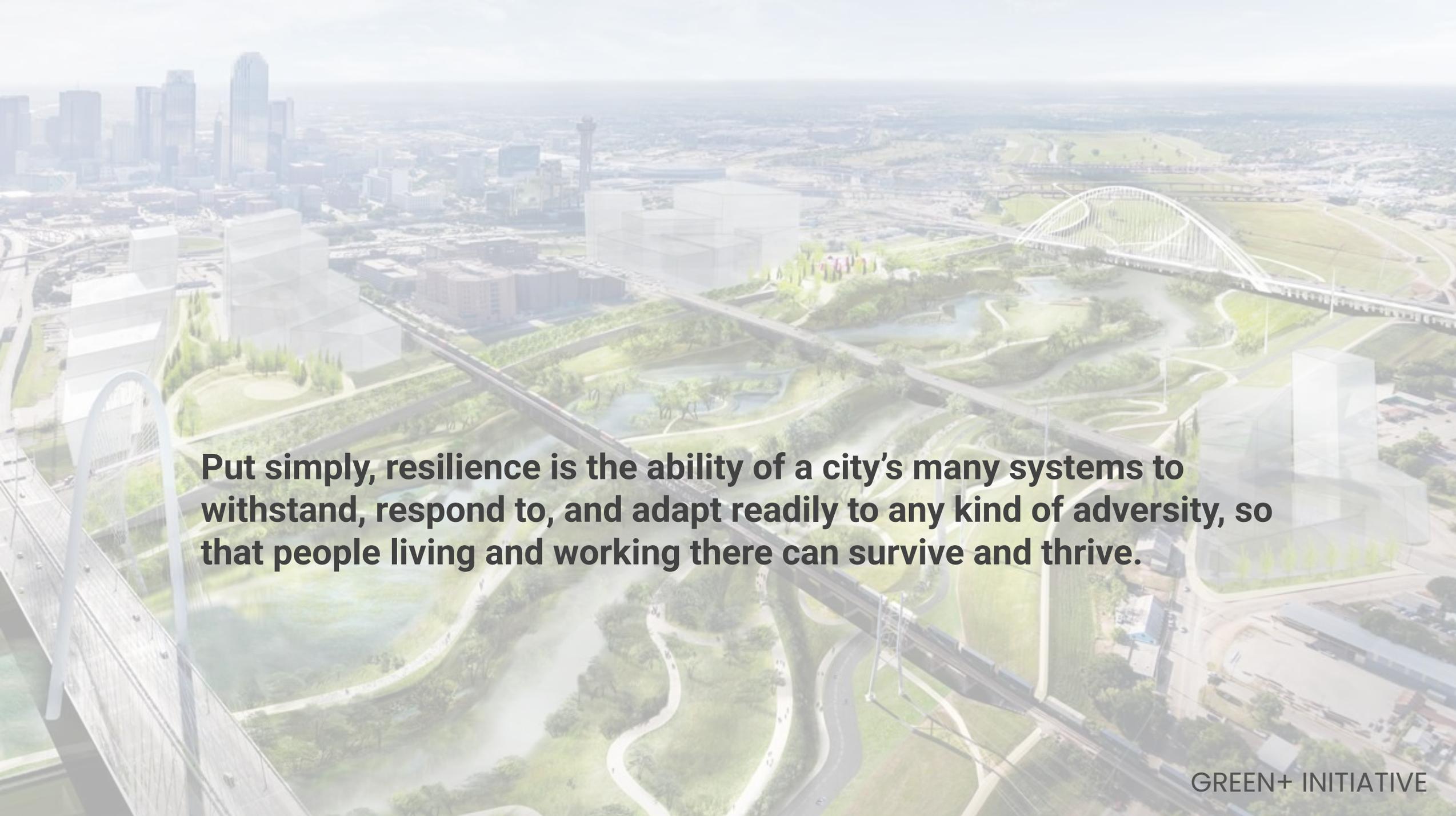


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Agenda

1. What is Resilience
2. Hazards, Risks, & Vulnerabilities
3. Designing For Resilience
4. Benefit Cost Analysis
5. Top 5 (or so) things to do

An aerial photograph of a city, likely Austin, Texas, showing a river with several bridges, including the iconic white arch bridge. The city skyline is visible in the background. The image is overlaid with a semi-transparent text box containing the definition of resilience.

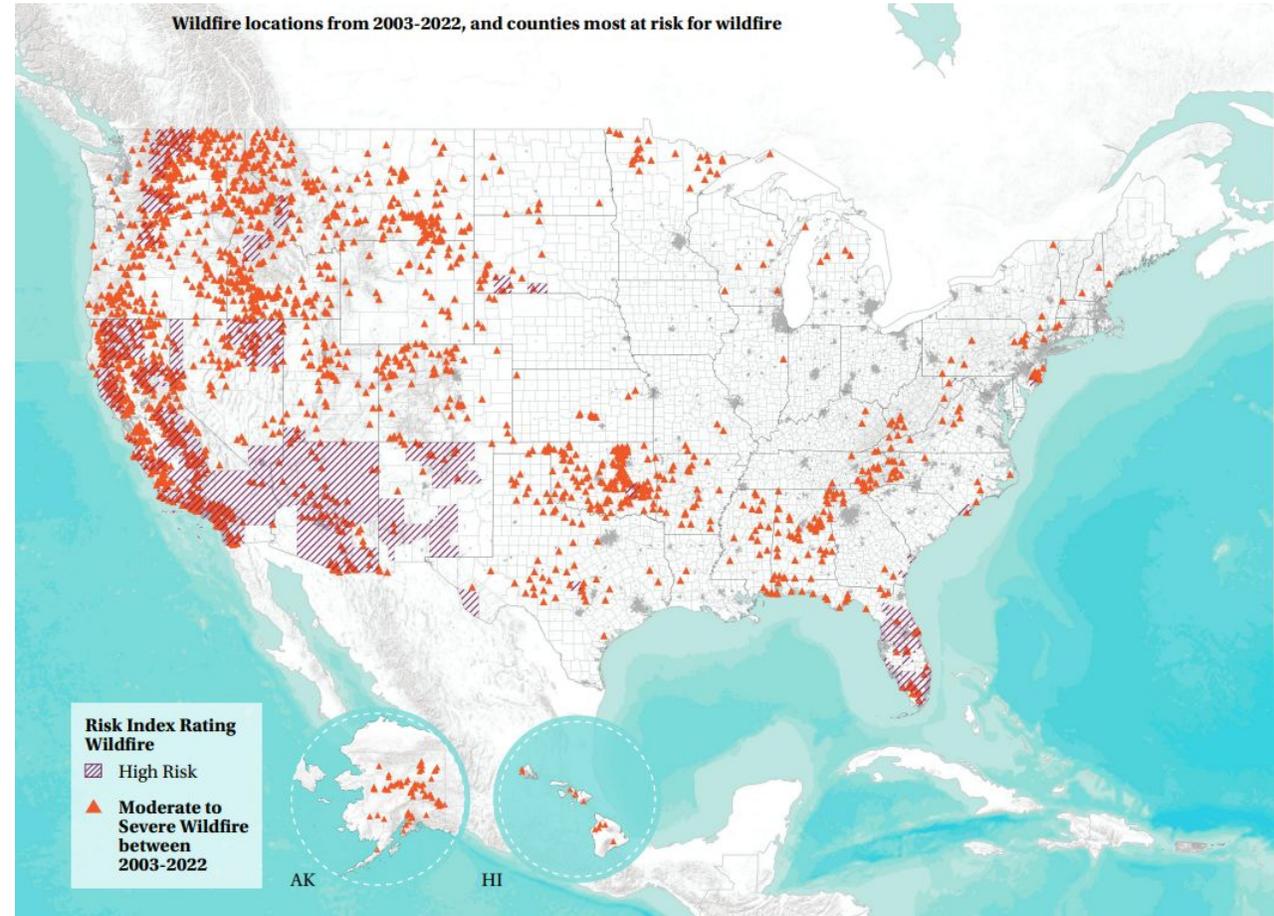
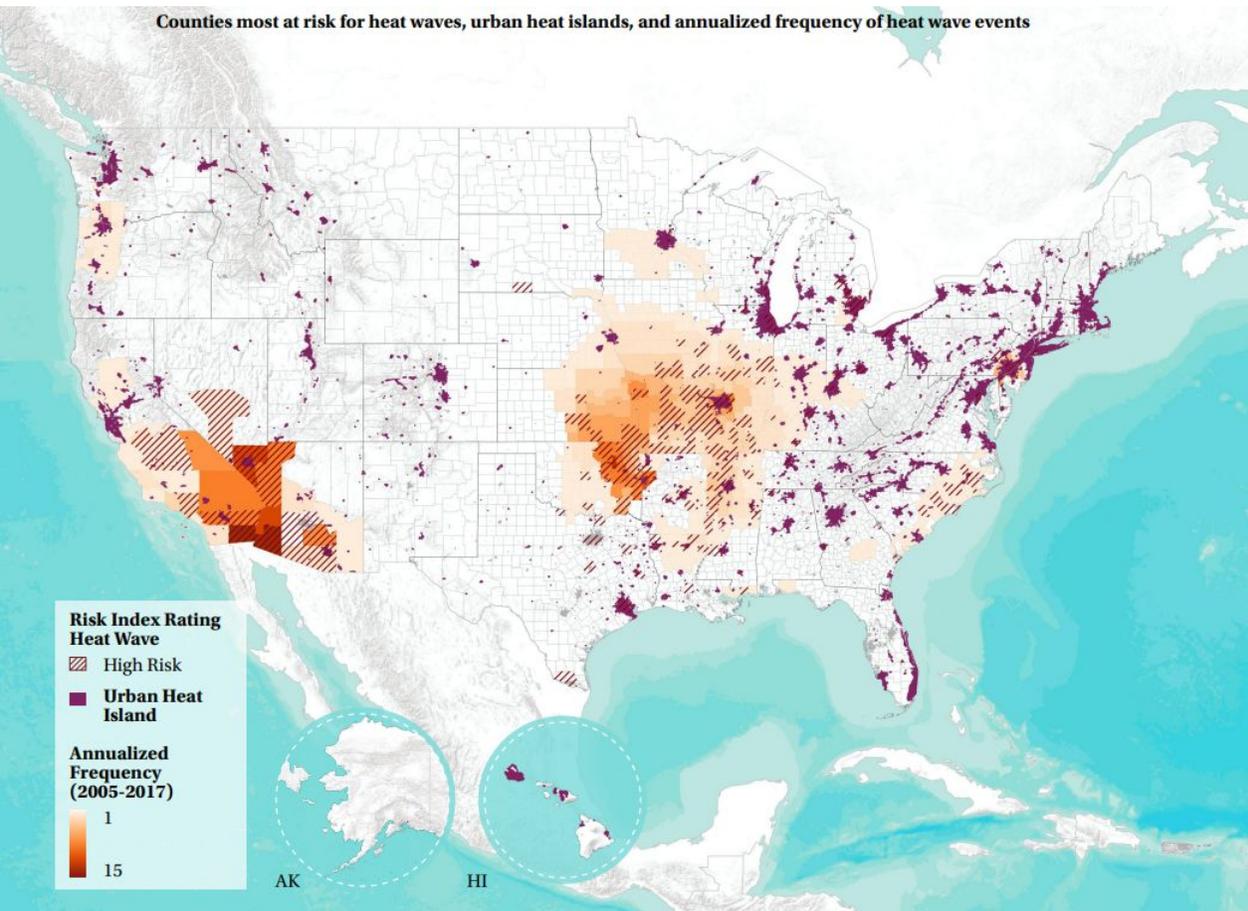
Put simply, resilience is the ability of a city's many systems to withstand, respond to, and adapt readily to any kind of adversity, so that people living and working there can survive and thrive.

