Urban Sustainability Directors Network (USDN)

Local Government Actions to Build Community Resilience

Kristin Baja

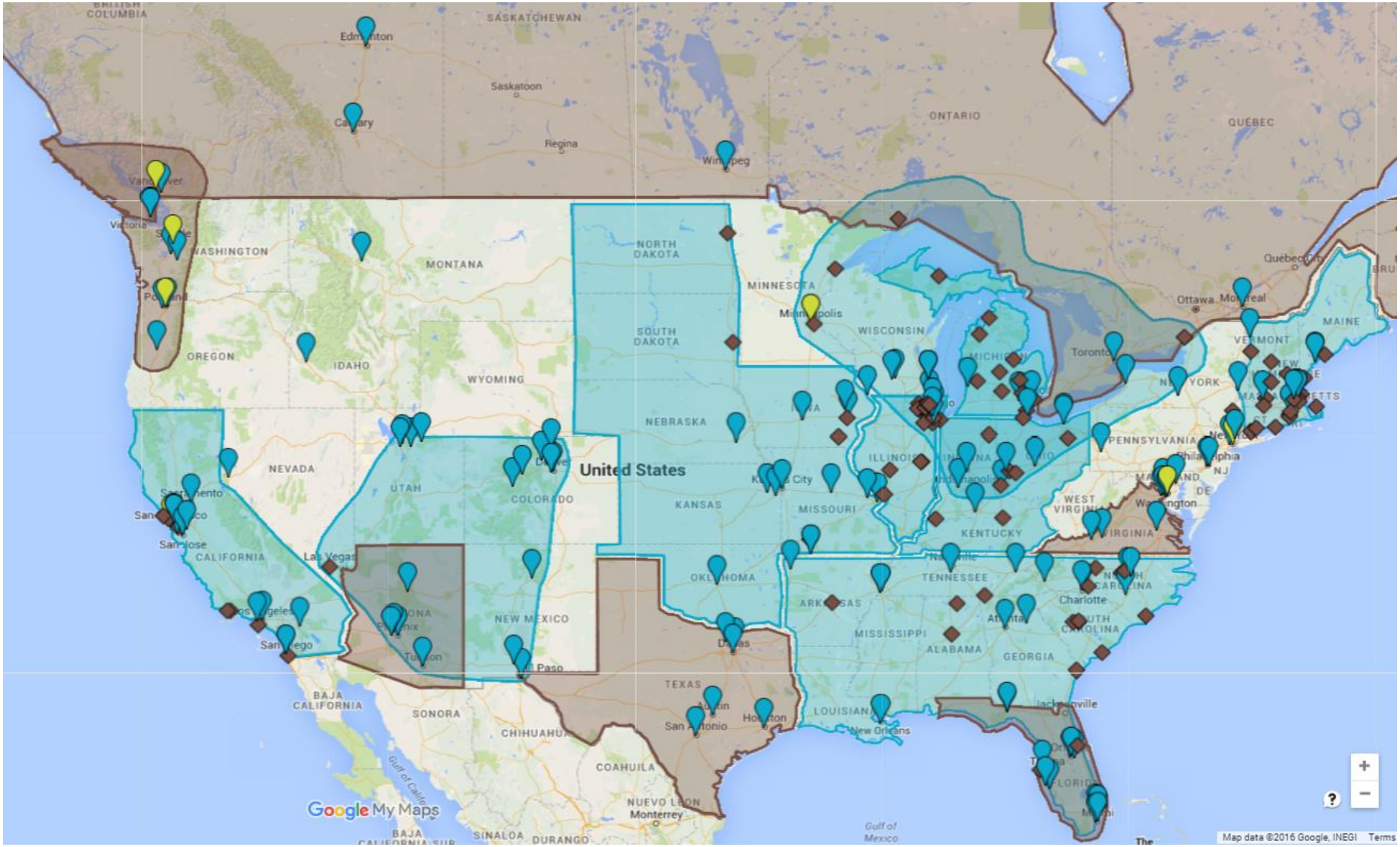
Climate and Resilience Officer

USDN | urban sustainability directors network

Overview

- USDN
- Context & Trends
- Weather & Climate
- Equity
- Planning
- Implementation
- Integration
- Communication & Training

USDN Members



USDN Members

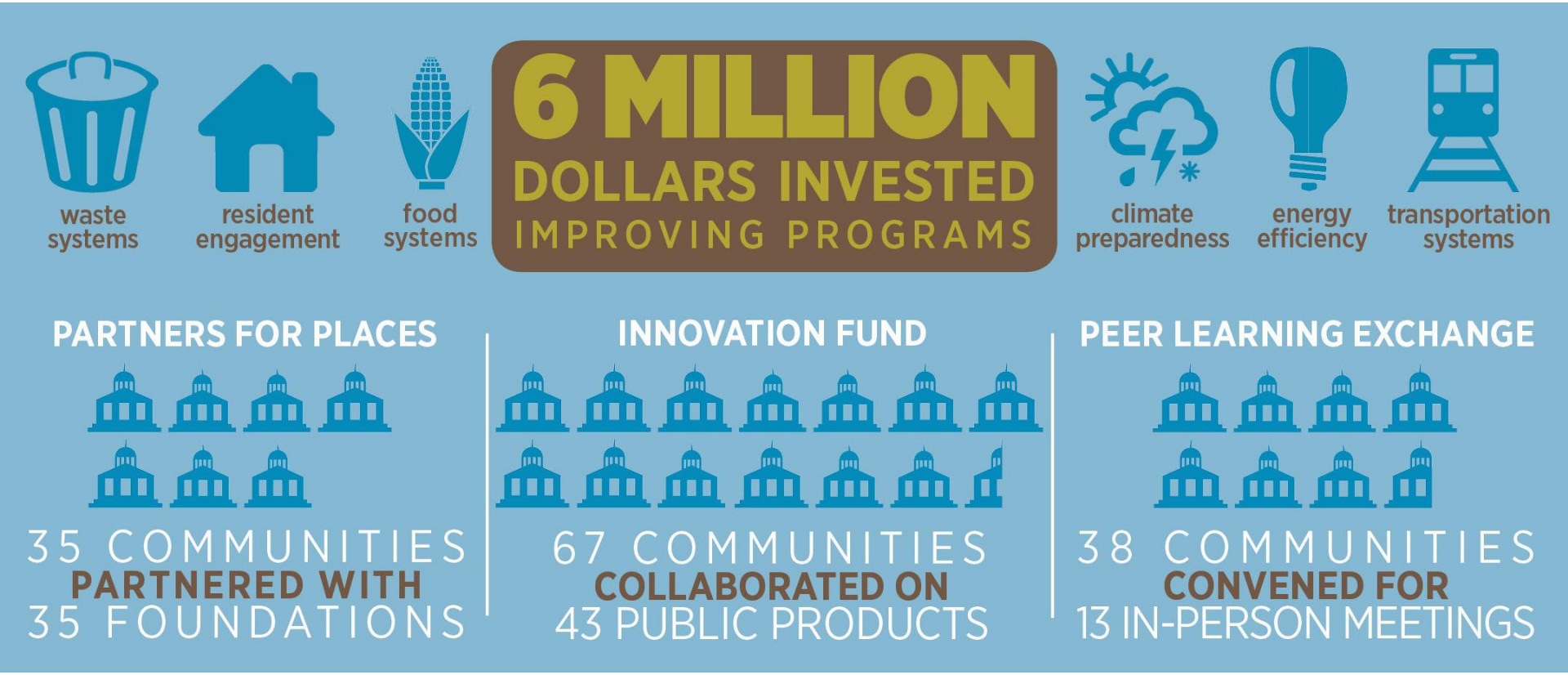
USDN is a peer-to-peer network of local government professionals from cities across the United States and Canada dedicated to creating a healthier environment, economic prosperity, and increased social equity.

The network enables members to share best practices and accelerate the application of good ideas across North America.

