



# Climate Adaptation Planning

*Climate Resilience Webinar Series*



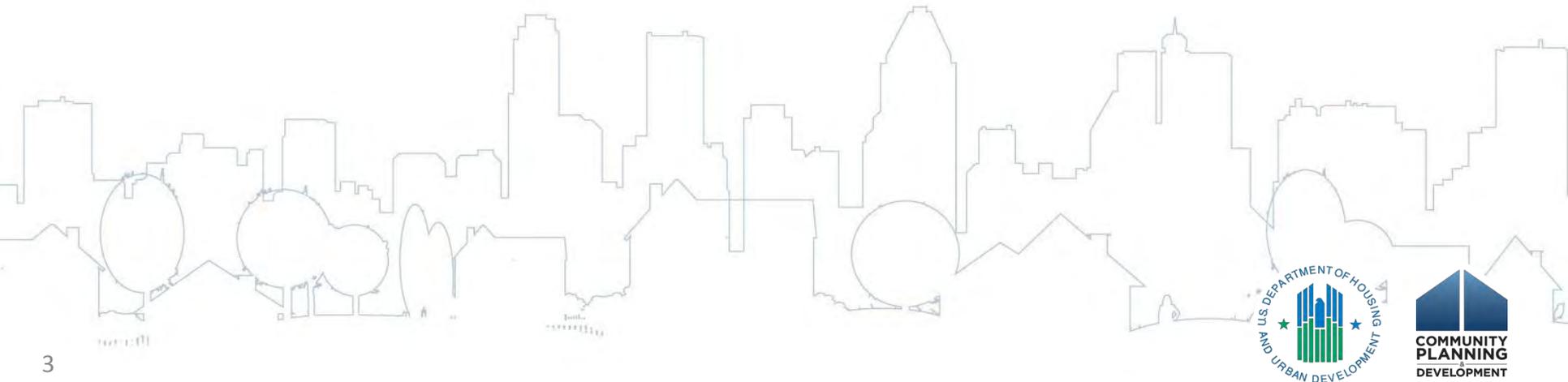
U.S. Department of Housing and Urban Development

# Disclaimer

- This presentation is intended to provide communities and states with the tools and information to help in climate resilience planning and activities.
- Information presented in this webinar is independent of the Notice of Funding Availability (NOFA) for the National Disaster Resilience Competition (NDRC). While we expect that this information will be useful to interested communities and eligible applicants, *it should not be construed as the definitive word on any singular approach to resilience.*
- No NOFA NDRC questions will be answered during this presentation.
- All NOFA NDRC questions should be sent to: [resilientrecovery@hud.gov](mailto:resilientrecovery@hud.gov)

# Presenters

- *Presenters*
  - *Brian Holland, ICLEI*
  - *Jessica Grannis, Georgetown Climate Center*
  - *Megan Susman, U.S. EPA*
  - *Karen Helbrecht, FEMA*



# Agenda

1. Introduction
2. Climate Adaptation Planning Overview
3. State and Local Best Practices
4. Sustainable Communities and Climate Adaptation Planning
5. Hazard Mitigation Plans
6. Questions

# Overview of Adaptation Concepts



**I.C.L.E.I.**  
Local  
Governments  
for Sustainability



# ICLEI Mission

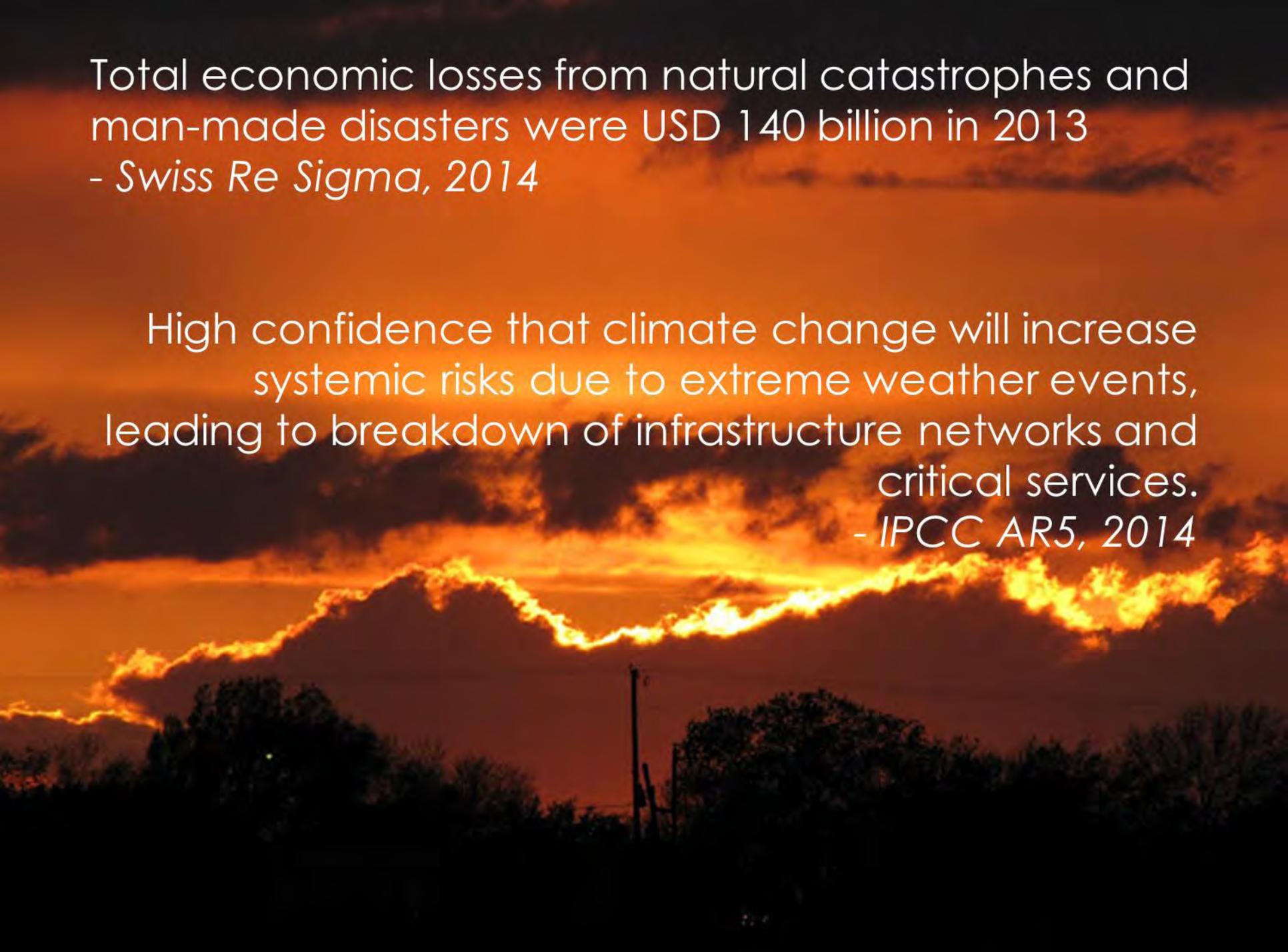
Our mission is to build, serve and drive a movement of local governments to advance deep reductions in greenhouse gas emissions and achieve tangible improvements in local sustainability.