Hazards, Risks, and Vulnerabilities

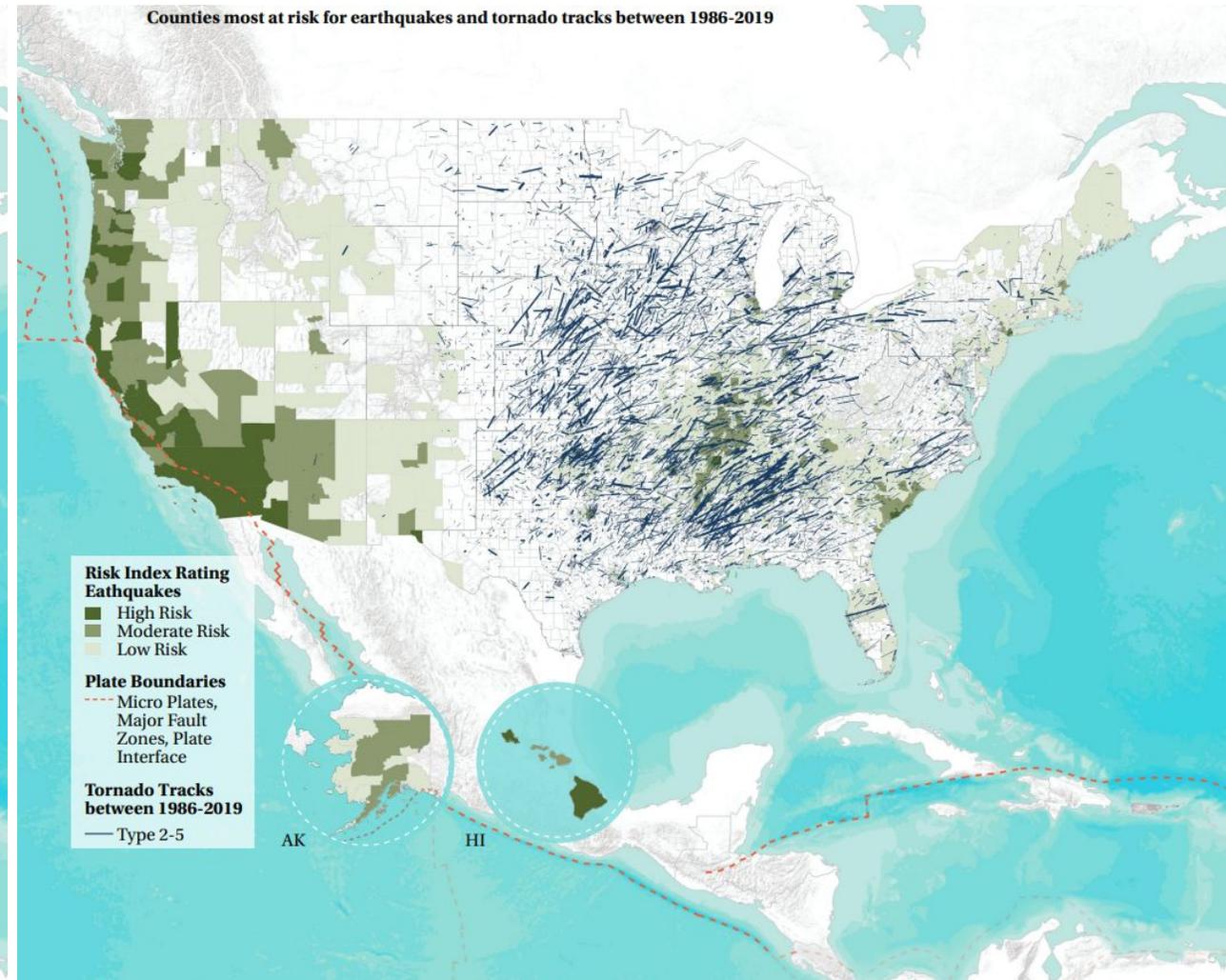
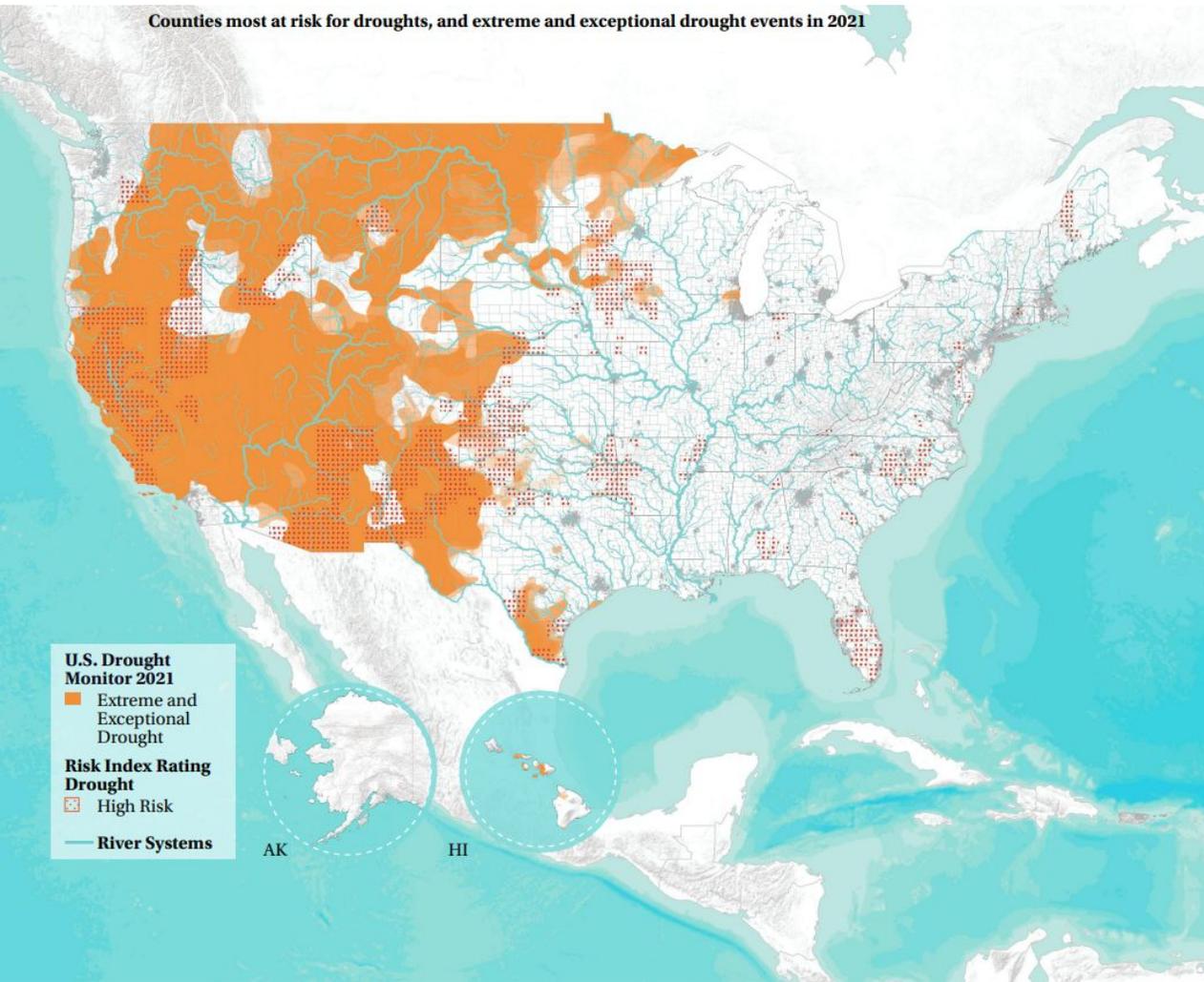
Consider:

- Extreme Heat / Cold
- Black-Outs / Brownouts
- Flooding / Drought
- Lightning
- Wildfires
- Hurricane / Tornados
- Earthquakes
- Sea Level Rise
- Epidemic / Pandemic
- Industrial / Chemical Disasters
- Environmental Pollution
- Air Quality
- Aging Infrastructure
- Water Contamination
- Food Shortages
- Access to public transit
- Access to Daycare/School
- Unemployment

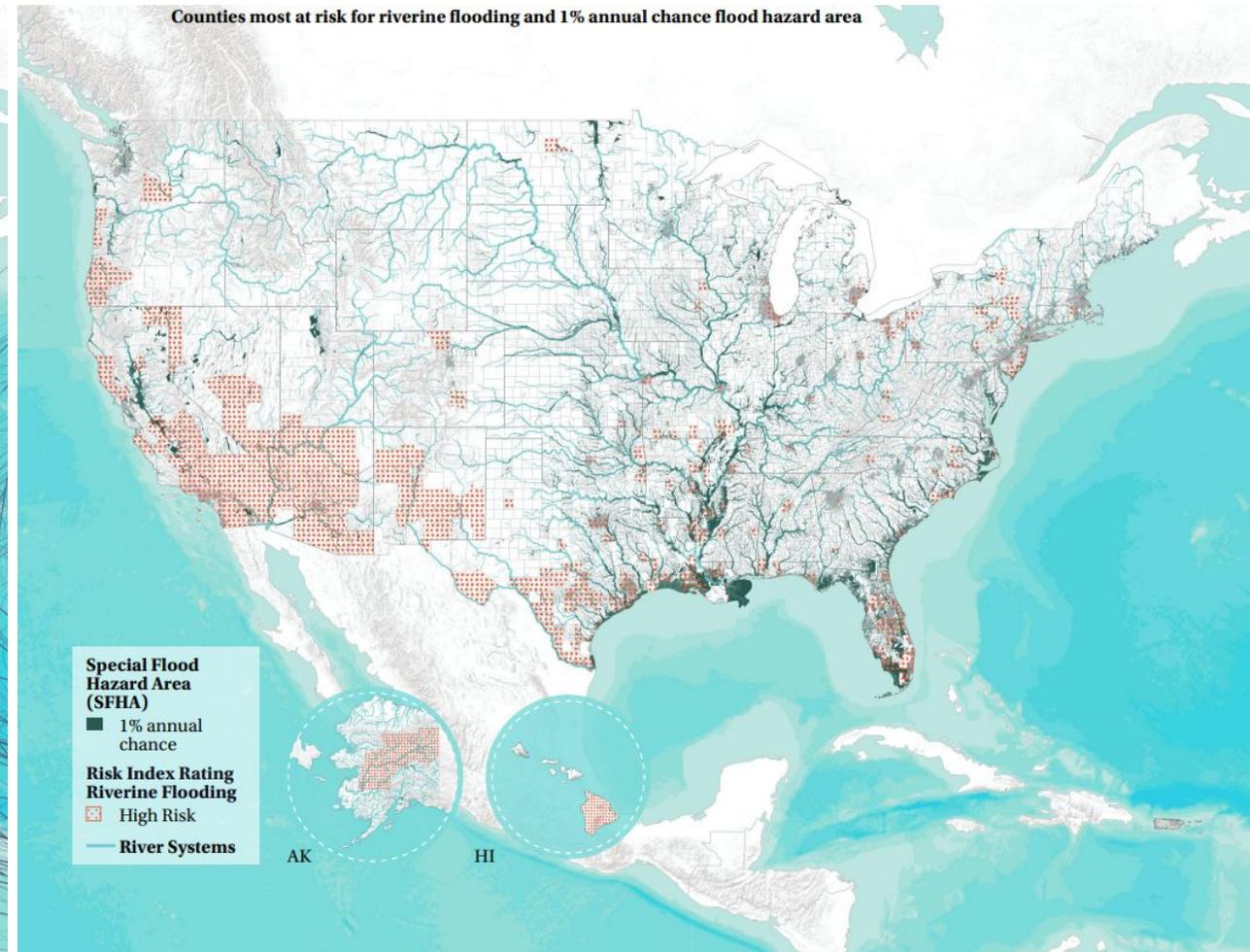
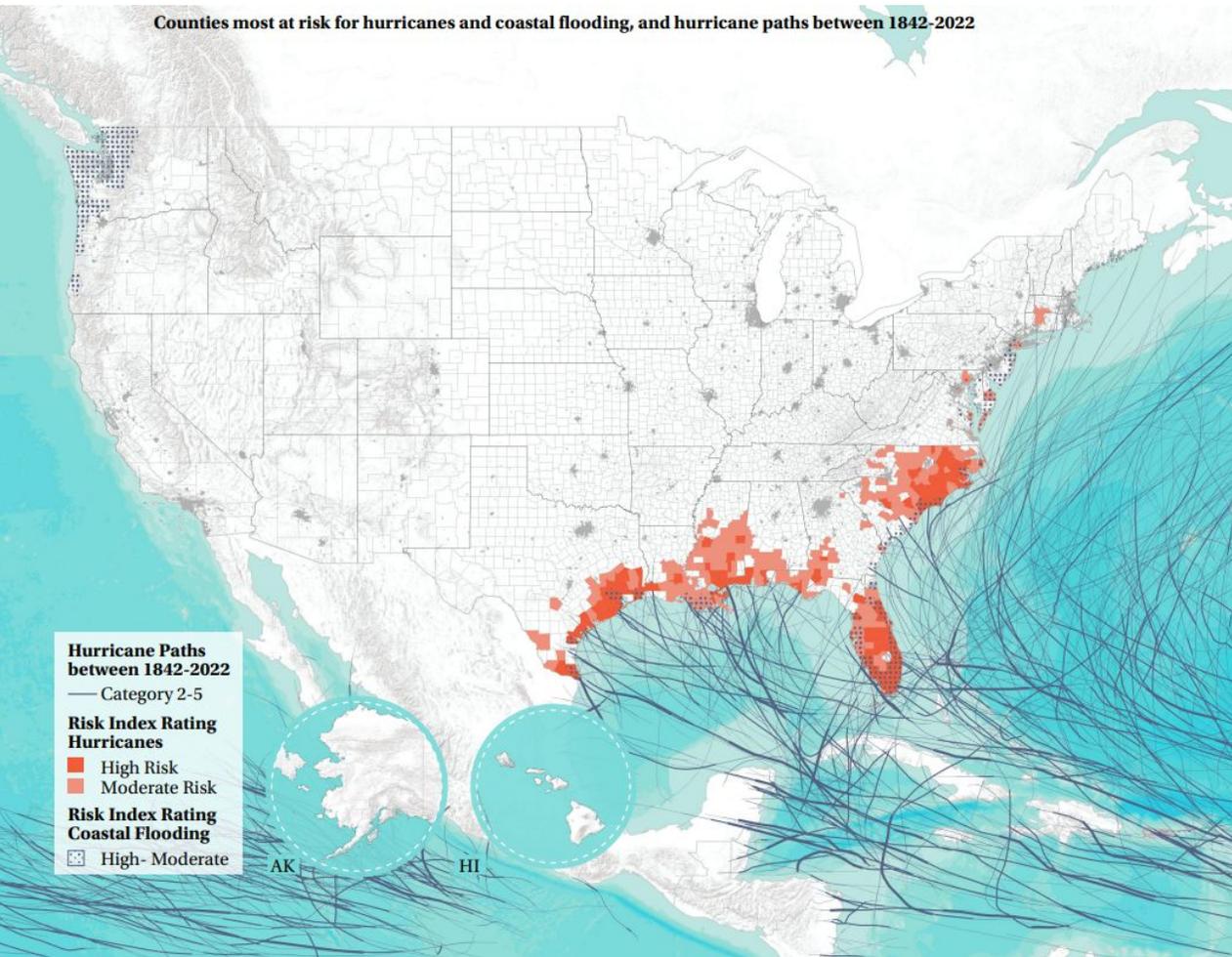
Extreme Heat & Wildfires