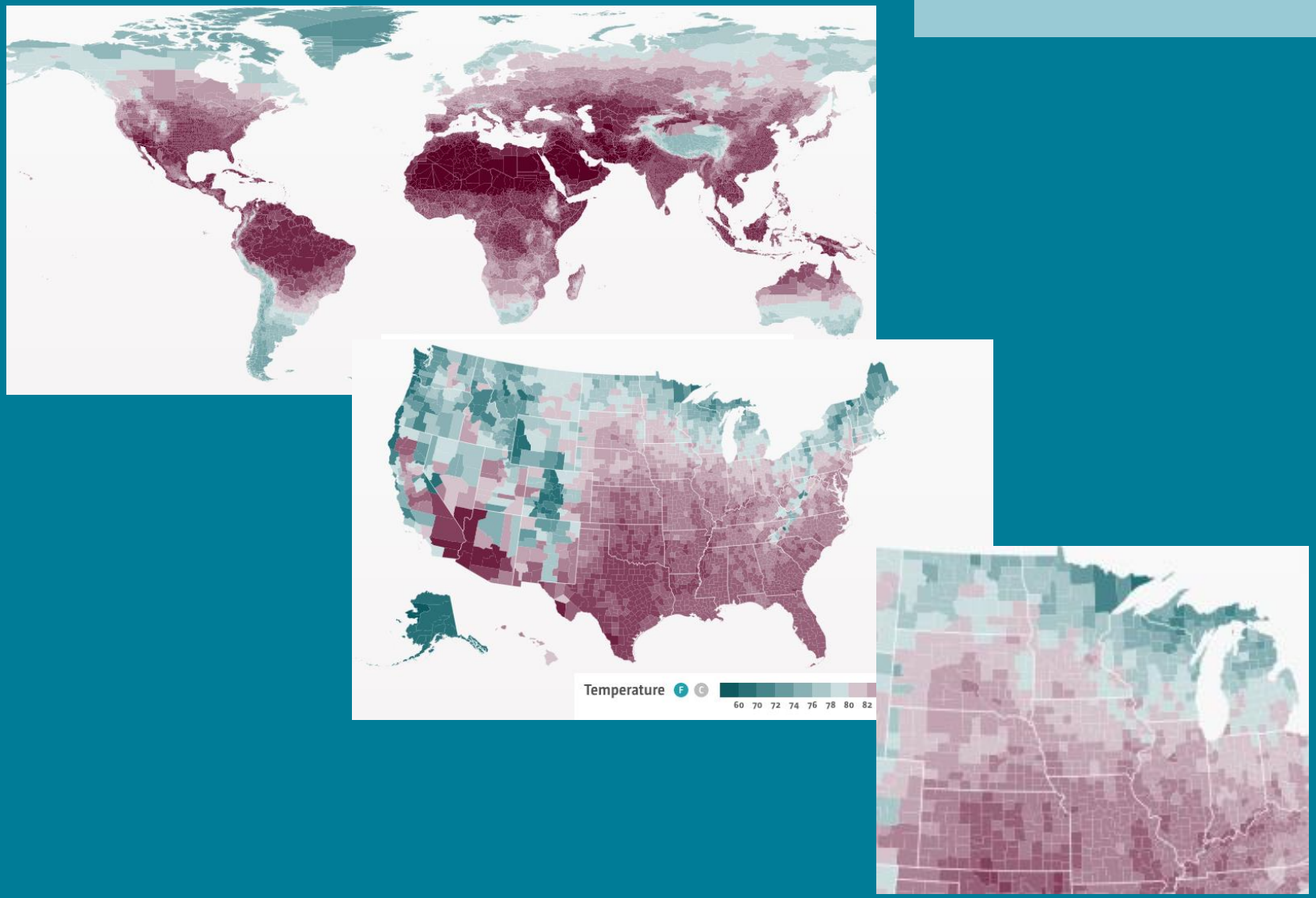
Peer Exchange and Learning

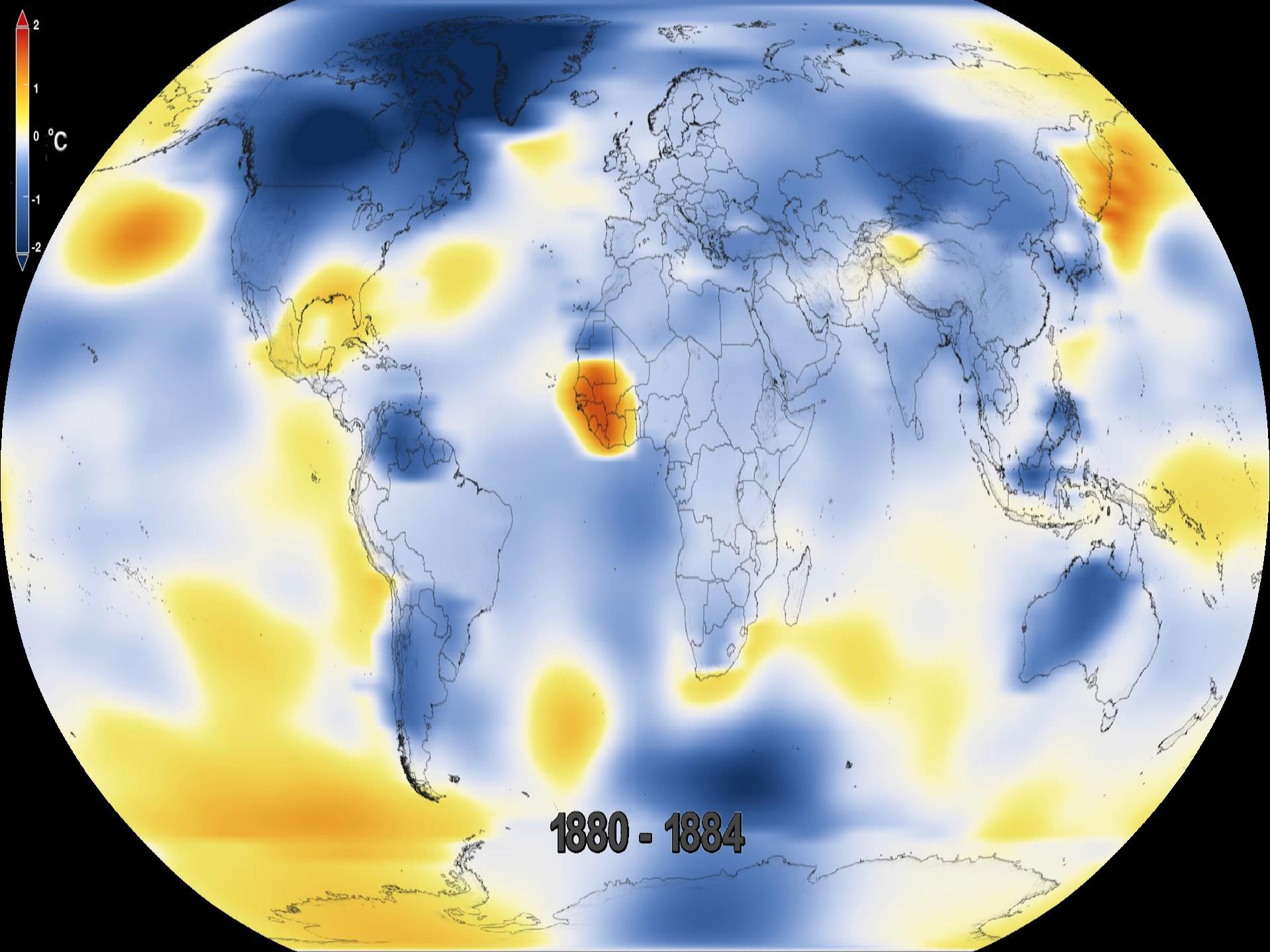
- **Equity and Access** (71 participants)
- **Climate Change Preparedness** (65)
- **Sustainable Behavior** (67)
- **Food Systems** (66)
- **Building Energy Strategies** (59)
- **Food Waste and Composting** (55)
- **Sustainability Indicators** (55)
- **District and Neighborhood Scale Sustainability** (53)
- **Waste Diversion** (52)
- **GHG Analysis and Reporting** (48)
- **Electric Vehicles** (40)
- **Sustainable Consumption** (39)
- **LED Street Lighting** (36)
- **Carbon Neutrality Planning** (34)
- **Urban Forestry** (34)
- **Green Stormwater Infrastructure** (32)
- **Small Cities Support Group** (32)
- **Sustainable Economic Development** (29 participants)
- **Clean Power Plan** (27)