# ICLEI Adaptation Program

- More than 1,000 member local governments worldwide
- Almost 300 members in the US
- Climate adaptation program started in 2008
- Guidebooks, case studies, software tool, pilot projects
- Leadership commitment campaign with NLC, WWF, USGBC





Total economic losses from natural catastrophes and man-made disasters were USD 140 billion in 2013  
- *Swiss Re Sigma, 2014*

High confidence that climate change will increase systemic risks due to extreme weather events, leading to breakdown of infrastructure networks and critical services.  
- *IPCC AR5, 2014*

# Preliminary Significant U.S. Weather and Climate Events for 2013

## DROUGHT

Drought conditions greatly improved across the Intermountain West, much of the Plains, and the Southeast. From January 1 to December 31, the percent area of the contiguous U.S. in drought shrank from 61.1% percent to 31.0%. Drought conditions worsened in the West.

## EXTREMES

CO had a year of extremes. In June, the Black Forest Fire destroyed over 500 homes near Colorado Springs, the most destructive wildfire in state history. In September record-breaking rainfall and flooding impacted the Front Range.

## DRY

CA had its driest year on record with 32.8% of average precipitation. The Rim Fire burned over 255,000 acres near Yosemite—the third largest fire on record in CA.

## WARM/WET

Alaska had its third wettest and 10<sup>th</sup> warmest year on record with a precipitation total 25.1% above average and a temperature 1.8°F above average.

## TROPICAL STORM

The remnants of Tropical Storm Flossie impacted HI in late July bringing up to 3 inches of rain. A tropical cyclone has not made landfall in Hawaii since Hurricane Iniki in 1992.

## WATER LEVELS

In early 2013, Lakes Michigan and Huron reached record low levels in the 1918-present period of record, according to the U.S. Army Corps of Engineers. All of the Great Lakes had water levels well below average.

## SNOW STORMS

Back-to-back winter storms impacted the central U.S. on February 20-23 and 25-28. Each storm system was responsible for dropping over one foot of snow across a large area.

## TORNADOES

On May 20, an EF-5 tornado hit Moore, OK destroying thousands of homes. 24 fatalities made this the deadliest tornado of 2013. A 2.6 mile wide, EF-3 tornado hit near El Reno, OK on May 31, causing eight fatalities; this was the widest tornado on record.

## TORNADOES

A late-season tornado outbreak on November 17 in the Midwest spawned over 70 tornadoes. IL, IN, and KY were the hardest hit, with seven fatalities reported.

## WET

Above average precipitation was widespread across the Southeast, Midwest and Northern Plains where numerous cities had their wettest year on record.

## HURRICANE SEASON

The North Atlantic Basin had 13 named storms, two hurricanes, and no major hurricanes. The number of named storms was above average, while the number of hurricanes was below average.

## SNOW

The spring snow cover extent for the contiguous U.S. was the 8<sup>th</sup> largest in the 47-year period of record. Many locations had more snow during the spring than the preceding winter season.



# Climate Adaptation/Preparedness Defined



Any action that reduces vulnerability to the actual or projected effects of climate change

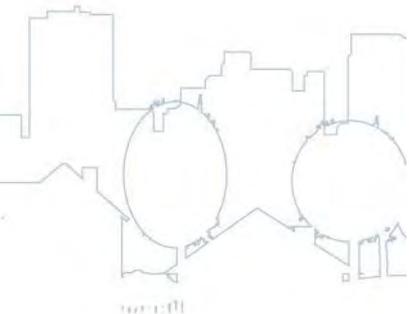


# Resilience Defined

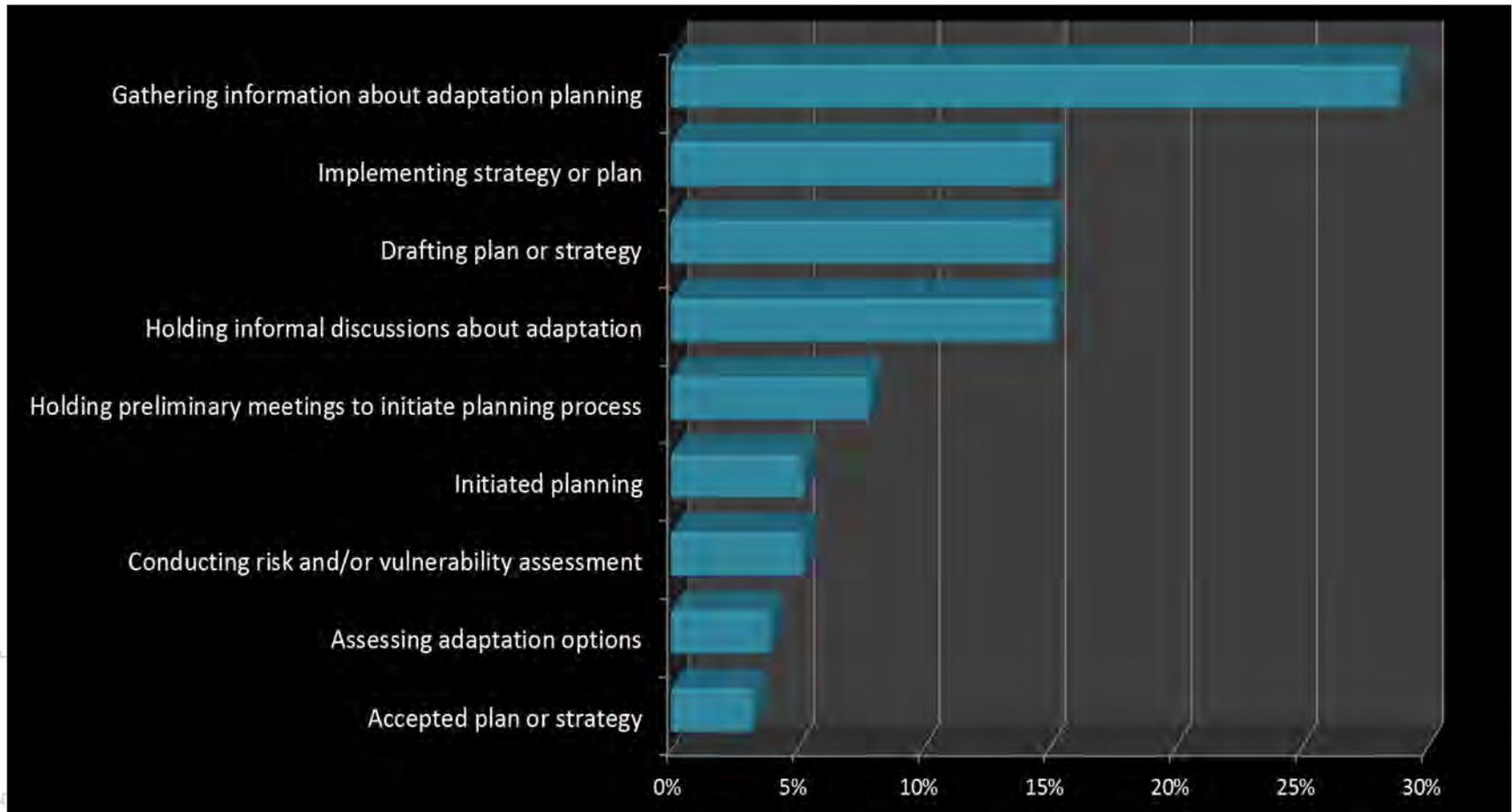
The ability to bounce back from disruptions in a sustainable way and maintain a good quality of life for all