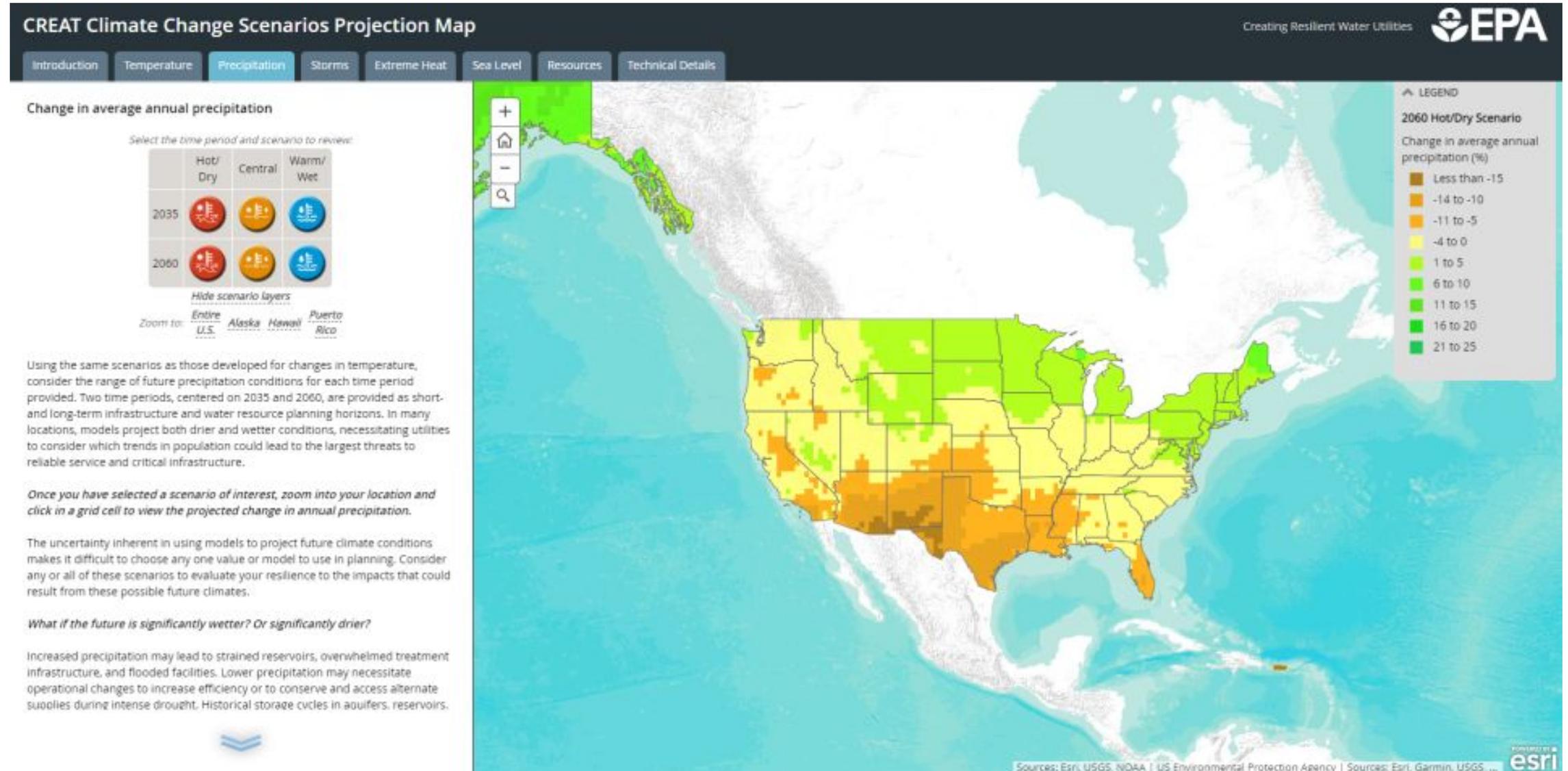
Drought, Earthquakes & Tornadoes



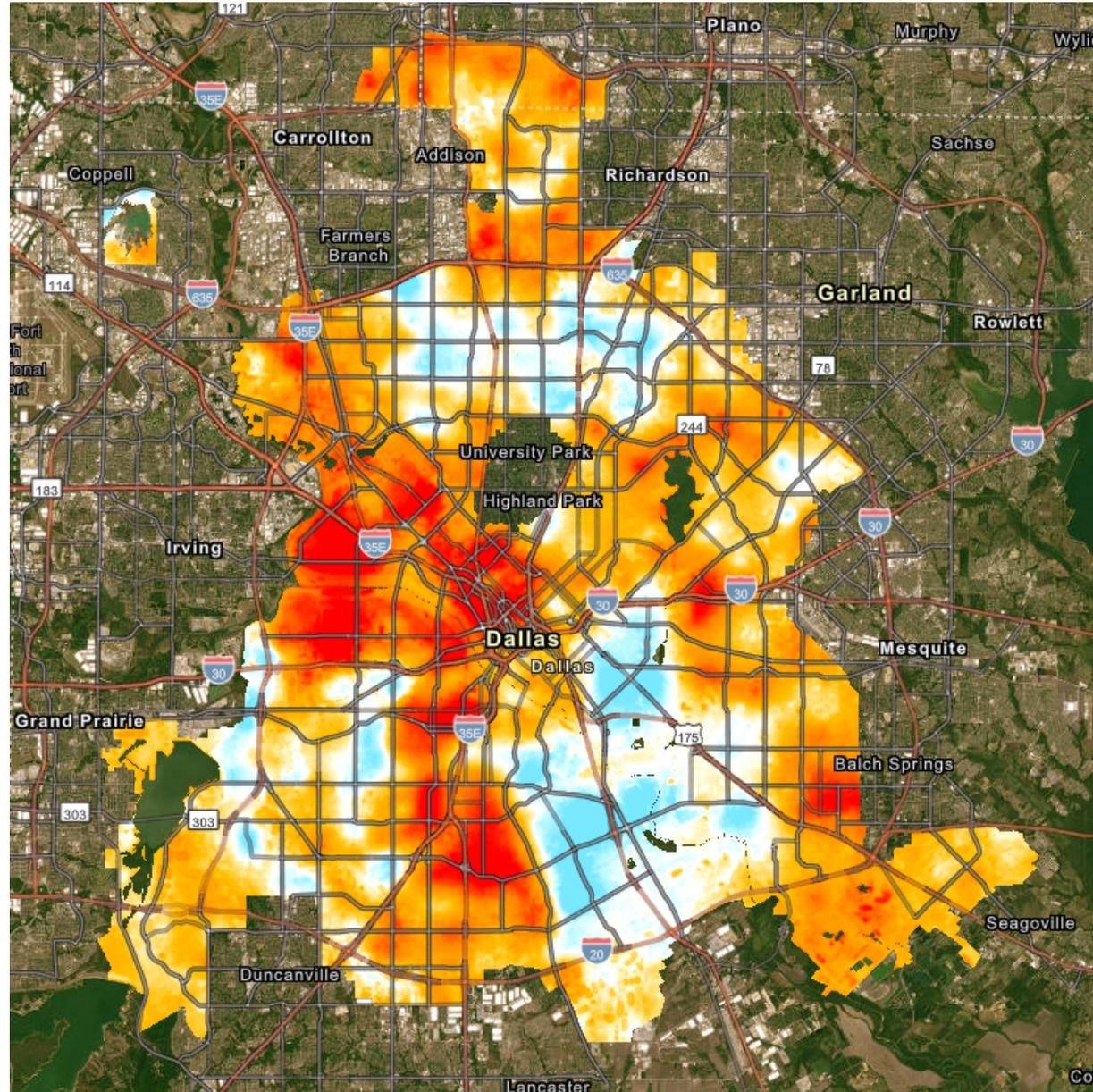
Hurricanes & Inland Flooding



Climate Change Scenarios Projections