Collaborative Funding: Innovation

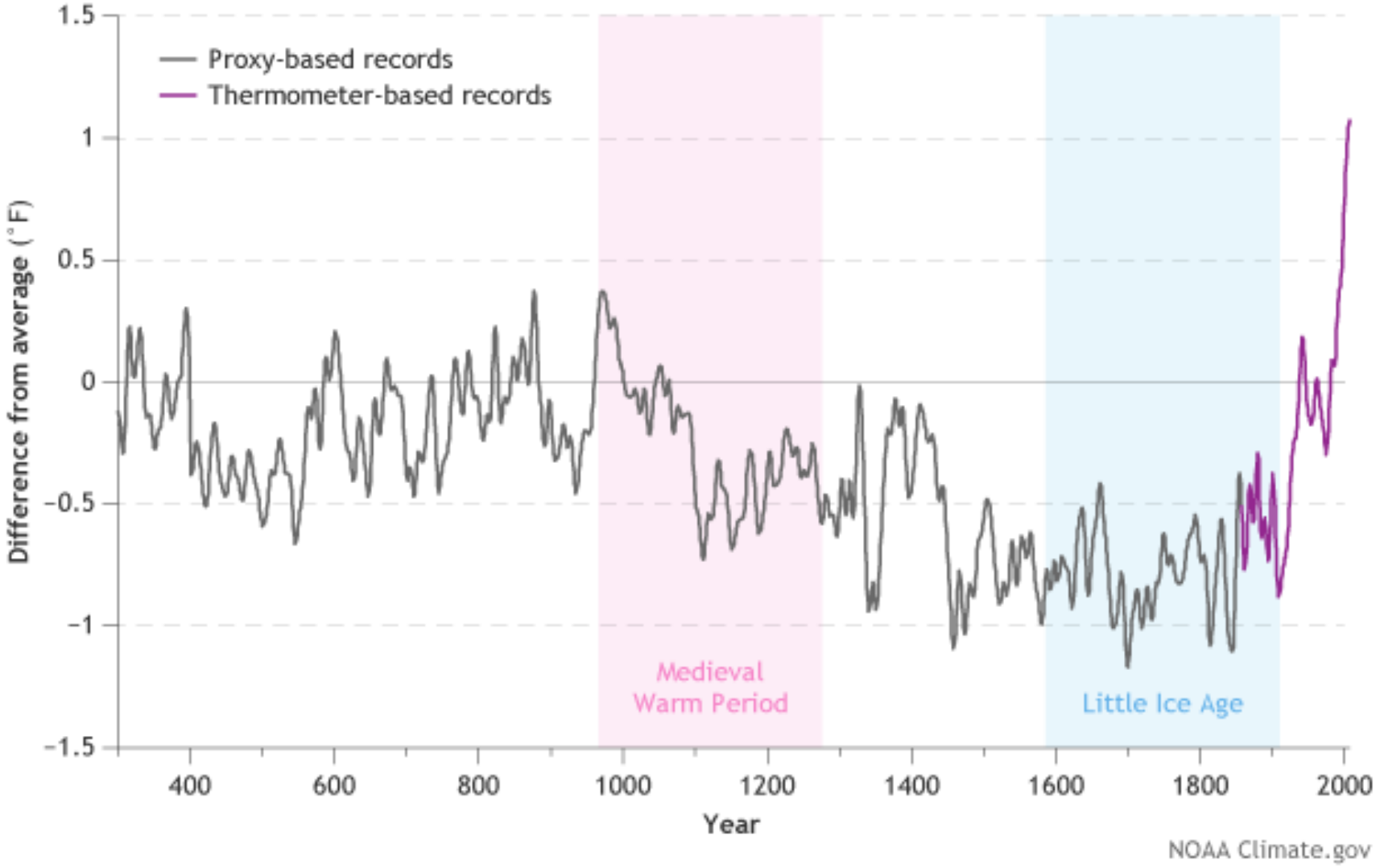


CONTEXT

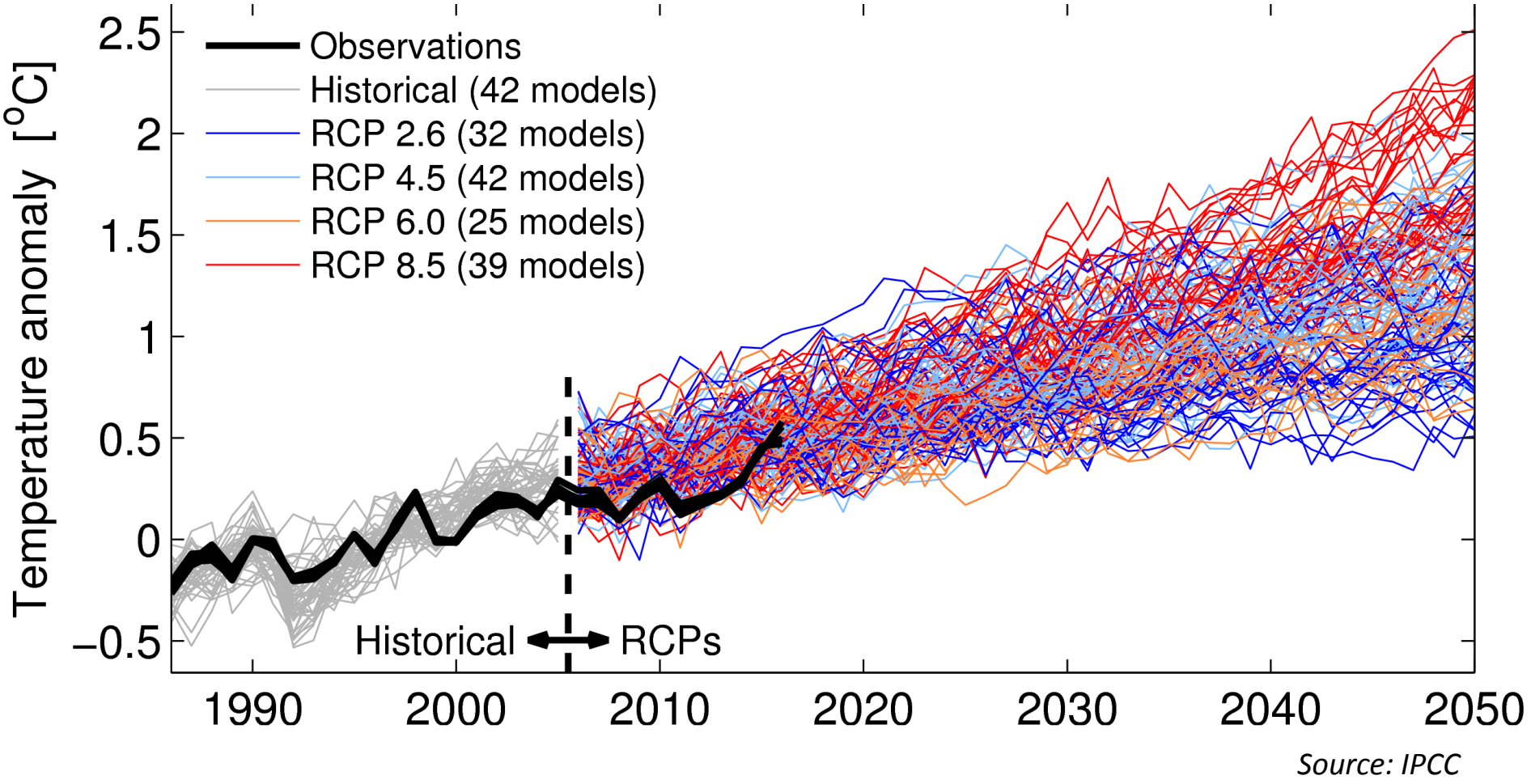



2
1
0 °C
-1
-2
1880 - 1884

Global Temperatures past 1700 years



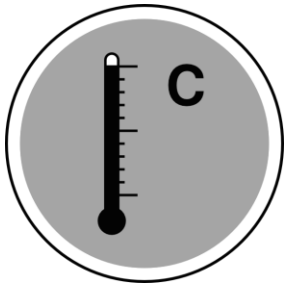
Global Mean Temperature projections



Source: IPCC

Mid-Atlantic Climate Stats

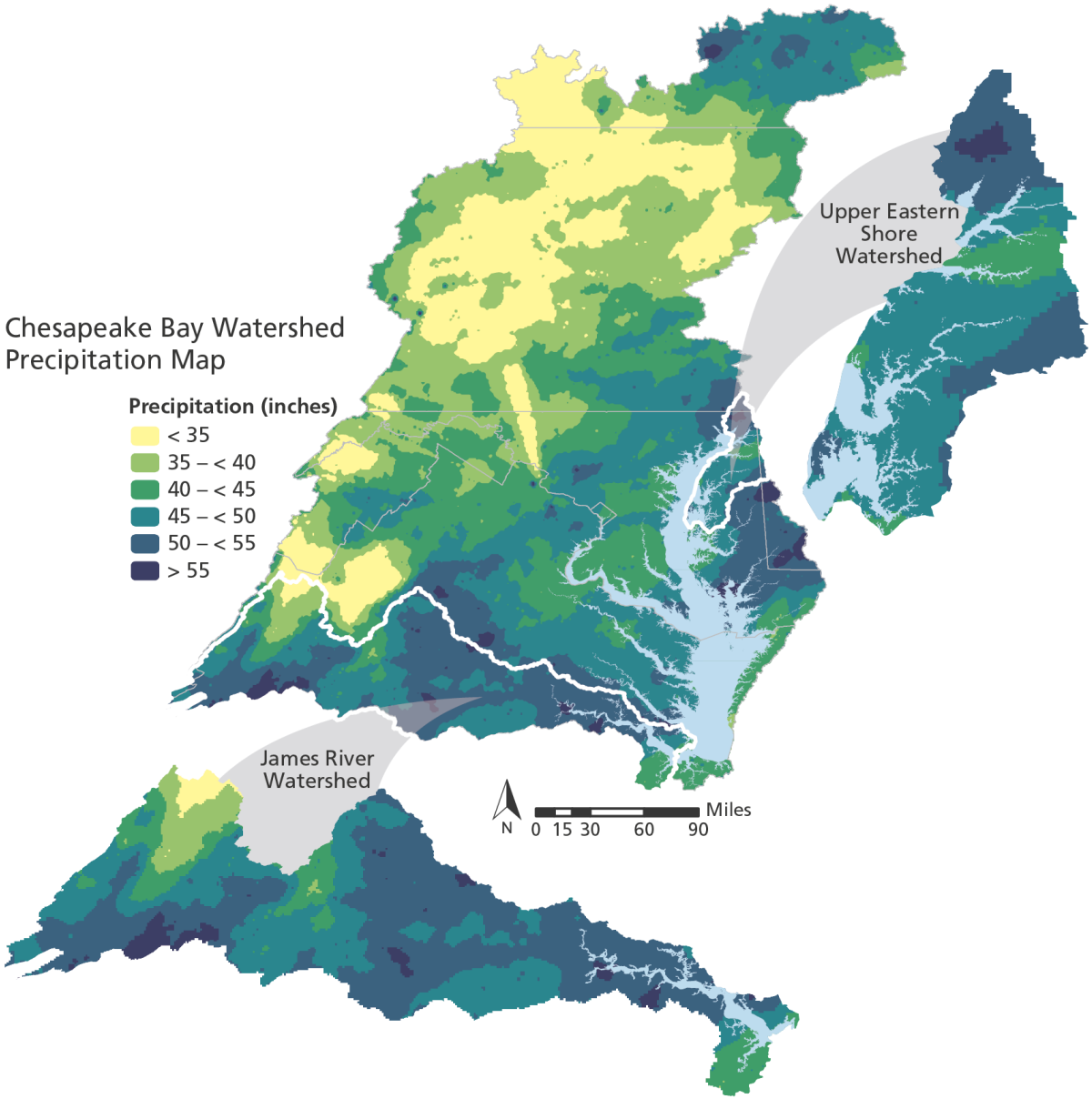
- Winter and spring precipitation is projected to increase
- Frequency of heavy downpours is projected to continue to increase



- Seasonal drought risk is projected to increase in summer and fall as higher temperatures lead to greater evaporation and earlier snowmelt
- The frequency, intensity, and duration of heat waves is expected to increase

- Global sea levels are projected to rise 1 to 4 feet by 2100
- SLR is expected to exceed the global average rise due to local land subsidence

Regional Relationship with Water



Weather is your Mood,

Climate is your Personality

Definition of Resilience

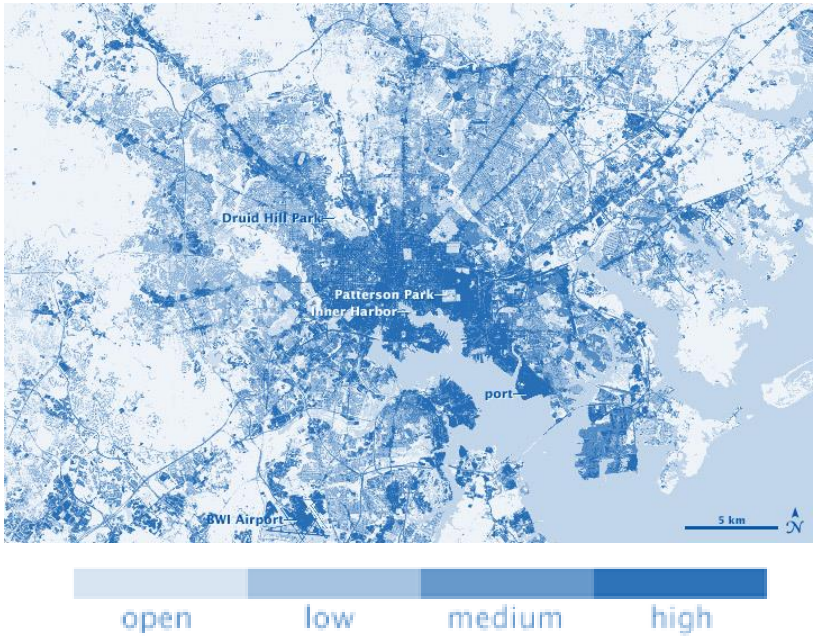
The ability of our community to anticipate, accommodate, and **positively adapt to or thrive** amidst changing climate conditions or hazard events and **enhance quality of life**, reliable systems, economic vitality, & conservation of resources for present & future generations.

Shocks and Stressors

SHOCKS	STRESSORS
Typically considered single event disasters	Factors that pressure on a daily or reoccurring basis
Fires	Endemic Violence
Hurricanes	High Unemployment
Earthquakes	Endemic Drug Use
Floods	Poverty

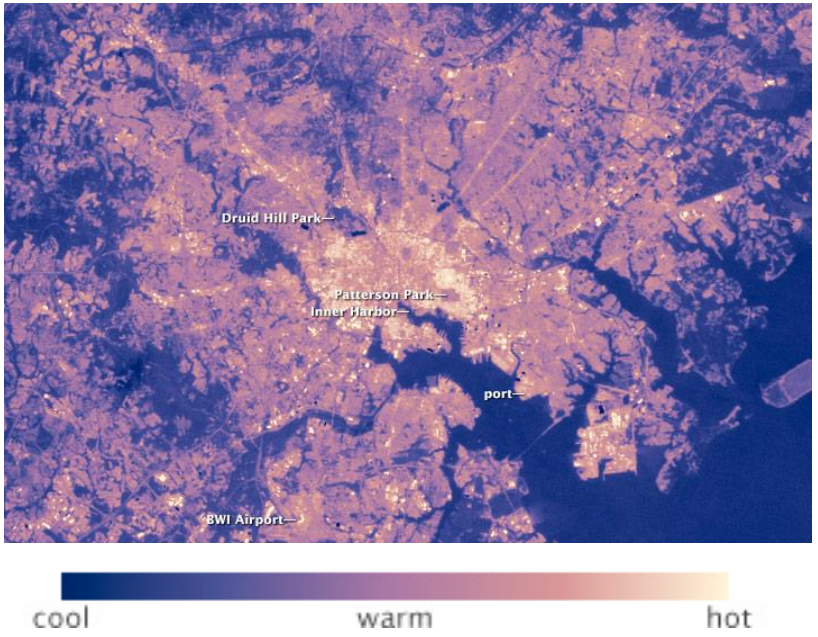
Focus on both shocks and stresses to enhance community adaptive capacity and resilience, especially in vulnerable areas

Climate Variability Extreme Heat



DEVELOPED LAND

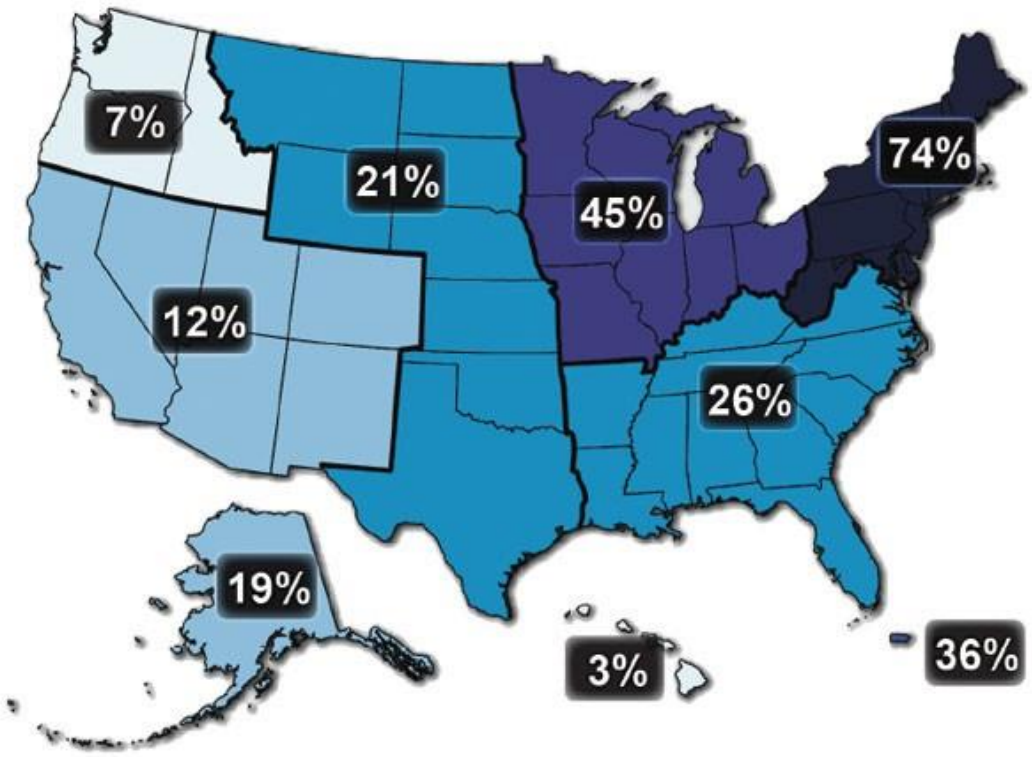
Cities have high amount of impervious surface which leads to increased Urban Heat Island Effect



LAND SURFACE TEMPERATURE

The number of days with air temperatures exceeding 90 F is projected to double (and could even triple) by the end of the century.