# Five Milestones of Climate Preparedness



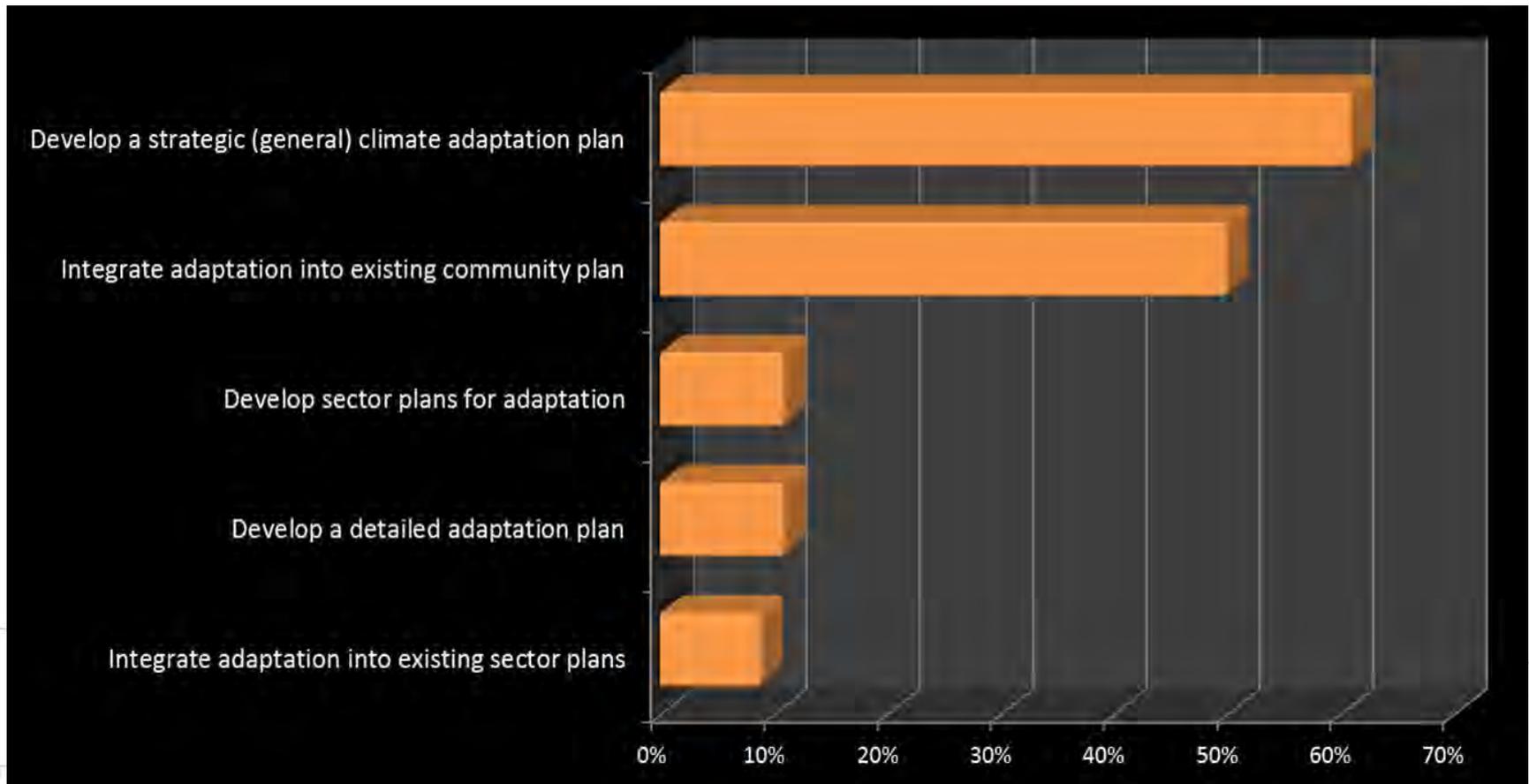
# Status of Adaptation Planning



JoAnn Carmin, MIT-ICLEI Urban Climate Adaptation Survey, 2012



# Approach to Plan Development



# Communities Integrating Climate Change into Local Mitigation Plans

## Communities

- San Diego County, CA
- City of Baltimore, MD
- Barnstable County, MA
- City of Lewes, DE
- City of Santa Cruz, CA
- Monterey County, CA



Barnstable County  
Cape Cod, Massachusetts

Multi-Hazard Mitigation Plan  
March 19, 2010

## The City of Lewes Hazard Mitigation and Climate Adaptation Action Plan



## CITY OF BALTIMORE

### Disaster Preparedness and Planning Project

A COMBINED ALL HAZARDS MITIGATION AND CLIMATE ADAPTATION PLAN

OCTOBER, 2013



# Resilient Communities for America Campaign



Championing the leadership of hundreds of local elected officials who commit to creating stronger, more prepared communities that can bounce back from extreme weather, energy, and economic challenges