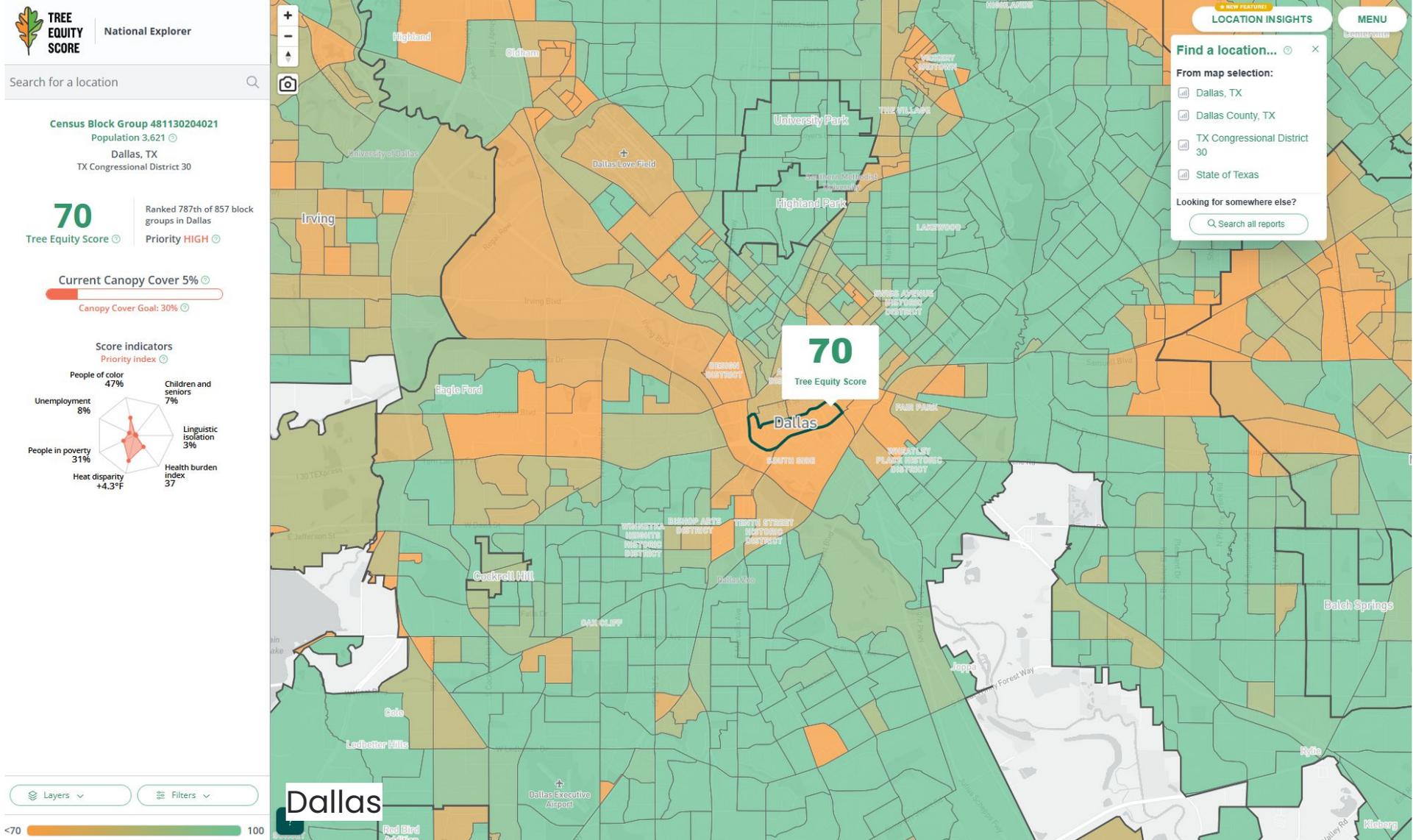
Urban Heat Island Map

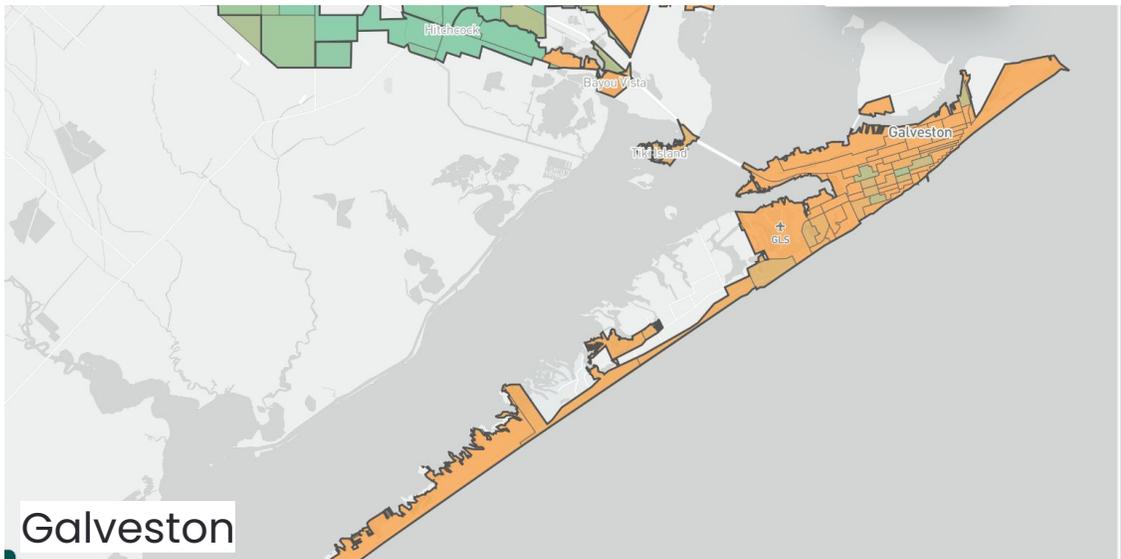
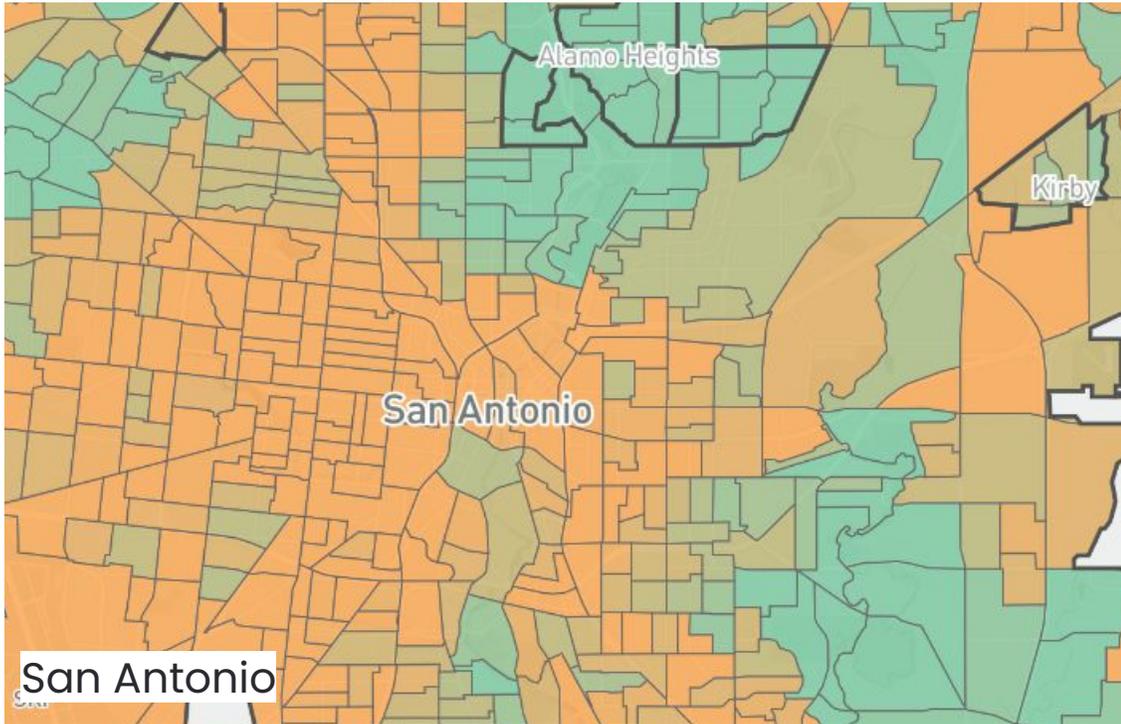
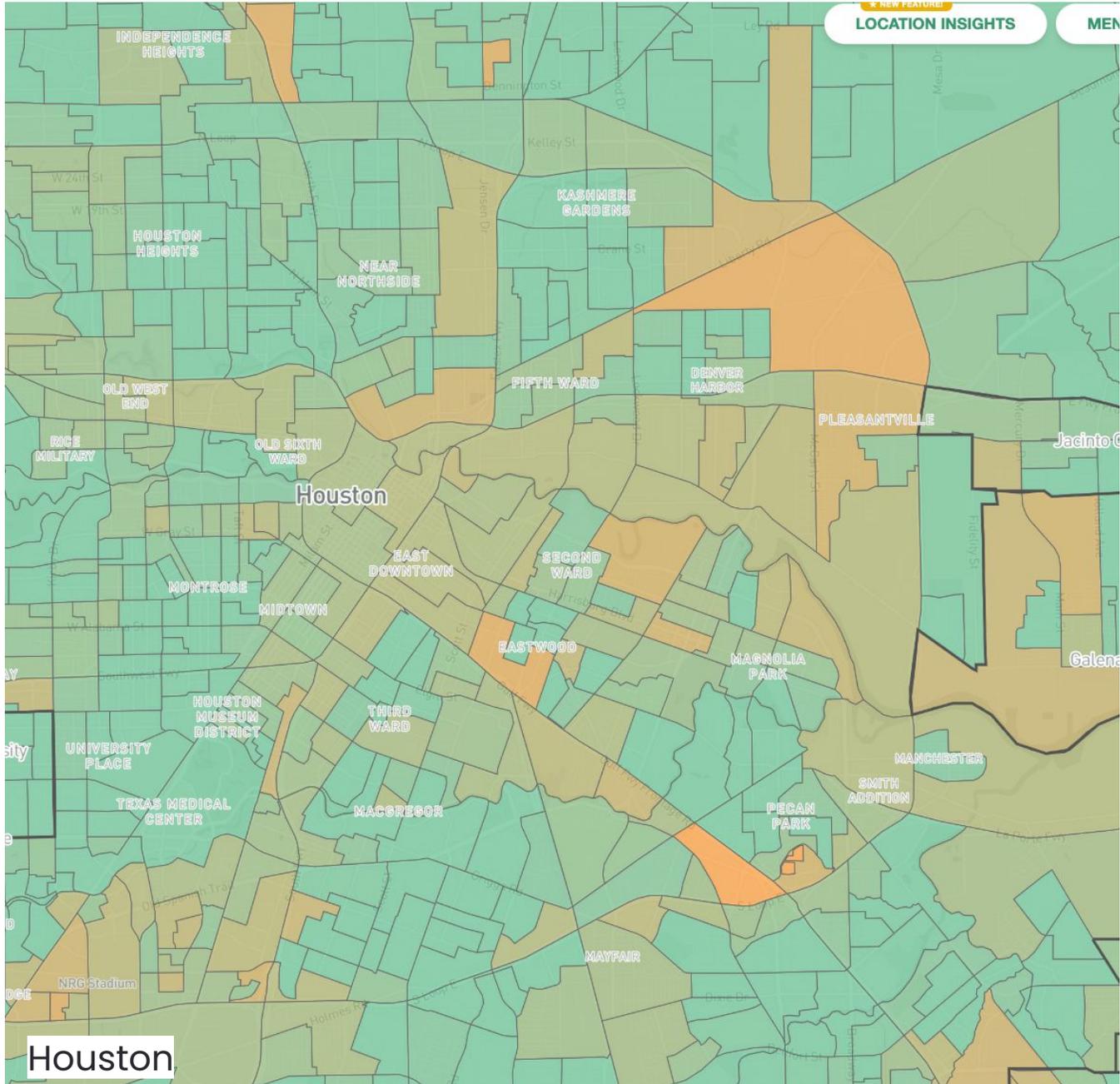