Climate Variability Precipitation



National Climate Assessment

SNOWMAGEDDON
FEBRUARY 5-6, 2010

FLASH FLOOD
APRIL 30, 2014

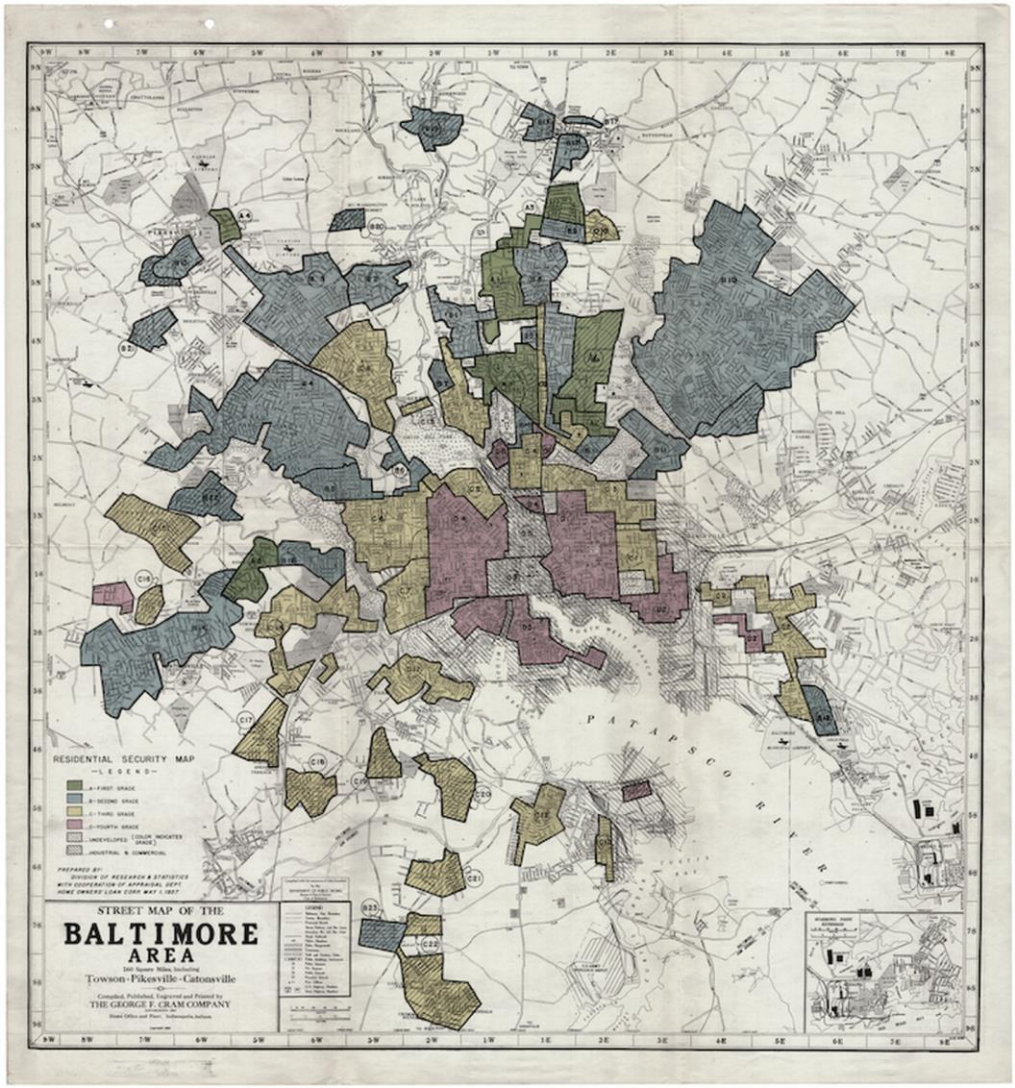
FLASH FLOOD
JULY 30, 2016

EQUITY

- Who Is Most Impacted Now?
- Who Will be Impacted in the Future?

Acknowledging History- Racism

- Historic planning practices
- From 1951 to 1971 80-90% of the 25,000 families displaced to build new highways, schools and housing were black
- Honestly acknowledge racism within policies and practices



Equity as a Lens

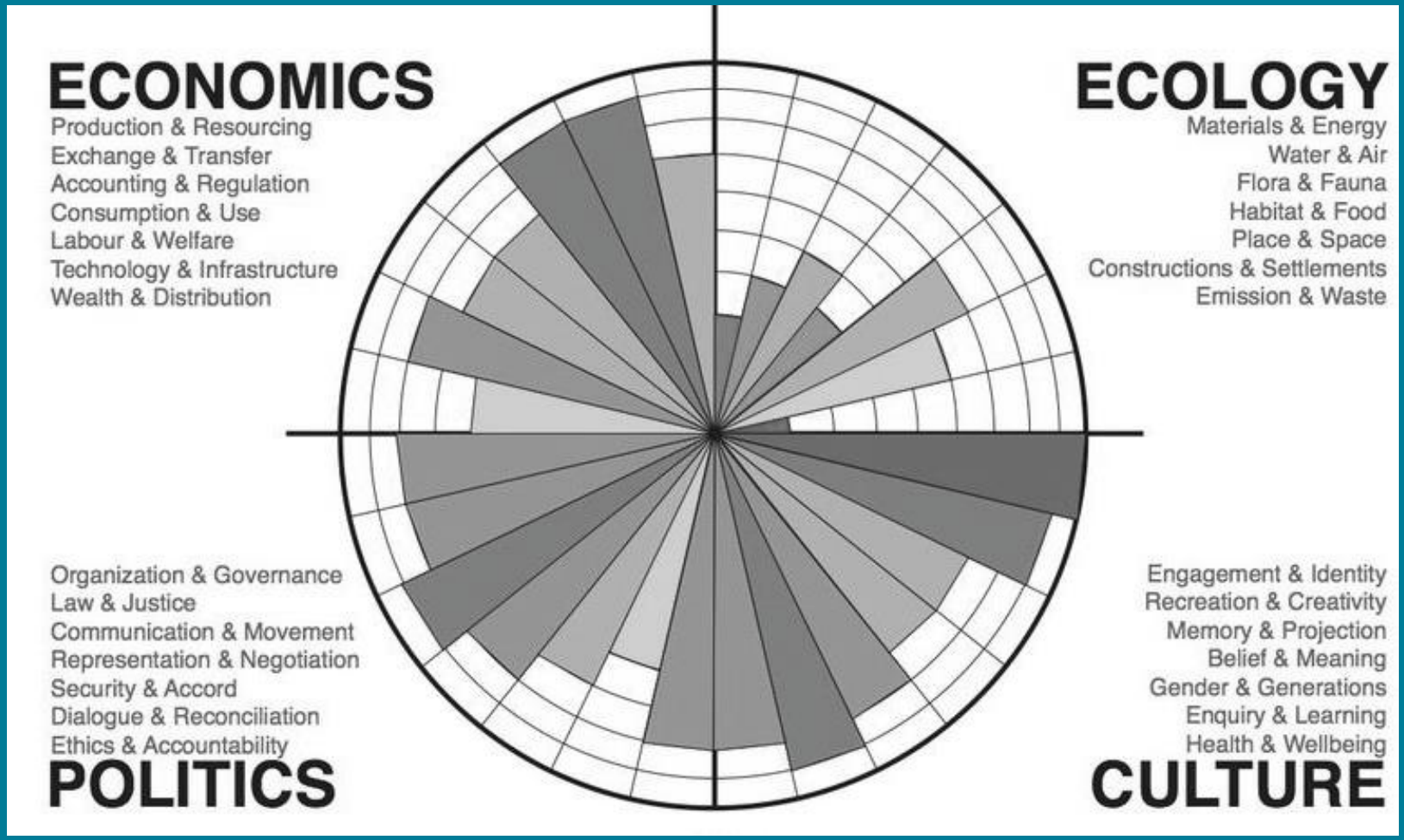
- Prioritize neighborhoods with highest low opportunity and historic disinvestment
- Provide job training and green job opportunities as part of most initiatives

- Actively listen to residents and collect their stories
- Build trust and relationships = partners in implementation
- Interactive meetings/events

Equity as a Lens

1. Foster and sustain mutual trust
1. Be accountable
2. Promises made must be promises kept
3. Power Sharing. We must go beyond informing and engagement
4. The process must value people's time and be sustained
5. Focus on social cohesiveness

PLANNING & MAINSTREAMING



A Unique Planning Approach

All Hazard Mitigation Plan
(current and historical hazards)

Climate Adaptation Plan
(new & predicted climate conditions)

Resilience

Definitions

Hazard Mitigation

Jimi Jones

Hazard Mitigation is action taken to reduce or eliminate long-term risks to people and their property from hazards.

Climate Adaptation

Aubrey Bodine

Climate Adaptation refers to changes made to better respond to new climate conditions, thereby reducing harm and taking advantage of opportunities.

Process- Risk Assessment

Risk Assessment

Hazard Identification

- Hazard Identification
- Review Historical Impacts
- Conduct an Asset Inventory

Vulnerability Assessment

- Determine likelihood
- Determine economic, social, legal & environmental consequence

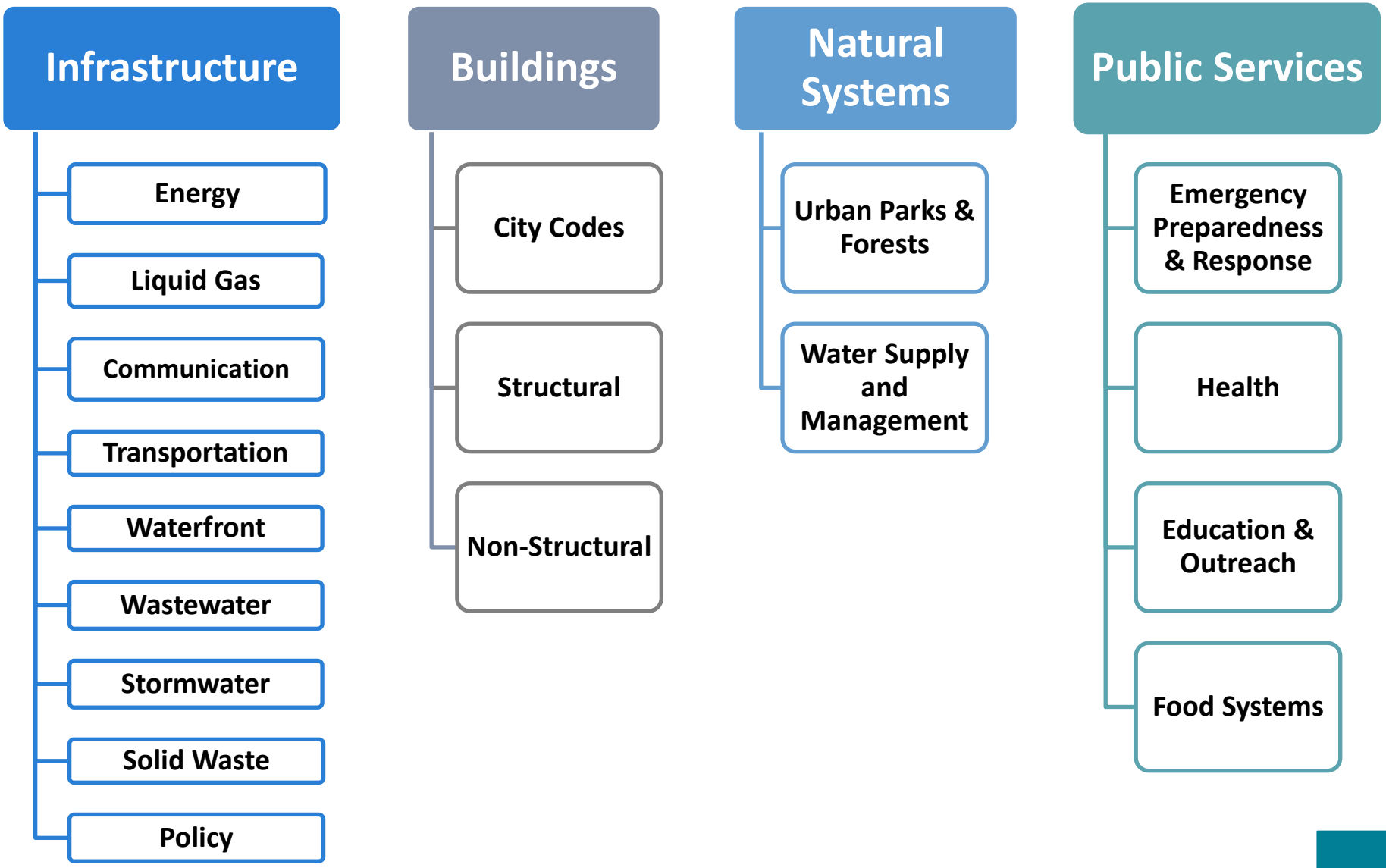
Impacts Assessment

- HAZUS Modeling
- Integrate projected climate conditions
- Identify weaknesses

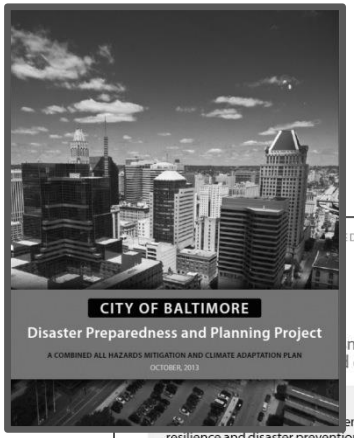
Plan Development

- Vision, Goals, Strategies, Actions
- Prioritization
- Integration
- Plan for implementation & monitoring

Altering Plan Structures



City Example: Disaster Preparedness Plan



Integration into All Hazards Mitigation Plan

EDNESS AND PLANNING PROJECT

ment that evaluates and improves all pipes' ability to withstand
l cold

em is dated and in need of upgrades. It is important to build extreme weather resilience and disaster prevention into water and wastewater systems by using both adaptation and mitigation actions. Additionally, structural and infrastructural upgrades must be made to reduce loss of water supply from the distribution system.

Baltimore Water Pipe *Source: BaltimoreSun*

1. Replace old and malfunctioning pipes with new pipes or retrofit existing pipes with new lining

   Pipes that have already begun experiencing problems, or older pipes which are more vulnerable to the impacts of hazards, should be upgraded using the best available technology.