# Signatories



**~200** top local elected officials (partial list)

Mayor Kevin Johnson, Chair

Mayor Vincent Gray

Mayor Mark Mallory

Mayor Michael Hancock

Mayor Tom Barrett

Mayor Sly James

Mayor Paul Fraim

Mayor Frank Cownie

Commissioner Kristin Jacobs

Mayor John P. "Jack" Seiler

Mayor Jean Quan

Mayor George Heartwell

Mayor Dawn Zimmer

Mayor Ralph Becker

Supervisor Salud Carbajal

Sacramento, CA

Washington, DC

Cincinnati, OH

Denver, CO

Milwaukee, WI

Kansas City, MO

Norfolk, VA

Des Moines, IA

Broward County, FL

Fort Lauderdale, FL

Oakland, CA

Grand Rapids, MI

Hoboken, NJ

Salt Lake City, UT

Santa Barbara County, CA



# Fundamental Concepts in Climate Adaptation

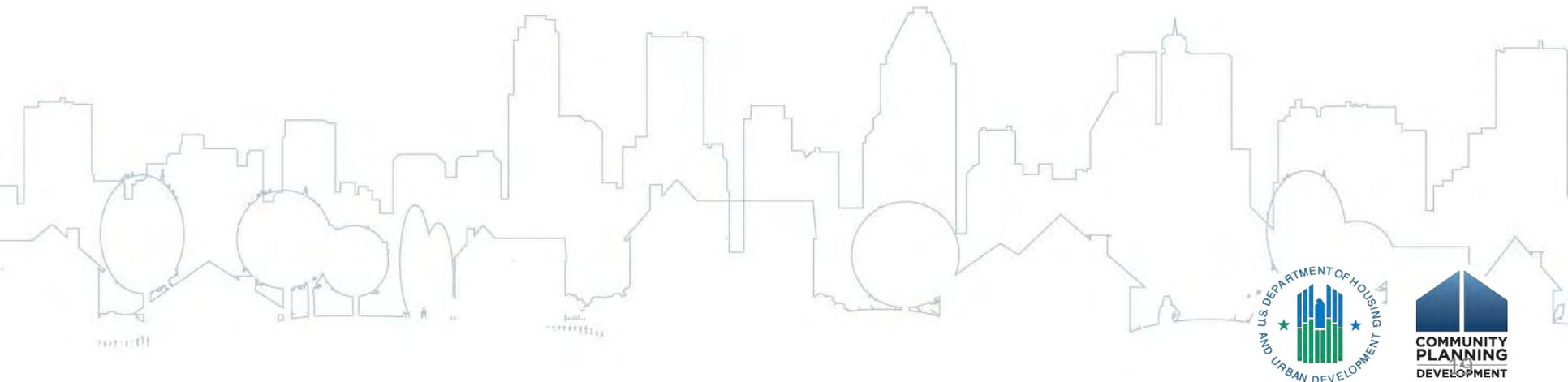


GEORGETOWN  
CLIMATE CENTER



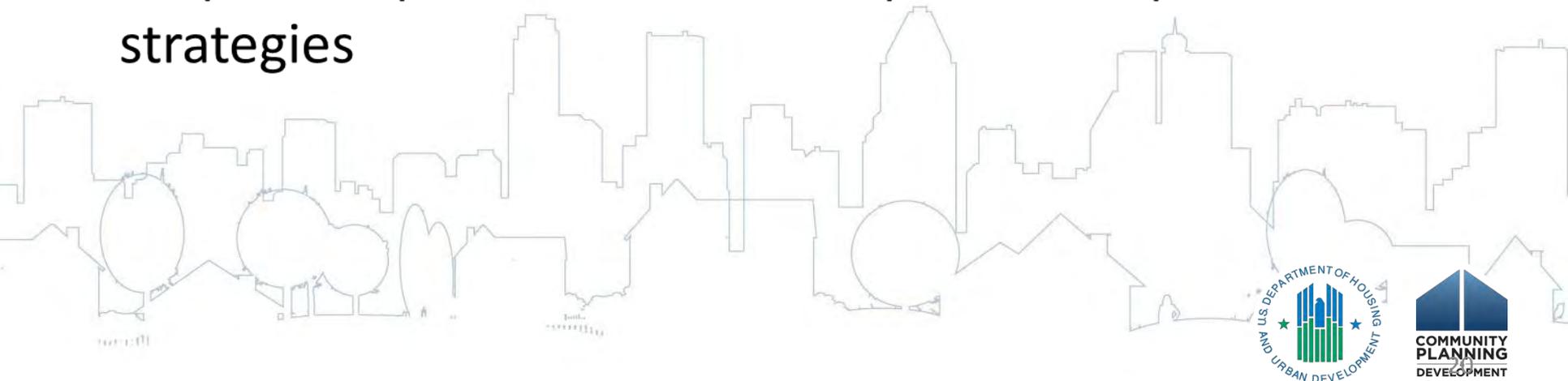
# Initiating an Adaptation Process

- Geographic / jurisdictional scope
- Scope of climate impacts
- Scope of sectors and assets
- Stakeholder identification and outreach



# Milestone 1: Vulnerability Assessment

- Provides information about the nature of the problem
- Identifies the assets affected by climate change impacts
- Narrows the focus by identifying specific locations or components of the system that are most vulnerable
- Helps to develop effective, targeted policy
- Helps with prioritization of adaptation responses strategies



# Components of Vulnerability

**Exposure**



**Sensitivity**



**Adaptive Capacity**



# Assessing Exposure

**Exposure** is a determination of whether assets will experience the impacts of sea level rise in specific locations. In many cases, exposure is a spatial analysis of the people, property, systems, and functions—that could be affected due to an impact of climate change.

## Legend

-  USGS 2010 Storm
-  USGS 2010 Storm + 50 yr SLR
-  USGS 2010 Storm + 100 yr SLR

 City of Los Angeles Boundary

Note: Sea Level Rise (SLR)  
0.5 m for 50 yr  
1.4 m for 100 yr



# Assessing Sensitivity

**Sensitivity** is the degree to which assets would be **impaired** by the impacts of sea level rise if they were exposed. Systems that are greatly impaired by small changes in sea levels have a high sensitivity, while systems that are minimally impaired by the same small change in sea level have a low sensitivity.



# Assessing Adaptive Capacity



**Adaptive capacity** is the ability of an asset to make adjustments or changes in order to maintain its primary functions when exposed to sea level rise impacts. This does not mean that the system must look the same as before the impact, but it must provide the same services



# Sensitivity

Low → High

# Adaptive Capacity

Low



High

**Low  
vulnerability  
Lower Priority**

**High vulnerability  
Higher Priority**



# Risk Assessments

Identification and analysis of uncertainty in decision-making

$$\textit{Risk} = \textit{probability} \times \textit{consequences}$$

Climate change is a classic problem of uncertainty:

- Emissions scenarios
- The effect of emissions on global climate
- Regional climate projections
- The effect of climate change on physical attributes like regional sea level
- The effect of climate change on extreme events
- Timing, severity, systems interactions



# Planning

## Steps in the process:

- 1) Develop guiding principles, goals and evaluation criteria that will be used to evaluate potential strategies
- 2) Assemble a suite of potential strategies that address key vulnerabilities
- 3) Calibrate potential strategies to respond to risk assessment
- 4) Evaluate and prioritize strategies and develop recommendations
- 5) Engaging stakeholders to provide feedback



# Additional Resources

ICLEI USA

[www.icleiusa.org](http://www.icleiusa.org)

Resilient Communities for America

[www.resilientamerica.org](http://www.resilientamerica.org)

American Society of Adaptation Professionals

[www.adaptationprofessionals.org](http://www.adaptationprofessionals.org)

Georgetown Climate Center

[www.georgetownclimate.org](http://www.georgetownclimate.org)

Climate Adaptation Knowledge Exchange

[www.cakex.org](http://www.cakex.org)