<https://capa-strategies.maps.arcgis.com/apps/webappviewer/index.html?id=524f0c76cb484154885118d81d51f814>

<https://www.dallasclimateaction.com/urbanheatislandstudy>

Tree Equity





Year to date (2025)



23

EVENTS



\$115.0 billion

TOTAL COST

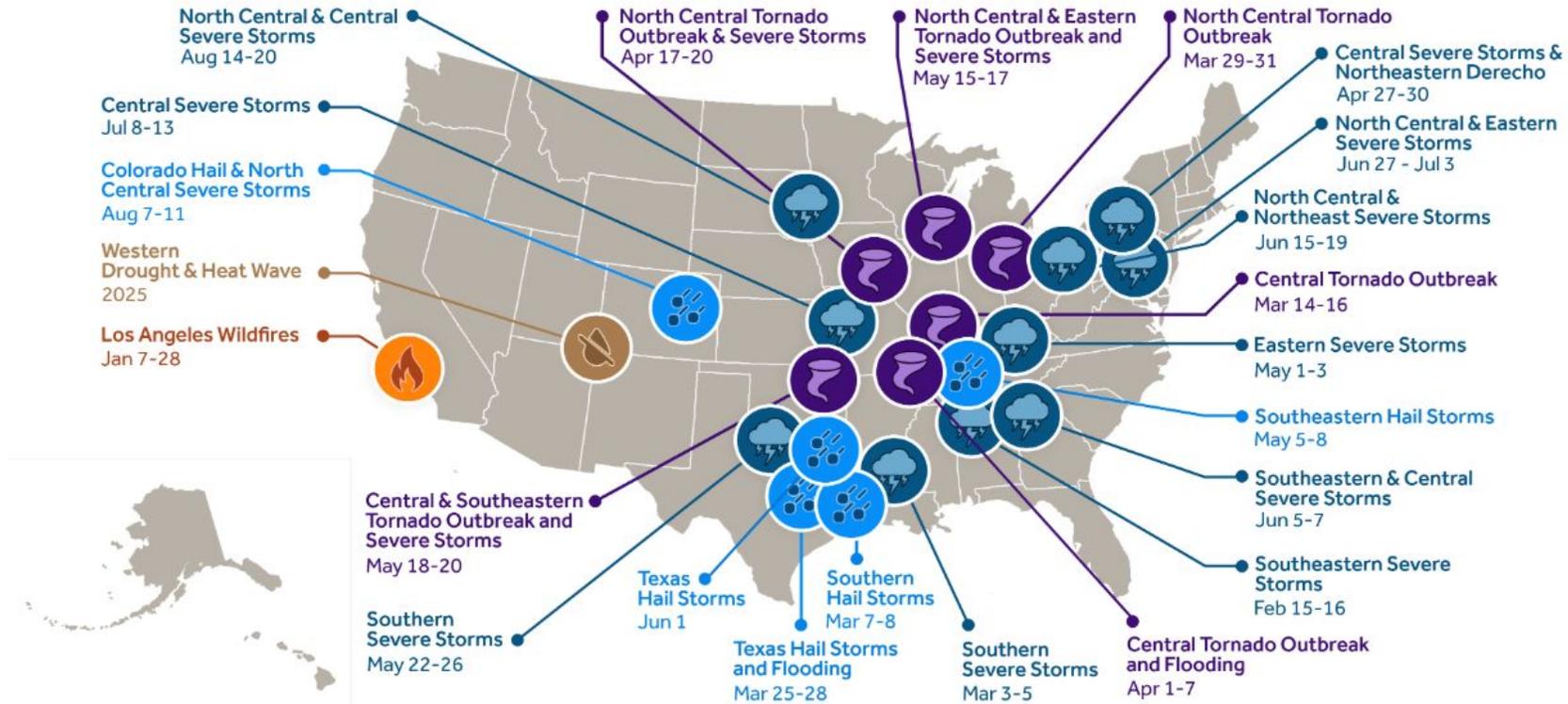


276

DEATHS

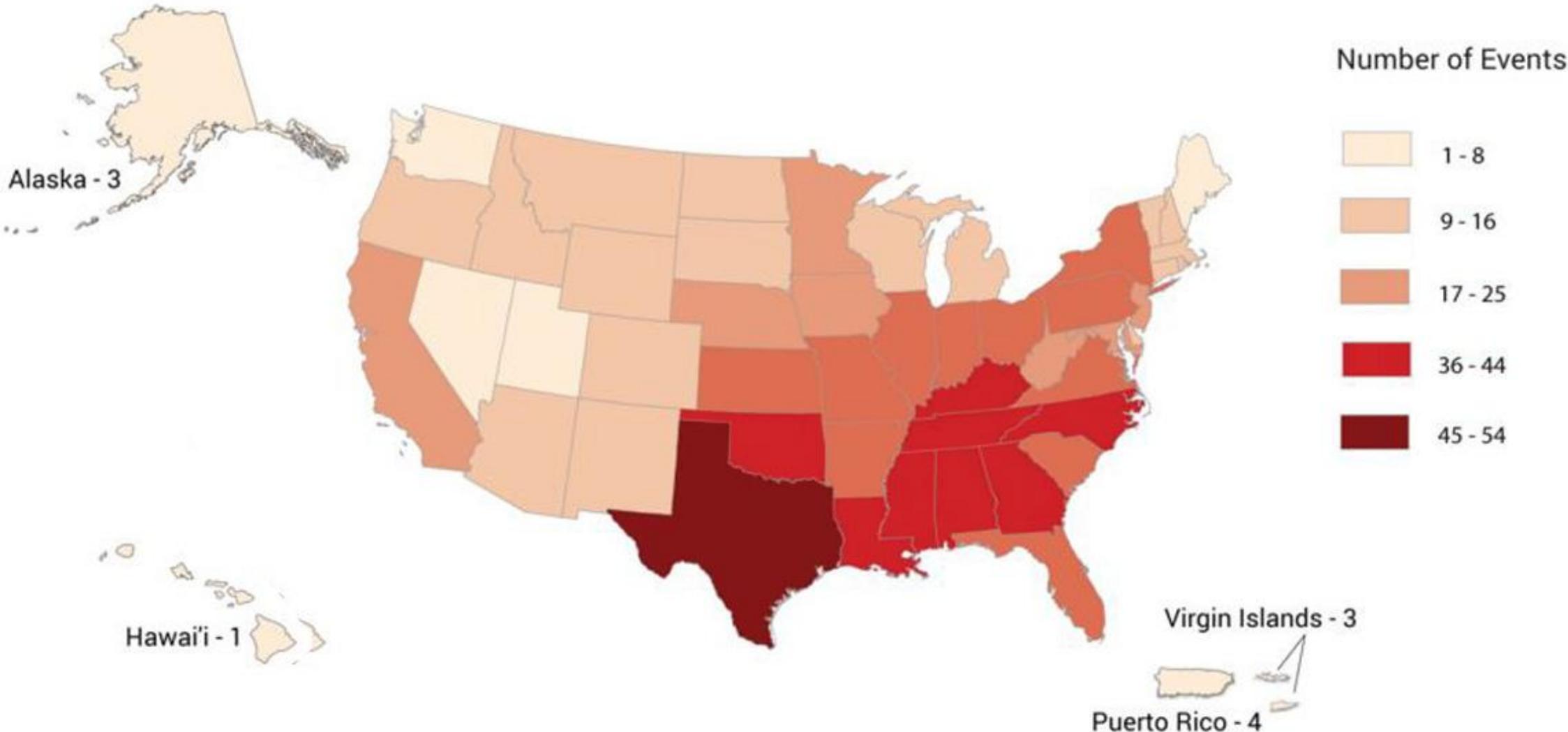
U.S. 2025 Billion-Dollar Weather & Climate Disasters

Drought Flooding Hail Hurricane Severe weather Tornado Outbreak Wildfire Winter Storm

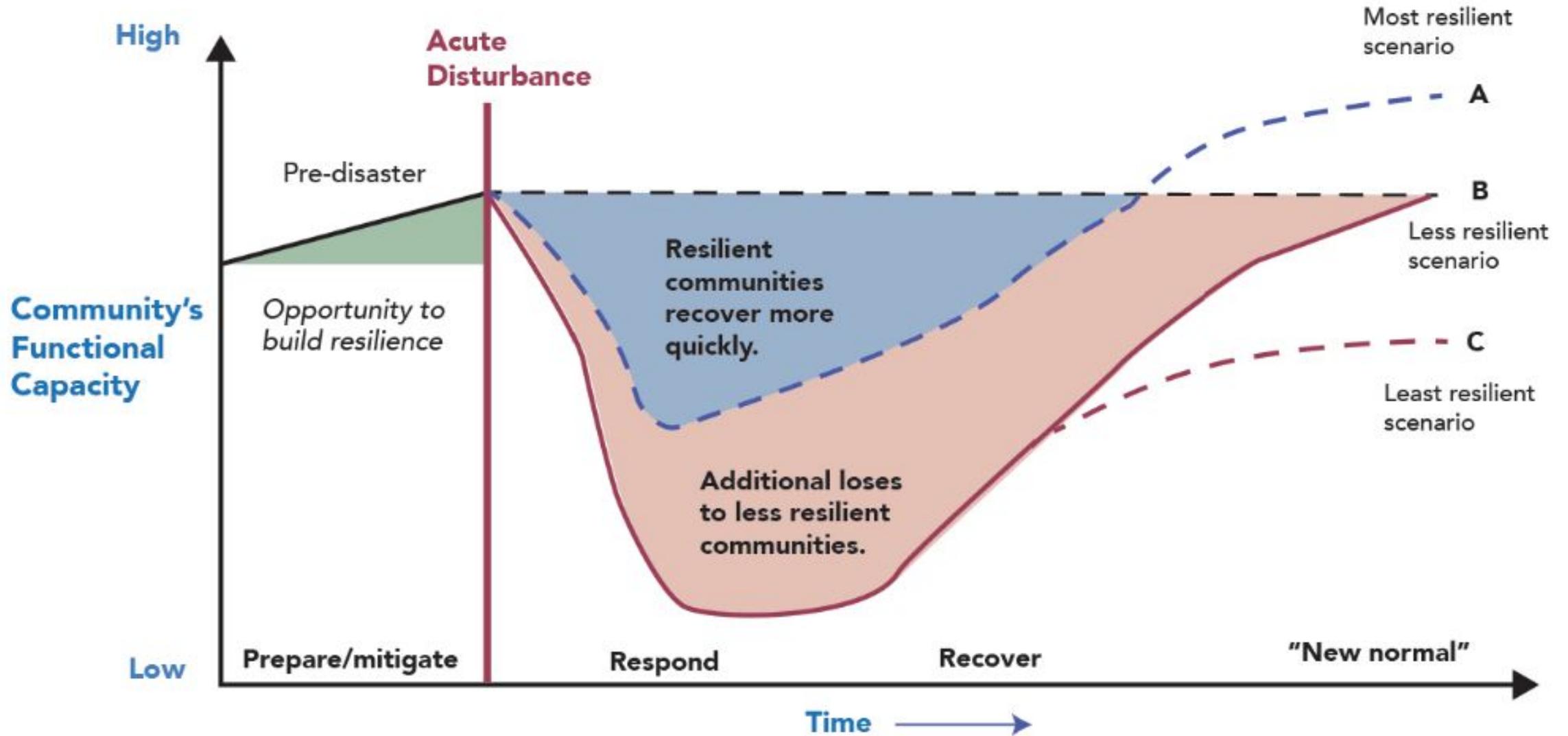


This map shows the approximate location for each of the 23 separate billion-dollar weather and climate disasters that impacted the United States from January-December of 2025.

U.S. Billion Dollar Weather Events



Recover: Communities After Disaster



Design for Resilience

Resilience

- Multiple Energy Sources
- Multiple Water Sources
- Disaster Fortitude Design
- Passive Survivability
- Support Natural Processes
- Evaluate Flood Plain
- Provide Access to Resources
- Civil Support Systems

- Energy Independence
- Water Independence
- Renewable Resources
- Resource Storage
- Environmental Effects
- Community Supports

Sustainability

- Energy Reduction
- Renewable Energy Production
- Recycled / Reclaimed Water
- Locally Sourced Material
- Community Responsibility
- Access To Transportation
- Indoor Environmental Quality
- Brownfield Restoration