2. Evaluate and utilize new technology that allows for greater flexibility in pipes as they are replaced

   It is essential to prepare for future changes in hazard events and proactively upgrade pipe systems to prevent cracking and bursting.

IMPLEMENTATION GUIDELINES	
Lead Agency	DPW
Stakeholders	DOT, DPW, Water and Wastewater Utilities
Alignment with Goals	Goal 3
Connection with Existing Efforts	CAP; CRS; MD DNR; ESF-3; ESF-4
Timeframe	

STRATEGIES AND ACTIONS 191

STORMWATER

IN-16 Enhance and expand stormwater infrastructure and systems

Future changes in precipitation frequency and intensity may require reconsideration of the design of existing stormwater infrastructure systems.

Increase resiliency and disaster prevention measures related to stormwater systems by enhancing drainage systems in stream corridors and improving and repairing stormwater conveyance popes and outfalls.

1. Implement the requirements of Baltimore's MS4 (separate stormwater and sewer system) permit (S)

   The City of Baltimore operates under a Municipal Separate Stormwater and Sewer System (MS4) permit, which protects water-quality and requires that Baltimore prevents pollution as much as possible. It is critical that the requirements of these permits are fully met.

2. Prioritize storm drain upgrades and replacement in areas with reoccurring flooding (S)

   While proximity to a floodplain or floodway can increase vulnerability to flooding, certain measures can reduce this vulnerability. Inadequate or older pipes, which cannot accommodate the excessive amounts of stormwater, should be upgraded so as to handle extreme rainfall and storm surge events.

3. Install backflow-prevention devices or other appropriate technology along waterfront to reduce flood risk (M-L)

   Backflow-prevention devices are used to ensure that water does not flow back through drainage infrastructure. Through the installation of backflow-prevention devices, the City can improve the performance of the drainage network and prevent risk of flooding impact along the waterfront.

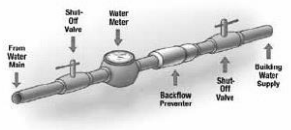
4. Preserve and protect natural drainage corridors (S)

   It is important to utilize natural drainage corridors and green infrastructure to capture more stormwater runoff and enhance the ability of the existing infrastructure to cope with environmental changes.

5. Review and revise storm drain design on a continuous basis, to accommodate projected changes in intense rainfall (O)

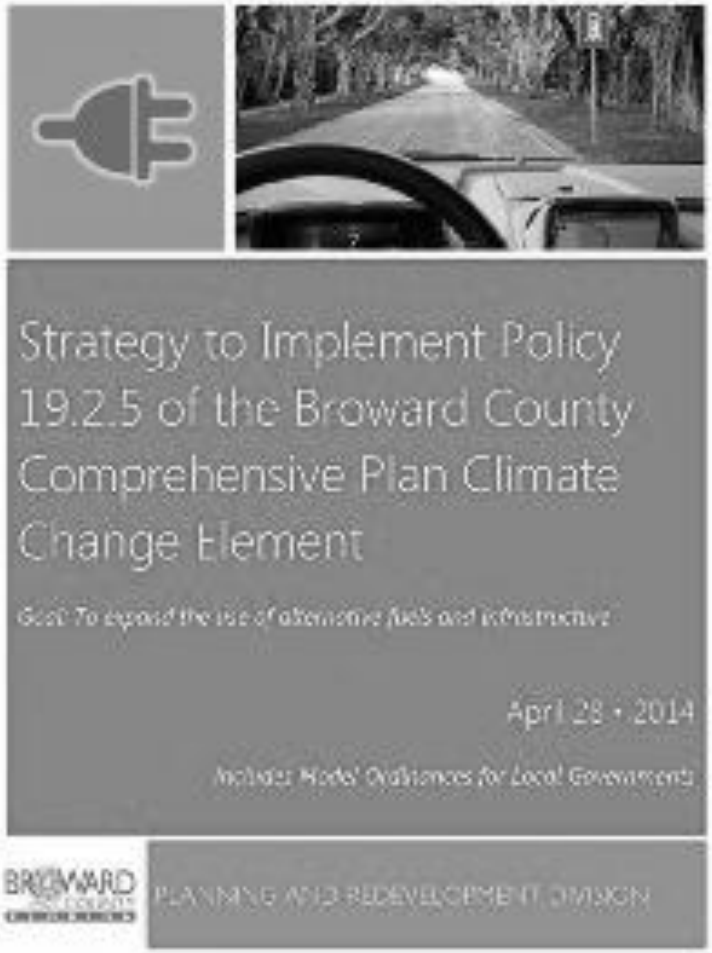
   The City's storm drains will require continual revision to incorporate new and projected changes in intense rainfall. This will ensure that the storm drains maintain adequate capacity.

IMPLEMENTATION GUIDELINES	
Lead Agency	DPW
Stakeholders	Community Groups, DOT, DPW, MOEM, MDNR, NGOs, Private Developers, Stormwater Utility
Alignment with Goals	Goals 1, 3, and 6
Connection with Existing Efforts	CRS; MD DNR
Timeframe	



Backflow Preventer *Source: DemarPlumbingNYC*

City Example: Comprehensive Plan



1. Administration
2. Future Unincorporated Area Land Use
3. Transportation
4. Potable Water
5. Sanitary Sewer
6. Solid Waste
7. **Drainage and Natural Aquifer Recharge**
8. Housing
9. Recreation and Open Space
10. Coastal Management
11. **Natural Disaster Component**
12. Deepwater Port Component
13. Conservation
14. Capital Improvements
15. Intergovernmental Coordination
16-17. Public School Facilities
18. Urban Design
19. **Climate Change**

Additional Mainstreaming

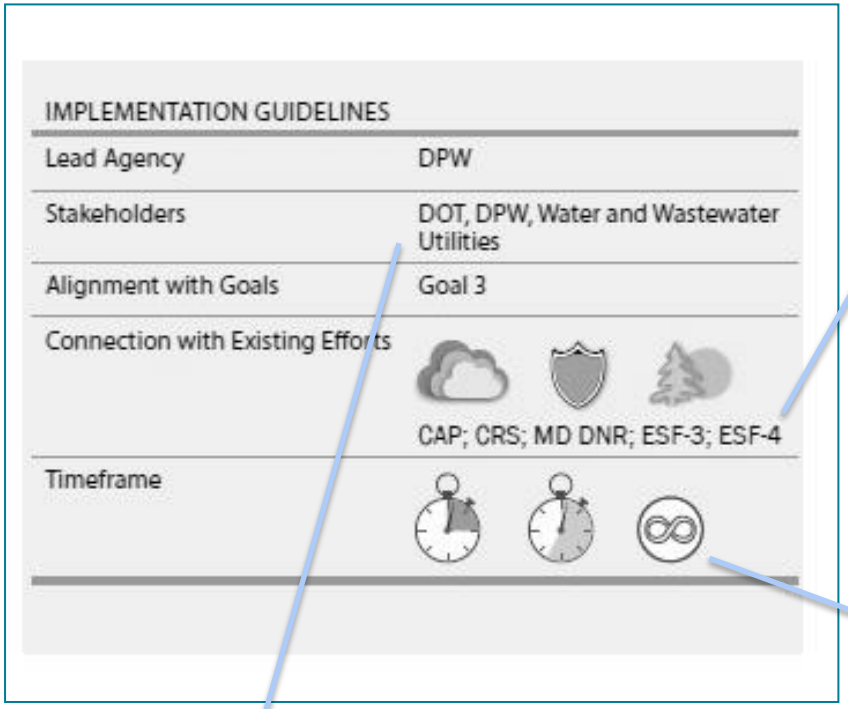
- Sustainability Plans
- Historic Building Retrofits
- Economic Development Plans
- Critical Facility Assessments
- Health Impact Assessments
- Emergency Response and Recovery Plans (ESF's)
- Water Management Plans

Crosswalk- Tedious but Effective

- Identify overlaps with existing planning efforts
- Prioritize Strategies and Actions with lead stakeholders

STRATEGY NUMBER	STRATEGY	ACTION	Water a	C1	C2	C3	PP1	PP2	PP3	PP4	PP5	RC1	RC2	RC3	RC4	G1	G2	G3	G4	T1	T2	T3	T4	T5	EA1	EA2	EA3	EA4	GE1	GE2
		Review and revise storm drain design on a continuous basis, to accommodate projected changes in intense rainfall							x				x																	
IN-17	Modify urban landscaping requirements and increase permeable surfaces to reduce stormwater runoff	Support existing stormwater requirements and continue to evaluate and improve Best Management Practices							x				x			x			x										
		Encourage urban landscaping requirements and permeable surfaces into community managed open spaces							x				x			x		x	x										
		Utilize water conservation elements such as green roofs, rain gardens, cisterns, and bioswales on residential, commercial, industrial, and City-owned properties to capture stormwater							x				x			x		x	x										
		Encourage permeable paving on low-use pathways							x				x					x	x										
IN-18	Evaluate and support DPW's stream maintenance program.	Review and improve status of standing maintenance requirements			x				x										x										
		Ensure adequate funding is in place to support stream maintenance			x				x										x										
		Identify opportunities where stream restoration efforts will off-set maintenance costs			x				x										x										
		Identify interdependencies and benefits of stream maintenance with other transportation programs			x				x										x	x	x	x	x	x						
		Clear streams on a regular basis, prioritize dredging the stream beds, and increase inspection and cleaning of culverts and storm drains to prevent flooding		x	x				x										x										
IN-19	Support and increase coordination and information sharing across jurisdictions to better enable mitigation of cross-border impacts on the regions watersheds (e.g., understanding flood conditions upstream in the County)	Partner with local counties to evaluate major tributaries in all watersheds to determine best management practices for capturing run-off and slowly releasing it (stormwater quantity management)							x				x						x										
		Encourage information sharing within the Chesapeake Bay community to assist in developing best management practices							x				x						x										
IN-20	Reevaluate and support a comprehensive debris management plan for hazard events	Investigate best practices for managing and disposing of downed trees, yard waste, building debris, as well as additional household garbage		x	x									x															
		Expand and integrate existing programs to reduce or intercept debris before it gets into the streams and harbor		x	x									x															
		Develop and promote solid waste management actions for citizens to implement before a hazard event		x	x									x															
		Incorporate consideration of hazards and climate adaptation efforts into all plans, systems,		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Proactively Identify Connections



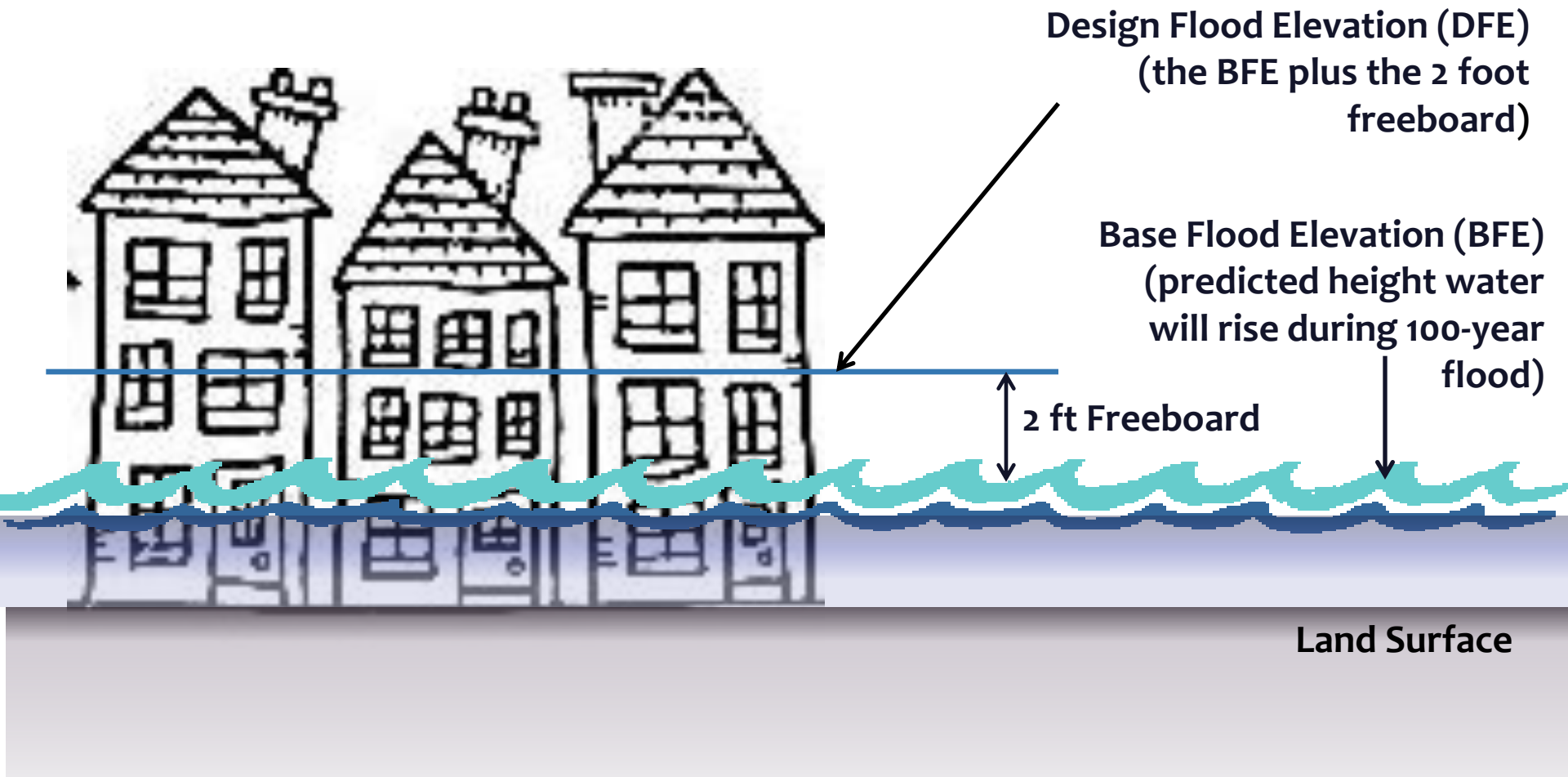
Show how easily climate and equity INTEGRATE into other department and stakeholder priorities and actions.