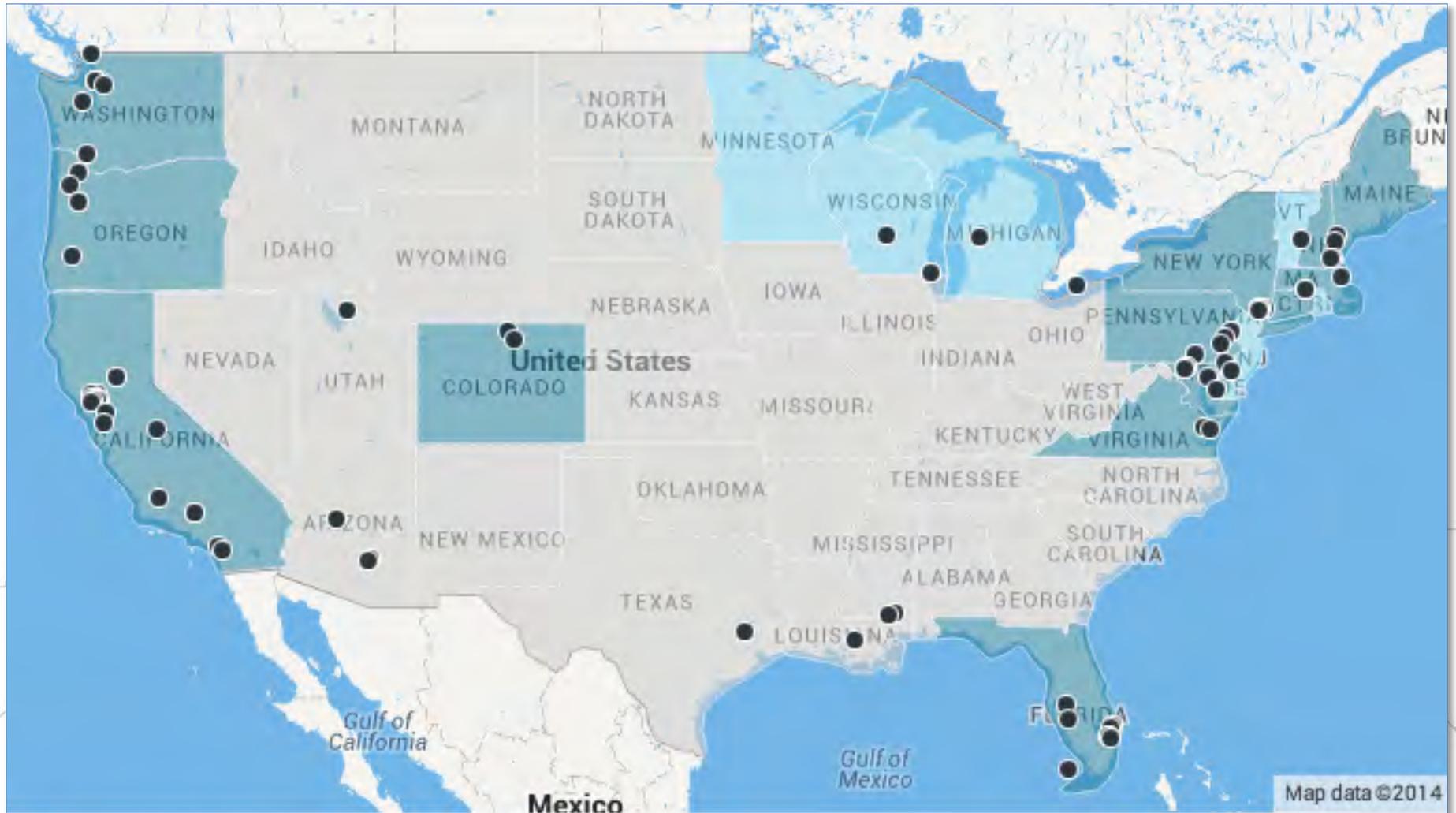
# Best Practices from the State and Local Level



GEORGETOWN  
CLIMATE CENTER



# State and local plans



■ State-Led Adaptation Plan Finalized   ■ Other State Planning Efforts Underway   ● Local and Regional Plans

# State adaptation progress tracker

Adapting to Climate Change

Clean Energy & Reducing Carbon Pollution

## Status of Maryland's Climate Change Preparations

On April 20, 2007 Governor Martin O'Malley signed Executive Order 01.01.2007.07, establishing the Maryland Commission on Climate Change and directing the Commission to create a Climate Action Plan. The Executive Order established the Adaptation and Response Working Group (ARWG) within the Commission to develop the adaptation portions of the state's Climate Action Plan. Maryland's Climate Action Plan includes two climate change adaptation strategies that are currently being used to guide state-level adaptation planning efforts.

The first strategy (Phase I), titled "Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase I: Sea-level rise and coastal storms," was published on September 12, 2008. The Phase I Strategy, makes up Chapter 5 of Maryland's Climate Action Plan, and addresses the covers effects of sea-level rise and coastal storms on: existing and future built environment and infrastructure; the economy; human health, safety and welfare; and natural resources. It makes recommendations to state lawmakers and policy makers for strategies to mitigate impacts from sea-level rise and coastal storms.

The second strategy (Phase II), is titled "Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: building societal, economic, and ecological resilience" and was published on January 24, 2011. The Phase II Strategy addresses changes in precipitation patterns and increased temperature, and the likely resulting impacts to six sectors: human health, agriculture, forest and terrestrial ecosystems, bay and aquatic environments, water resources, and population growth and infrastructure. It details the findings and recommendations of the ARWG and the Scientific and Technical Working Group on each of the six sectors. Each sector assessed climate change vulnerabilities, and recommended adaptation strategies for the State of Maryland.

Close



VIEW STATE ADAPTATION PLAN STATUS



VIEW ALL COMPLETED GOALS

Maryland



Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change - Phase I: Sea-level rise and coastal storms

Adopted: July 2008



3 out of 20 Goals Completed

16 out of 20 Goals in Progress

Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change - Phase II: Building societal, economic, and ecological resilience

Adopted: January 2011



2 out of 154 Goals Completed

92 out of 154 Goals in Progress

# State adaptation progress tracker

## Sector Adaptation Goals in Progress or Completed

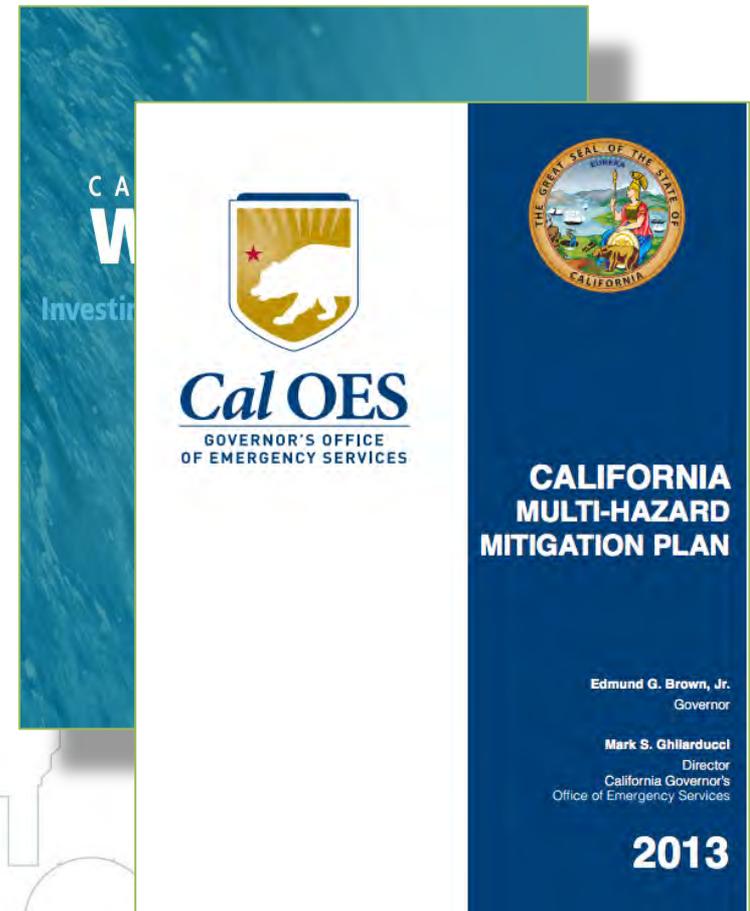
Get a quick view of the progress Maryland is making to prepare for climate change in different areas below. The first number includes goals **in progress or completed** in both of Maryland's state adaptation plans. The second number reflects the total number of goals in each area. For a more detailed look at progress [click here](#) or click on one of the sector buttons below.