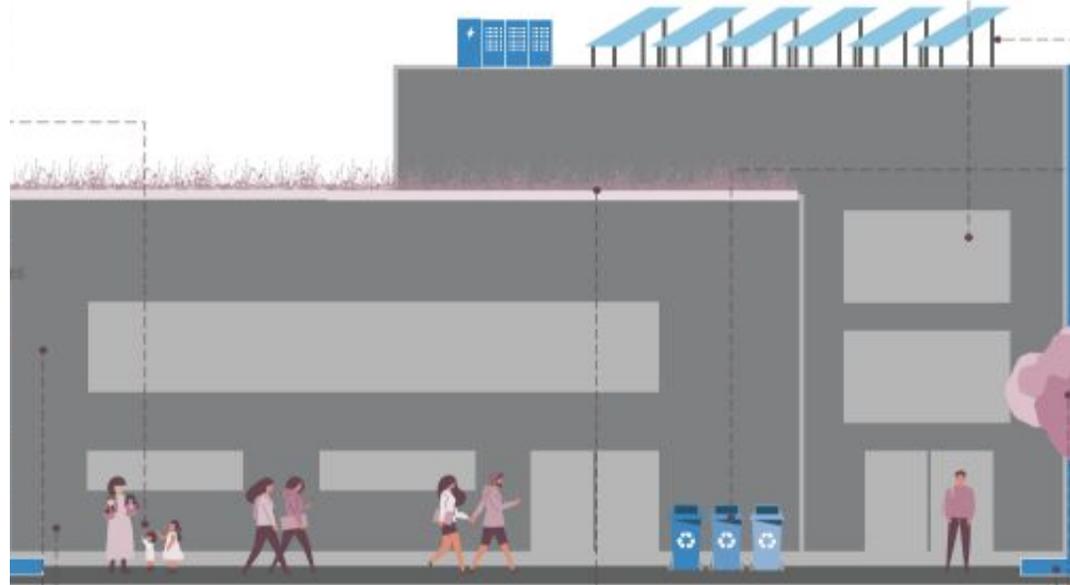
COMMUNITY RESILIENCE HUB



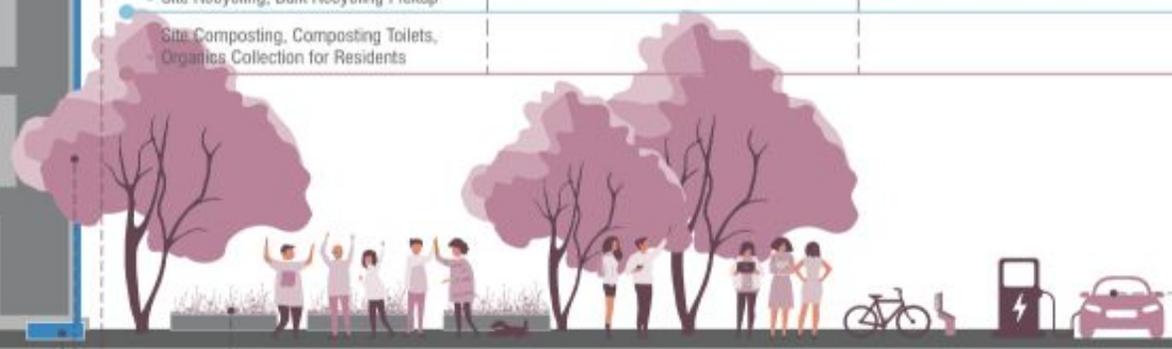
Resilience Hub

- BASE
- OPTIONAL
- IDEAL

Event



	NORMAL FUNCTION	DURING DISRUPTION	RECOVERY FUNCTION
Transportation	<ul style="list-style-type: none"> • EV Charging • Bike Classes • Car/Bike/Scooter/Ride Share • Transit Accessible 	<ul style="list-style-type: none"> • Shuttles to the Hub • Evacuation Meet Up/Assistance • Shuttle to Shelter 	<ul style="list-style-type: none"> • Shuttles to Supply & Service Centers
Accessibility	<ul style="list-style-type: none"> • Accessible Elevator, Accessible Bathrooms, Gender Neutral, Hearing, Visual Impairment, EEAP-Evac Assistance Enrollment 	<ul style="list-style-type: none"> • Clear Sites - Keep Accessible, Designated Rep to Clear Doses + Keep Ramps, Site Open, Backup Power to Elevators 	<ul style="list-style-type: none"> • Assistance For Hearing + Visually Impaired for Recovery, Design Improvements
Storage & Resources	<ul style="list-style-type: none"> • Drinkable Water • Supplies and Tool Storage for Community • Community Tool Library • Veteran Services and Programming • Water Storage Tanks 	<ul style="list-style-type: none"> • Potable Water and Water Bottle Storage • Food Storage • Baby Formula and Diaper Storage, Distribution • Supplies and Tool Storage for Community Check-out • Cots, Blankets and Bassinets 	
Waste	<ul style="list-style-type: none"> • Site Trash Removal • Site Recycling, Bulk Recycling Pickup • Site Composting, Composting Toilets, Organics Collection for Residents 	<ul style="list-style-type: none"> • Debris Cleanup Around Site 	<ul style="list-style-type: none"> • Debris Removal and Assistance for Residents



Design for Resilience



Resilience Transcends Scales
Protects Natural Environment & Resources
Anticipates Interruptions and Adversity
Simple Passive and Flexible
Durable Materials and Systems
Locally Available, Renewable Resources
Diverse and Redundant Systems



Benefit Cost Analysis

Step 1: Project Data

- 60 year life expectancy
- \$300M construction cost
- Maintain operations 24/7/365
- 4-Star hotel, 180 Keys
- Major hurricanes incidence expected, 5.4 events in 60 years

Step 2: Determine Value

- Property value with building - \$320 Million USD
- Property value of contents - \$100 Million USD

Step 3: Characterize Impacts and Determine Damages

- Hurricane potential damage estimates \$5 Million USD per storm
- Major hurricane potential damage estimates \$15 Million USD per storm
- Potential loss of revenue if the facility is closed: \$47,000 per day

Step 4: Hazard Mitigation Analysis

To the right are the resilience design solutions identified for the project.

Not all of the resilience design solutions are intended to protect the building from a major hurricane. Those solutions could be calculated separately outside of a major hurricane scenario. For demonstration purposes, we will keep the BCA only for a major hurricane event. The same process can be used to evaluate other scenarios and design solutions as well.

The intention of the resilience design solutions is to minimize damage and reduce downtime of the project. In this case we will reduce the impacts for damages as follows in the table.

Damage forecasts are reduced by 1/3 and the property is able to re-open 20 days sooner allowing for revenue to begin flowing more quickly. Impacts to local infrastructure, roadways, airports, etc. should be considered when the facility is able to operate.

Step 5. Calculating Benefit-Cost Ratio (BCR)

BCR Calculations:

BCR = Benefits / Cost

\$38,421,000 (Benefits from Resilience Design)

\$34,000,000 (Cost of Resilience Design Solutions)

BCR = 1.13 > 1.0

Benefit Cost Analysis

Impacts from One Major Hurricane (Base Code Construction)

Type	Cost
Property Damage	\$15,000,000
Lost Revenue (30 days)	\$1,500,000
Insurance Premium	\$1,800,000
Total	\$18,300,000
5.4 Major Hurricanes in 60 Years	\$98,820,000

A BCR of 1 or higher is considered an effective ratio and should be implemented into the design. To keep the BCR at 1 the resilience solution should not exceed \$38,421,000.

Since a major hurricane likely will not strike every year and may never strike, this calculation represents a worst-case scenario. The owner will likely need to weigh the cost of the resilience solutions with the insurance premium and potential position of risk.

Impacts from a Major Hurricane

Type	Base Building Code	Resilience Design
Property Damage	\$15,000,000	\$10,000,000
Lost Revenue (30 days / 10 Days)	\$1,500,000	\$540,000
Insurance Premium	\$1,800,000	\$645,000
Total	\$18,300,000	\$11,185,000
x5.4 Major Hurricanes in 60 years	\$98,820,000	\$60,399,000
Difference / Project Benefit	-\$38,421,000 (61% potential cost reduction)	

Owner Resilience Strategy Rubric

Resilience Strategy	Benefit Cost Ratio (BCR) of 1+	Financial Stewardship	Reserves 30% or More of Site as Open Space	Resilience Education Opportunities
Living Shoreline Option A	1.2	\$5,000,000	31%	Yes
Living Shoreline Option B	1.0	\$4,350,000	28%	Some
Living Shoreline Option C	1.5	\$7,100,000	35%	Yes
Best Selection	Option C	Option B	Option C	Option C

Existing Buildings

1. Water Cistern and Filtration
2. Solar with battery backup
3. Hardwired phone line
4. Upgrade building envelope
5. Upgrade building systems
6. Use durable building materials
7. Have food and water storage onsite

1. Select plants and trees that absorb water quickly and help with stormwater infiltration

New Construction

1. Water Cistern and Filtration
2. Solar with battery back up (zoned locations)
3. Passive Design Strategies: Operable Windows, shade and overhangs, etc.
4. Design for adaptation and flexibility of the building and systems
5. Hardwired phone line
6. Increased landscape area and permeable surface to help stormwater infiltration
7. Shade Trees to reduce urban heat island effect and provide cooler areas
8. Consider an area where the community or building occupants can gather
9. For Multi-family communities or neighborhoods - create a resilience plan and share the plan with residents on an annual basis.

additional resources

1. <https://www.aia.org/resource-center/understanding-resilience>
2. https://www.aia.org/sites/default/files/2024-11/Understanding_Resilience_2020.pdf
3. <https://www.aia.org/resource-center/resilient-project-process-guide>
4. https://www.codegreenhouston.org/sites/g/files/nwywnm441/files/gbrc/006-resiliant_home_guidelines_4_19_2022.pdf
5. <https://resilience-hub.org>
6. <https://capa-strategies.maps.arcgis.com>
7. <https://www.dallasclimateaction.com/urbanheatislandstudy>
8. <https://www.treeequityscore.org/>



Foundation Communities Case Studies

Session 3 | March 31
TACDC Conference



Passive Solar Design in Texas

Session 4
April 14



Home

Conference Details

Agenda

Sponsor

2026 Texas Community Development Conference

March 29- March 31, 2026

Austin, Texas

Registration Now Open!

LINK

<https://www.tacdconference.org/>

LINK

<https://lnkd.in/gnVY6ukF>





Questions and Discussion