Provide TIMELINES and METRICS for success so you can be held accountable. If possible, connect these to budgeting and larger city goals

Support what other departments and partners are already doing but ENHANCE it

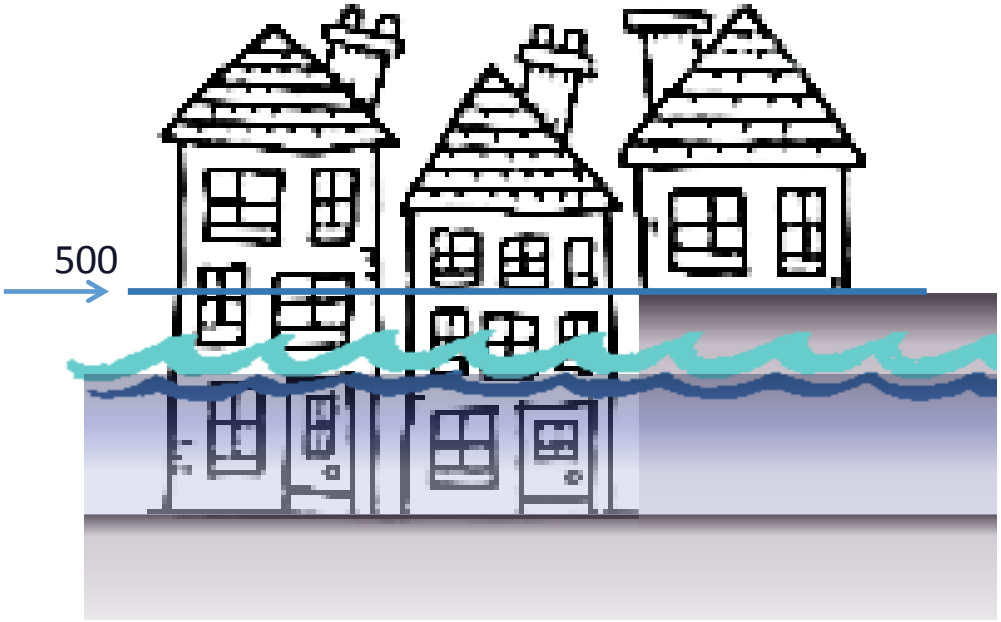
IMPLEMENTATION

Example- Floodplain Code

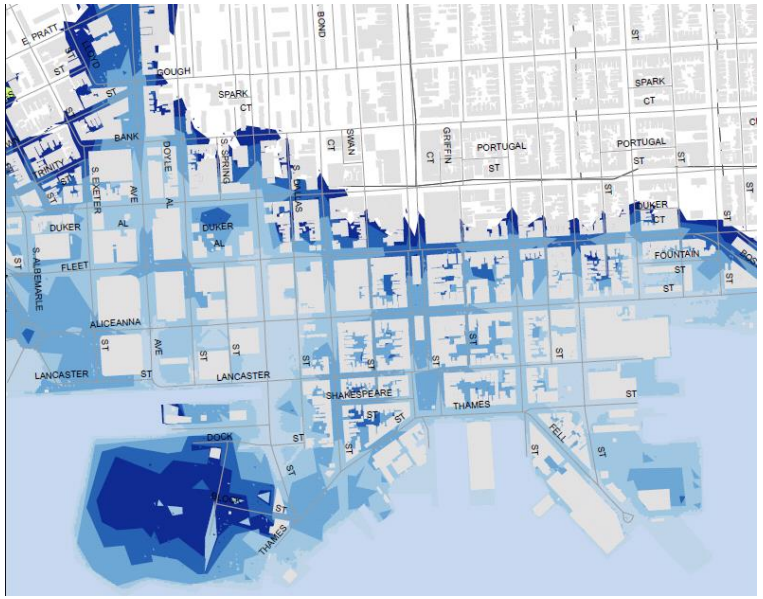


Higher Regulatory Standards

- Regulate to the HEIGHT and the EXTENT of the 500 year floodplain
- Utilize ASCE-24 - building categories (critical facilities)



Height



Extent

Big Changes in Insurance

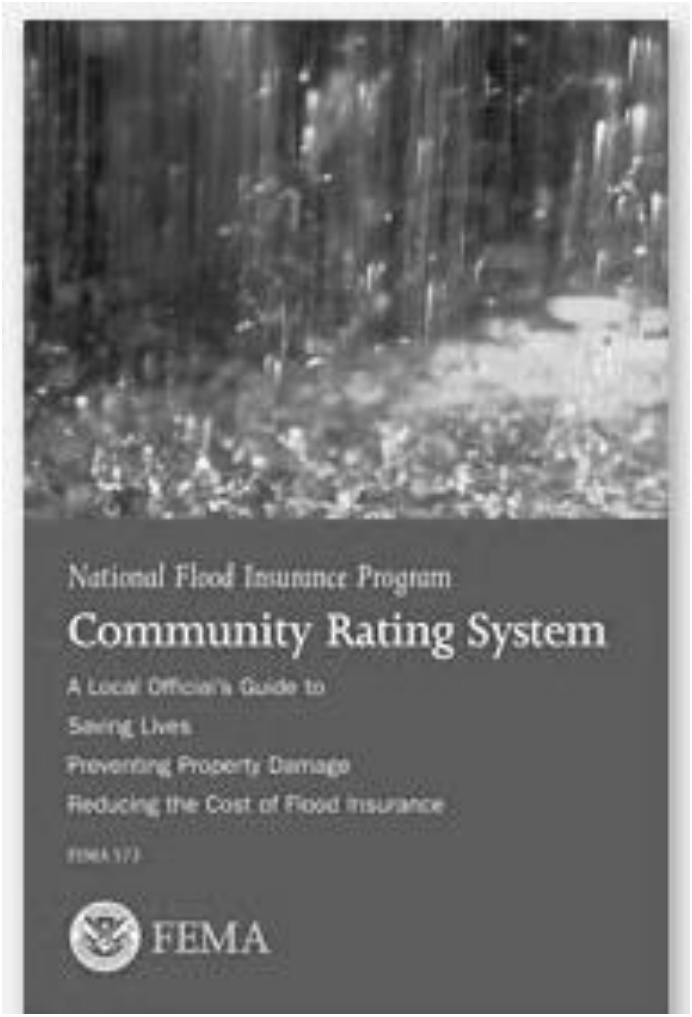
Biggert-Waters Flood Insurance Reform Act of 2012

- Intended to phase in increases in flood insurance rate for homes in flood zones
- Proposed loss of subsidies and grandfathered status

Homeowner Flood Insurance Affordability Act of 2014 (HFIAA)

- Repeal and modifies Biggert-Waters
- Slows some flood insurance rate increases
- Phases out subsidies for some older buildings in high-risk areas
- Insurance rates for these buildings will rise quickly until they reach full-risk rates
- All policyholders subject to new assessments and surcharges
- Increases annually

Community Rating System



Voluntary incentive program that recognizes and encourages floodplain management activities that exceed the minimum NFIP requirements.

Leads to reduced flood insurance rates to reflect the reduced flood risk

Reduces flood damage to insurable property and encourages a comprehensive approach to floodplain management.

Community Preparedness

Resiliency Hubs

Definition:
A Resiliency Hub consists of a building or set of buildings and neighboring outdoor space that will provide shelter, backup electricity, access to fresh water, and access to resources such as food, ice, charging stations, etc. in the event of an emergency.

Resiliency Hubs

Resiliency Hubs are locations that are used year-round. They are existing facilities that are trusted and well-utilized in the community. Not just in emergencies.

Training provided in CERT

Currently working on pilot hubs in Washington DC, Baltimore, Richmond and Philadelphia.

Energy Projects

Residential

- Identify neighborhoods most vulnerable to impacts from climate change
- Pilot project: solar on row houses in low income area & include weatherization and cool roof installation

Private

- **Mr. Trash Wheel-** On a sunny day, the water wheel can produce 2500 watts of electricity a day. It also collects over 500 tons of trash per year.
- **Industrial Partners-** white roof and solar panel installation on large industrial roofs

Critical Facilities

- Solar and battery back up on wastewater treatment facilities and other critical facilities

Greening Projects

Green Infrastructure

Green Infrastructure as part of a comprehensive strategy for rebuilding and improving a city. Provides economic, environmental, and social benefits.

Vacant Lots

Vacants Lots as Assets
Demolishing vacant, blighted buildings and creating new community supported and managed green spaces

Stormwater Management

Resiliency & Restoration

- Stream Restoration
- Stormwater Capture Systems
- Impervious Surface Removal
- Erosion Control
- Backflow Prevention Devices
- Wastewater Treatment Plants
- Blue Alley Projects
- Replace and upgrade pipes

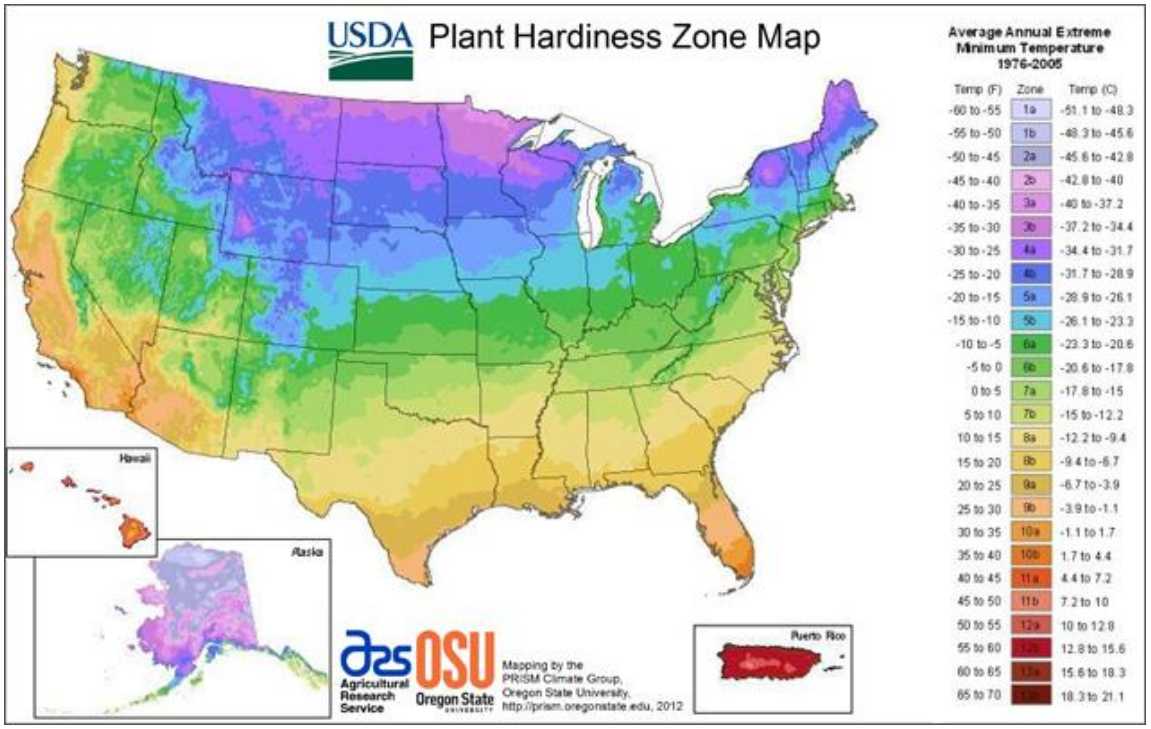
Hardiness Zone Changes

Tree Species Database

- Species that thrive in new conditions on climate factors
- Maintenance and soil requirements & planting specifications