## State Law and Policy

Resource Name	Resource Type	Date
Maryland HB 118: Bay Acidification Bill	Law and Governance	May 5, 2014
Maryland HB 615: Coast Smart Council Bill	Law and Governance	May 5, 2014

# State adaptation plan: *California*



# State planning to local action:

## *Cal-Adapt*

### Video Tour

VIEW THE DIFFERENT TOOLS AND DATA AVAILABLE IN CAL-ADAPT



### Explore Climate Tools

INTERACTIVE MAPS & CHARTS



### About Cal-Adapt

-  WHAT'S NEW?
-  WHAT'S TO COME?
-  FAQs

### Access Data

ACCESS THE RAW DATA USED IN CAL-ADAPT



Select and download data in a variety of tabular and GIS formats

### Resources

INFORMATION, ARTICLES & LINKS



Find out more about how climate change in California is relevant to your community

### Community

PARTICIPATE IN COMMUNITY BASED TOOLS AND ACTIVITIES



Find out how you can share your thoughts and findings, communicate with experts, and help to collect new data

 Tweet 273  Like 451

# State planning to local action

## *California Planning Guidance*

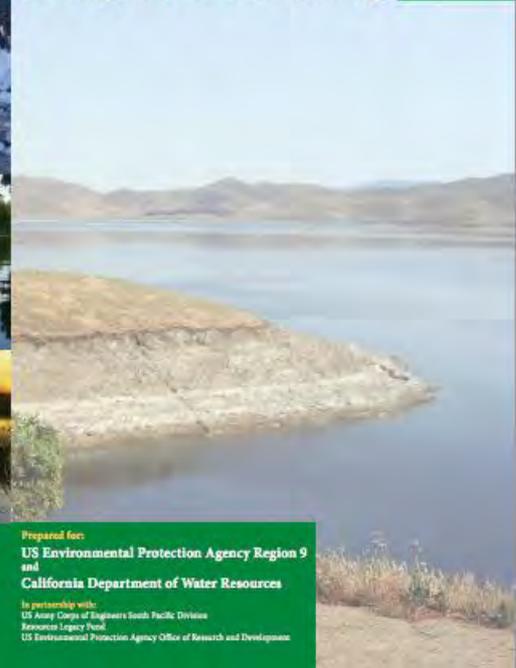
### 2009 CALIFORNIA CLIMATE ADAPTATION STRATEGY

A Report to the Governor of the State of California  
in Response to Executive Order S-13-2008



### CALIFORNIA ADAPTATION PLANNING

### Climate Change Handbook for Regional Water Planning



Prepared for:  
EPA  
US Environmental Protection Agency Region 9  
and  
California Department of Water Resources

In partnership with:  
US Army Corps of Engineers South Pacific Division  
Resource Legacy Fund  
US Environmental Protection Agency Office of Research and Development



# Regional adaptation planning:

## *South East Florida*



### A Region Responds to a Changing Climate

Southeast Florida Regional Climate Change Compact Counties

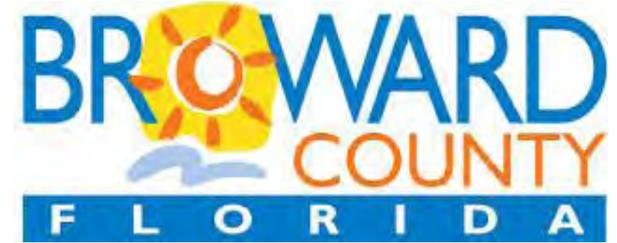
Regional Climate Action Plan

October 2012



# Mainstreaming adaptation:

## *Broward County's Comprehensive Plan*

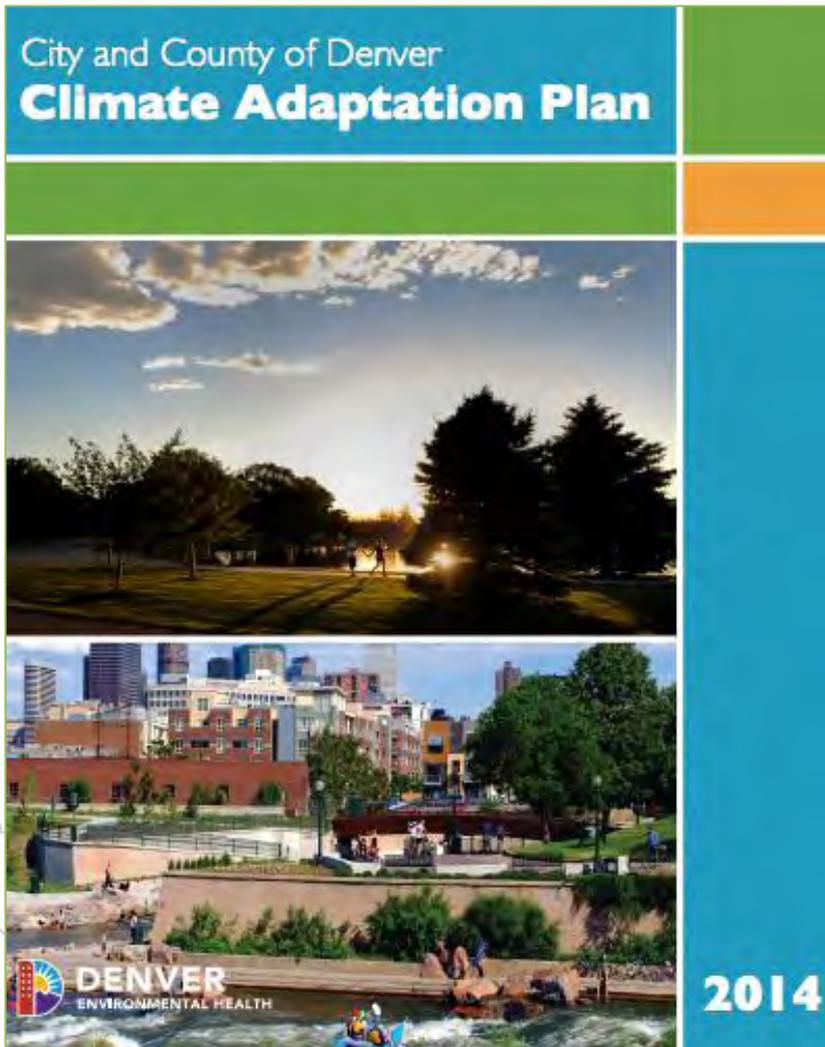


- Elevate buildings for SLR
- Design buildings to be more resilient to extreme storms
- Reevaluate zoning
- Consider SLR in public investment decisions



# Local adaptation planning:

*Denver, CO*



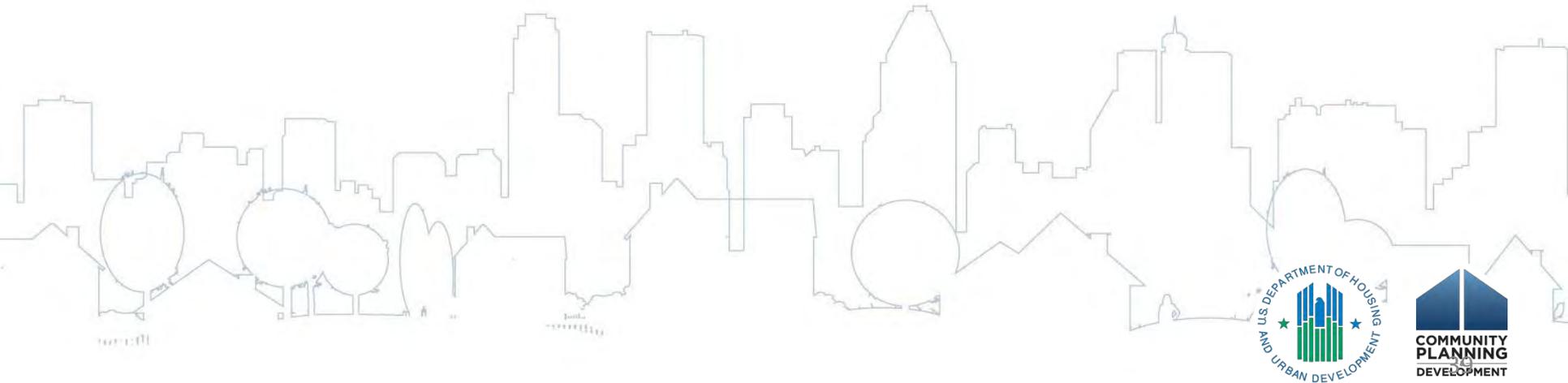
- Buildings and Energy
- Health
- Land Use & Transport
- Natural Resources
- Water
- Food and Ag



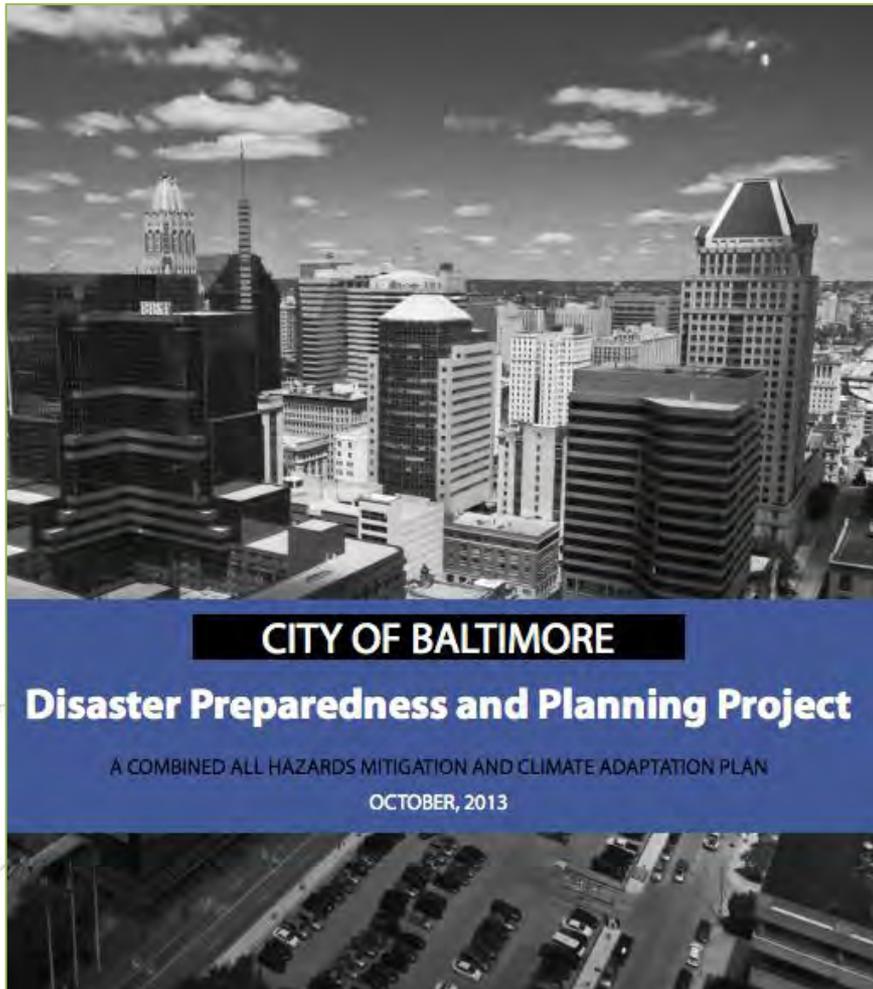
# Local adaptation planning:

## *Denver, CO – short term actions*

Climate Impact	Vulnerability	EMS Activities	Responsible Agency	Agency Plan
Increase in temperature and urban heat island effect	Stress on trees and urban landscaping	<ol style="list-style-type: none"> <li>1) Publish and begin the outreach of the Metro Denver Urban Forest Assessment</li> <li>2) Initiate a contract to inventory existing trees within the City in preparation for a Tree and Shade Master Plan</li> <li>3) Update the right-of-way tree list that focuses on trees that can thrive in future climates</li> </ol>	Department of Parks and Recreation	<p>Metro Denver Urban Forest Assessment</p> <p>Tree and Shade Master Plan</p> <p>Right-of-Way Tree List Storm</p>



# Mainstreaming adaptation: *Baltimore's Hazard Mitigation Plan*



## IMPLEMENTATION GUIDELINES

Lead Agency	MOEM
Stakeholders	BCRP (Forestry), BGE, Building Owners, DGS, DOT, DPW, Exelon, PSC, Utility customers, Veolia, Wheelabrator
Alignment with Goals	Goals 2 and 3
Connection with Existing Efforts	 Building Standards and Zoning Codes; CAP; ESF-12; MDNR
Timeframe	



# Mainstreaming adaptation: *Boston's adaptation checklist*



# Mainstreaming adaptation: *San Francisco's Capital Improvement Planning*



Source: Climate Central



# Where to mainstream in state plans

- Hazard Mitigation Plans
- Transportation Plans
- State Wildlife Action Plans
- Drought Plans
- Emergency Response Plans
- Economic Development Plans