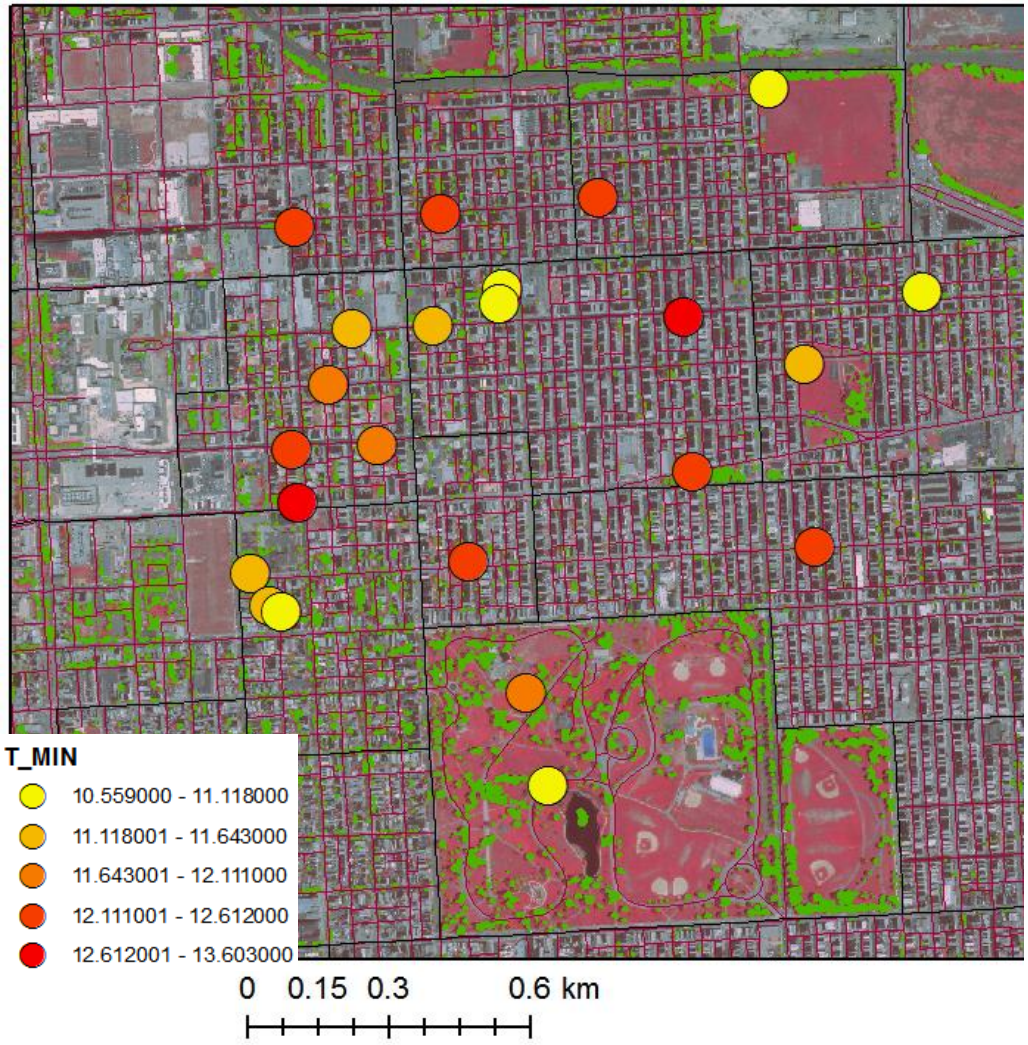
Agriculture

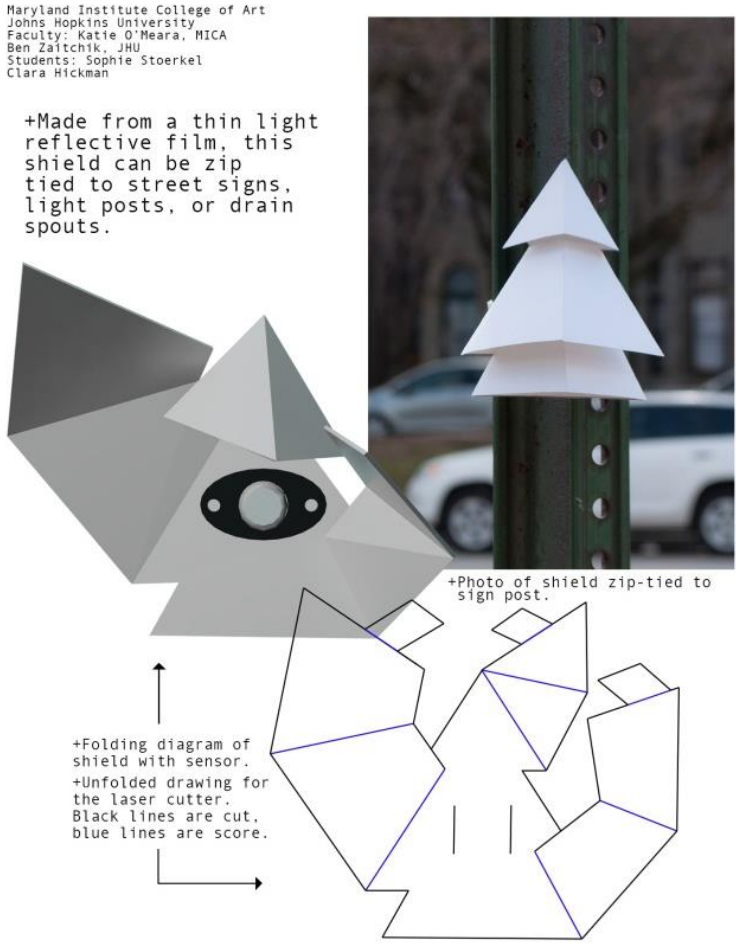
- What we grow and plant now may change
- Pests and other threats



Urban Heat Island Sensors

Minimum Temperature (^{O}C)





INTEGRATION

Integration into Plans and Frameworks

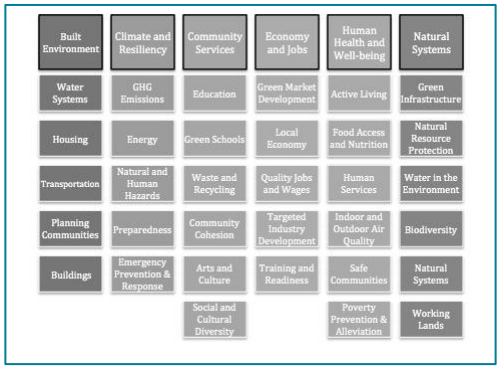
CIP

- Developed a resiliency checklist for projects that request CIP funding (Boston, Baltimore, Seattle)
- Identify how each project will help reduce risk and improve the city's ability to adapt and respond to natural hazards

STAR CRS

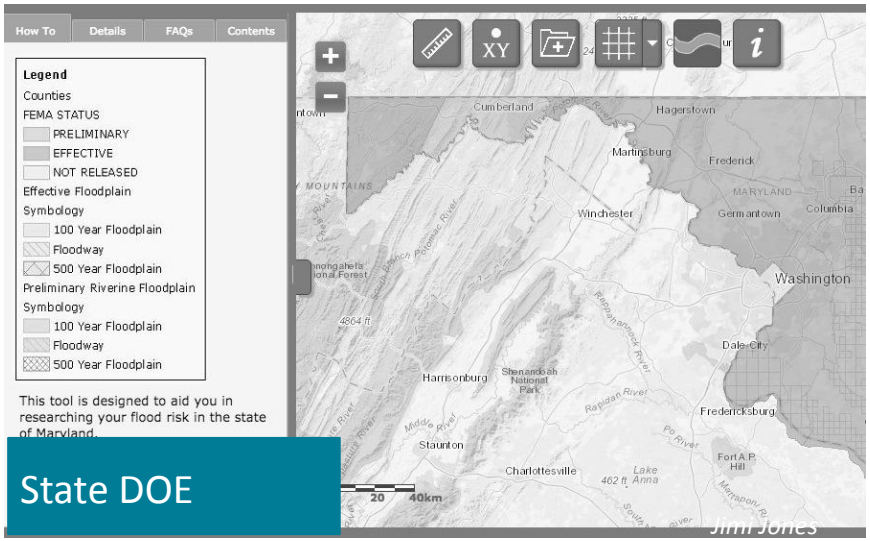
- STAR Community Rating System (Annapolis, Fredrick)
- Opportunities to connect climate, sustainability and equity into other city departments and establish metrics that compare to other cities

Plan Framework



- Use Equity as a lens for planning and implementation
- Integrate future climate trends into considerations, decisions and metrics

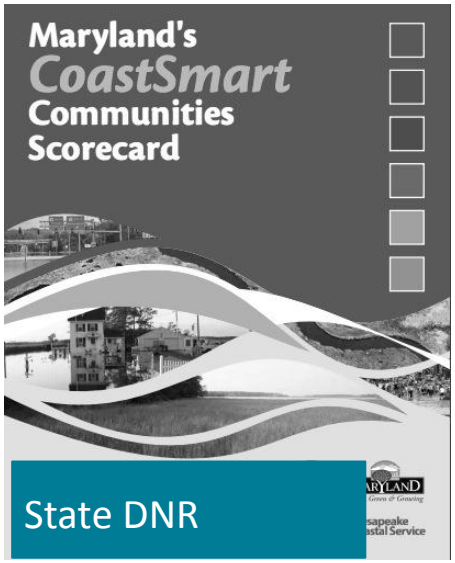
Connect to State Resources and Tools



State DOE

MD Flood Maps

Digital Flood Insurance Rate Maps (DFIRMs) enhance the ability to plan, permit and assist with insurance applications

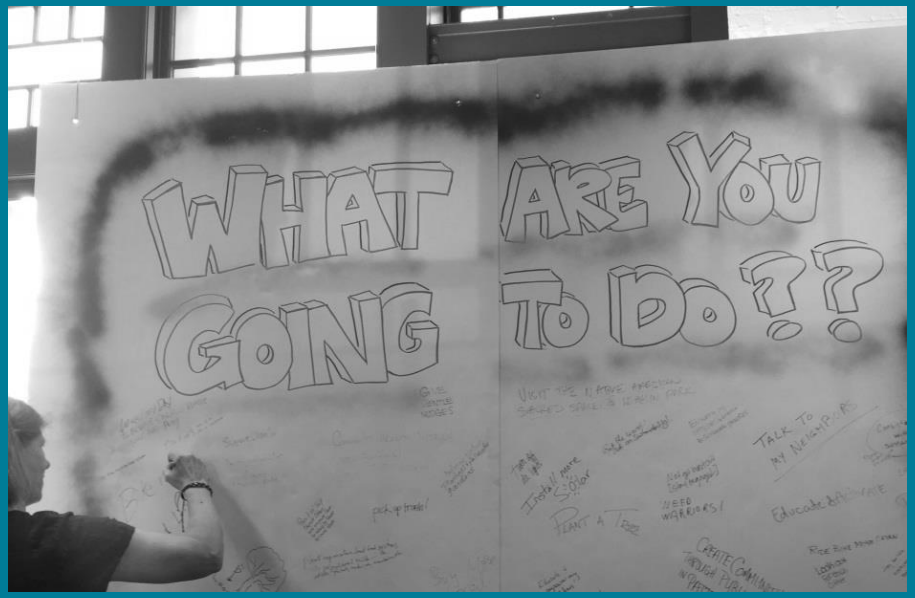


State DNR

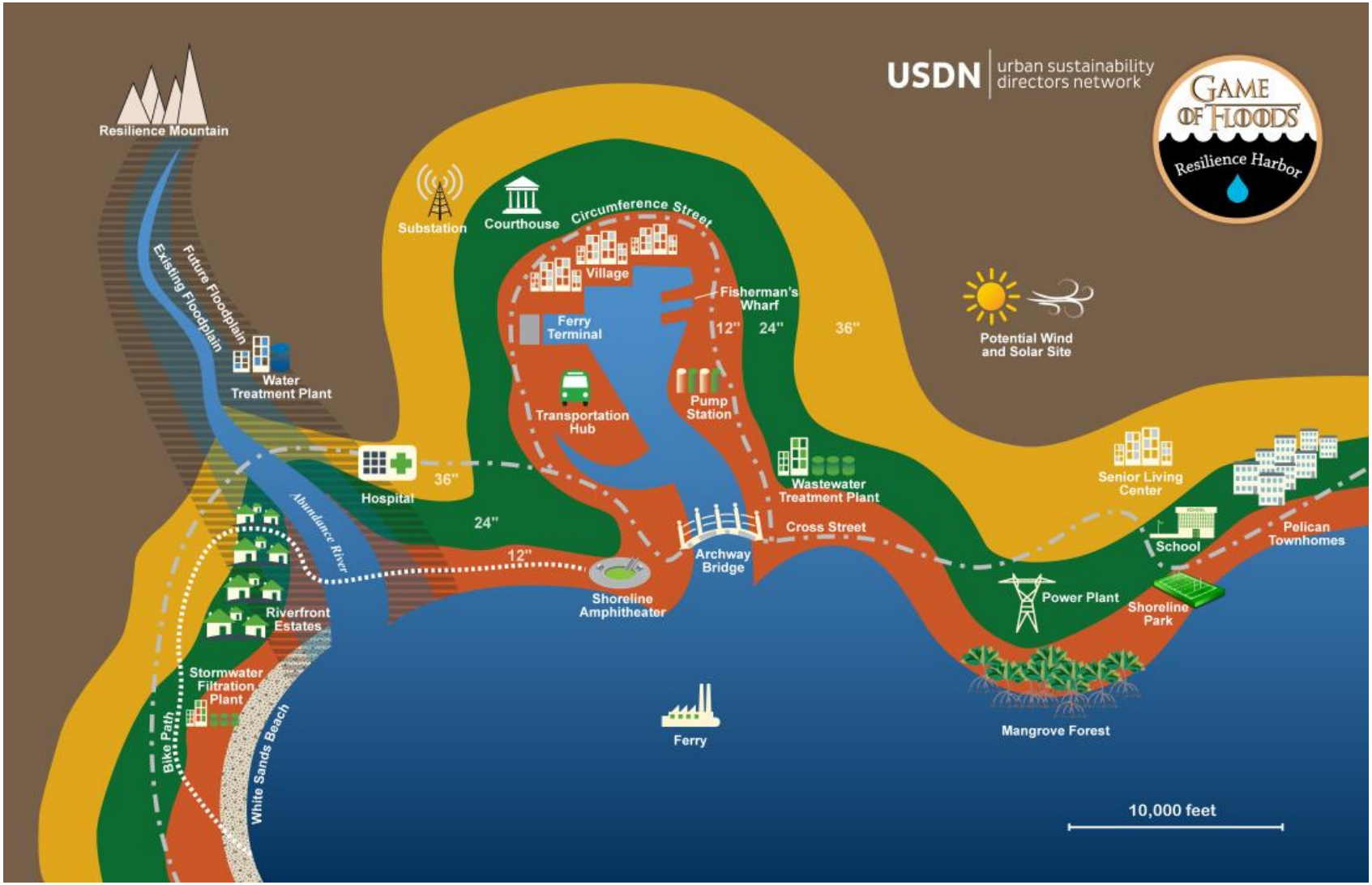
MD Natural Resources

Programs and policies focused on climate mitigation and adaptation

COMMUNICATION AND TRAININGS



USDN Trainings with Games



USDN Trainings with Games

Team Scenario 1

Planning Horizon: 2050
Sea Level Rise: Mid range (12" by 2050)
Precipitation: 20% increase in precipitation intensity

Town History:
Originally settled by longline fisherman in the 1890s, the area became heavily farmed in the 1930s, and transitioned to a resort community during the economic boom of the 1980s. The town's economy is now based on a mix of technology-related industry, tourism, fishing, and agriculture.

Current Resident Population = 225,000

City Planning and Sustainability

Role: City Planner and Sustainability Director

You represent the interests of the Resilience Harbor Planning Department. It is your role to ensure the recommendations and decisions made ensure a safe, healthy, and sustainable path for Resilience Harbor to continue to grow and function in the face of future climate change.

Asset Condition Cards

Historic Courthouse

The Historic Courthouse is a registered landmark beloved by the community and frequently used for weddings. Because it is a historic structure, the building cannot be elevated or

Asset Condition Cards

Riverfront Estates

Originally settled in the 1890s by fishermen, the Estates neighborhood has tripled over the last two decades and now comprises 300 homes. Housing styles range from original Craftsmen to sprawling 1950s ranch homes to new, luxury vacation estates. This neighborhood is home to many wealthy residents. The Abundance River has overflowed its banks twice in the last decade, causing millions of dollars worth of damage.

Built gradually, 1890s-present.

Engagement- Remove Barriers

- Go to people (in locations they identify and trust)
- Partner with community leaders
- Provide transportation
- Provide food and beverages
- Provide childcare or activities for children
- Consider language barriers
- Translate the science and data – easy to understand
- Ensure any and all locations are ADA compliant

Engagement – Build Relationships

- Collect stories
- Approach all stakeholders with empathy
- Provide interactive and fun ways to engage
- Invite community members to participate on advisory committees or special interest groups
- Show that every voice is valued, heard and appreciated
- Continue to engage and re-engage
- Job and employment opportunities

Stories Count

Liked ▾ | Message | Save | ··· More ▾ | Contact Us

Every Story Counts

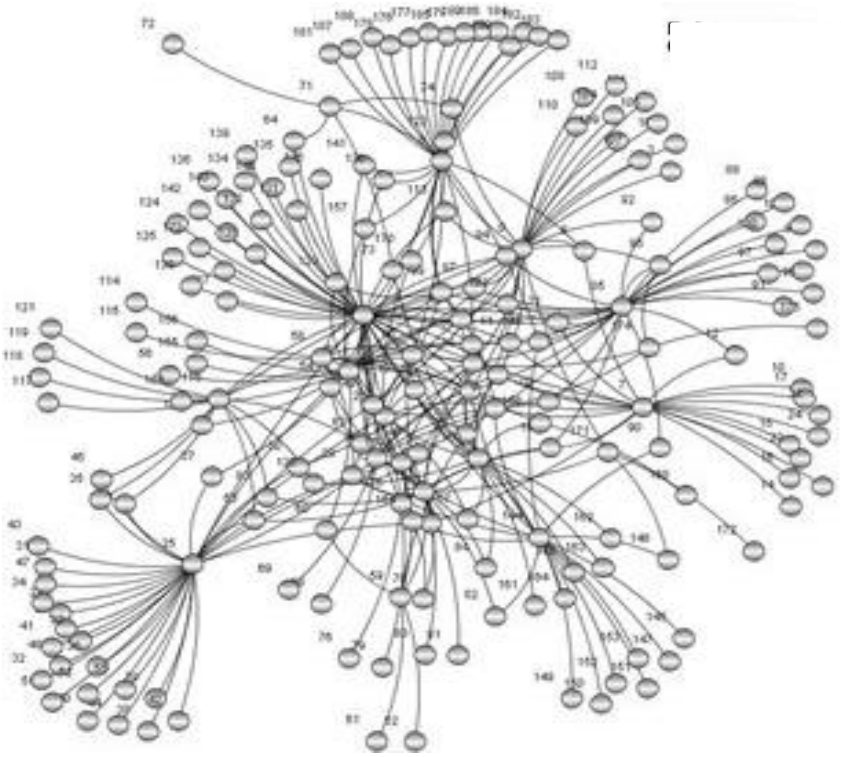
6 Photos · Updated 5 days ago

You don't have to be a climate scientist or city planner to create sustainability + resilience. Everyone has a story to tell about making Baltimore a stronger, fairer and safer place for all of us. Be a part of our Every Story Counts Campaign by sharing yours on Twitter or Instagram using the hashtag #EveryStoryCounts or #ItsAboutUs, or by sharing your words and pictures through our website at http://tiny.cc/everystory. Join the many people who've shared their stories already at http://tiny.cc/everystory so that the whole city can see how we're making a difference together, and so we can match you with the resources to do even more.




Community Ambassador Network

- People trust their own friends, family and community leaders more than government or institutions.
- Peer-to-peer network that is trained and supported on equity, climate and sustainability
- They recruit & recommend people who might be interested in engaging with their neighbors
- Provide stipends that value their time and efforts



Ambassador Support

TRAININGS

- One three-hour training required for each Ambassador
- Extra 90 minute training required for each Lead Ambassador
- Trainings on equity and sustainability
- Hosting three primary trainings with 25 participants maximum
- Interactive and engaging
- Paid if complete outreach

TOOLKITS

- Surveys
- Neighborhood-specific data & information
- Draft Presentations
- Suggestions for Engagement
- Suggestions for locations to engage with people

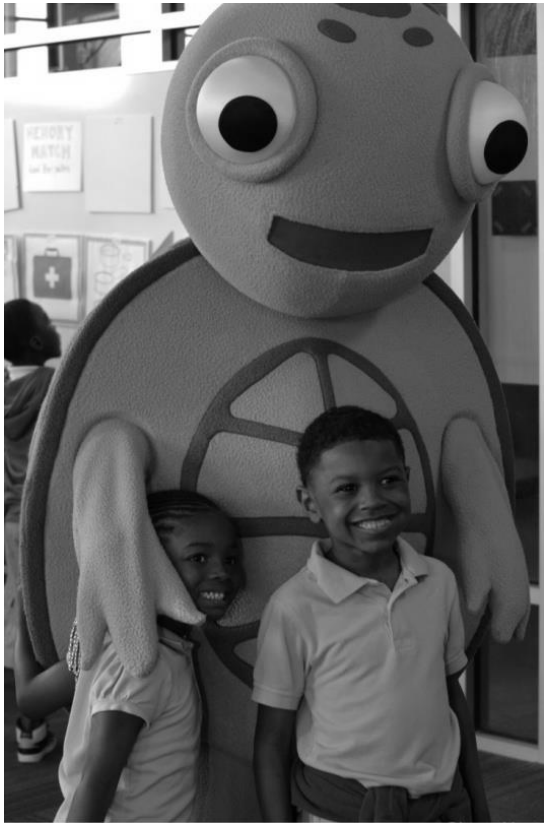
Climate Curriculum with Institutions

Partnership with Morgan State University and American Institute of Architects

Developed a year-long curriculum that integrates six different university departments and builds lessons all around a whole community resiliency approach

Launched on March 31, 2015

Involve Youth

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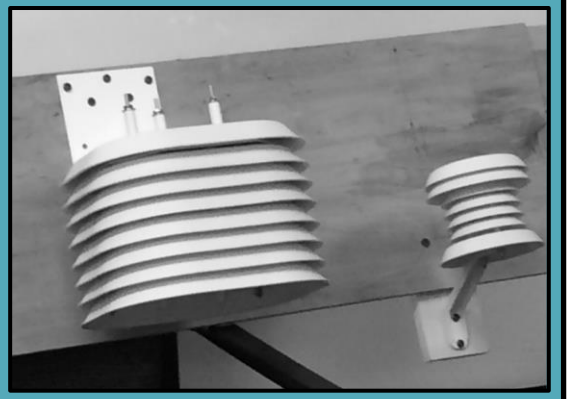
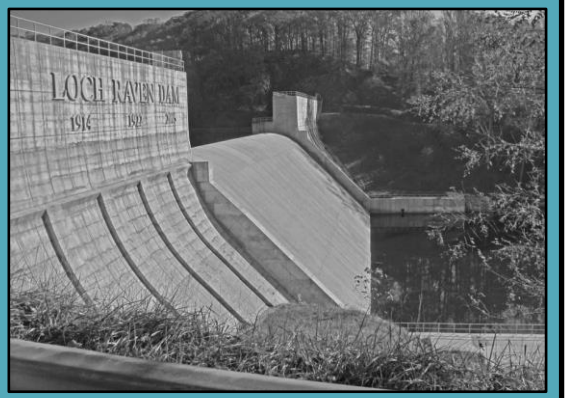
Partners

Non-Profits

Regional

Universities





State

Business & Private

Federal

Thank you!

Kristin Baja
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Urban Sustainability Directors Network (USDN)

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