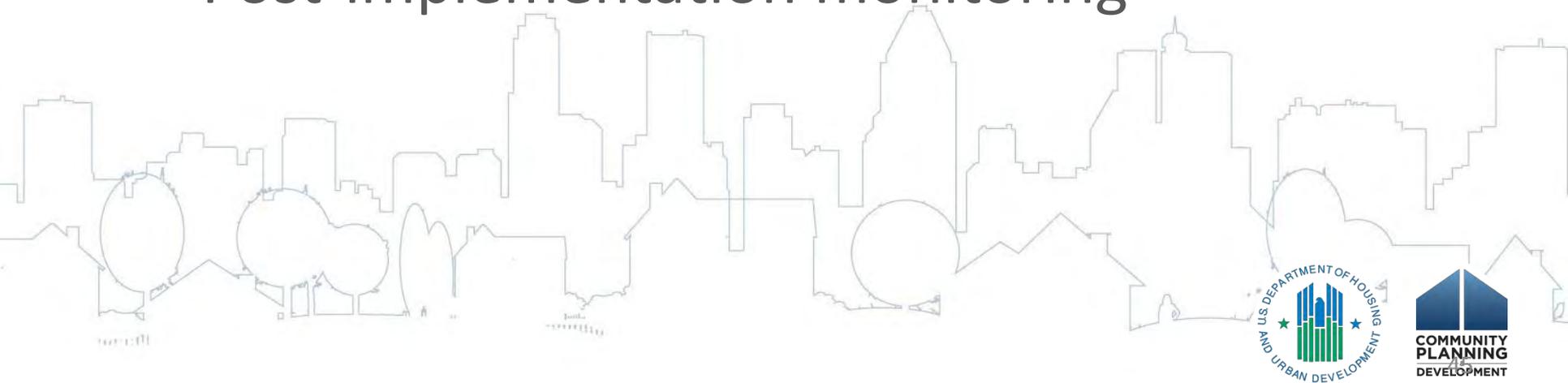
# Where to mainstream in local plans

- Land Use Plans (e.g., comprehensive plan)
- Hazard Mitigation Plans
- Transportation Plans
- Capital Improvement Plans
- Emergency Preparedness Plans
- Water Management Plans
- Urban Forestry Plans
- Extreme Heat Plans



# What makes a good plan

- Implementable actions
- Specified actors
- Timelines for action
- Progress reports
- Post-implementation monitoring



## Adaptation Clearinghouse™

Search by keywords

search

+ Click here to browse by resource type, sector, impact

Tap into the adaptation expertise of the Georgetown Climate Center and its partners. Find resources using the search, mapping, and browsing tools displayed on this page.

### Featured Policy Areas



Law & Governance



Sea-Level Rise



Urban Heat

### Sector Materials to Get You Started



Coasts



Public Health



Transportation



Water

### Find Adaptation Resources Near You



Get Resources

Select State

### Highlighted This Week

#### City of Chicago

When it comes to adapting to climate change, the City of Chicago continues to provide important leadership. The city's "Lead by Example Workplans" identify more than 470...



### Recently Added Resources

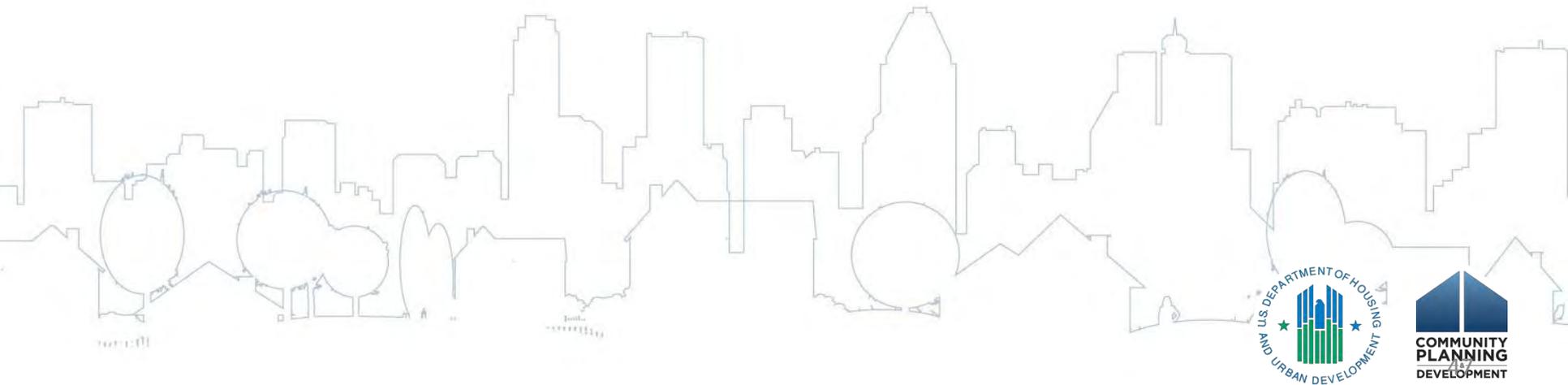
Climate Change Adaptation in New York City: Building a Risk Management Response  
The New York City Panel on Climate Change (NPCC) was convened by Mayor Michael Bloomberg in more...

Add to My List

# Resources

[Georgetown Climate website](#)

[Adaptation Clearing House website](#)



# Sustainable Communities and Climate Adaptation

U.S. EPA Office of Sustainable Communities



# Sustainable Communities

- Smart growth
  - Compact, walkable, mixed-use communities with a variety of housing and transportation choices
- Green building
  - Energy and water efficiency, renewable energy, environmentally preferable building materials and specifications, waste and toxics reduction, indoor air quality, site selection



# Sustainable Communities and Climate Adaptation

*Vulnerable populations (low income, elderly, children, chronically ill, overburdened, and minority) need particular attention.*

- Direct new development away from particularly vulnerable areas and toward safer areas that are well-connected to existing communities.
- Build compact, mixed-use, mixed-income development in safer places.
- Offer safe, appealing, affordable transportation options.
- Build water- and energy-efficient structures and neighborhoods.



# Sustainable Communities Strategies Might Help Overcome Political Obstacles to Climate Adaptation

- “No regrets” strategies – bring multiple short- and long-term benefits regardless of extent of climate impacts – improve everyday life
- Can often both reduce GHG and prepare for climate change
- Fiscally responsible; save people money
- Can help communities prepare for economic changes as well
- Can often be tied to regular community processes (e.g., regular zoning or building code updates)
- Development on the ground now will shape community for decades to come



# Sustainable Communities Strategies for Climate Adaptation

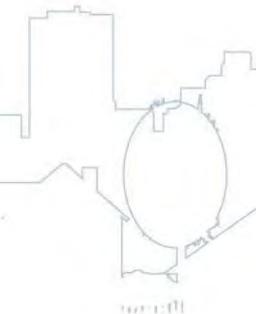
*First step: Vulnerability assessment to determine risks, which provides a baseline to consider and prioritize actions*

- Discourage new development in particularly vulnerable areas.
- Protect people and assets in vulnerable areas.
- Encourage sustainable growth in appropriate, less-vulnerable areas.



From *Using Smart Growth Strategies to Create More Resilient Communities in the Washington, D.C., Region* (EPA 2013)

	Adaptation Planning Stage			Most Relevant Sector	Relevant Hazards		
	Basic	Intermediate	Advanced		Temperature	Precipitation/ Severe Storms <sup>a</sup>	Sea Level Rise
<b>3 Discourage New Development in Particularly Vulnerable Areas</b>							
3-A	<a href="#">Evaluate Development Incentives Provided in Particularly Vulnerable Areas</a>	●		Land Use		☁	↻
3-B	<a href="#">Adopt Protective Regulations for Particularly Vulnerable Areas</a>	●		Land Use		☁	↻
3-C	<a href="#">Direct Development Away From Particularly Vulnerable Areas Within Individual Development Sites</a>		●	Land Use		☁	↻
3-D	<a href="#">Adopt or Adapt a Purchase or Transfer of Development Rights Program</a>			Land Use		☁	↻
3-E	<a href="#">Establish a Fund to Acquire or Protect Land in Particularly Vulnerable Areas</a>			Land Use		☁	↻
<b>4 Protect People and Assets in Vulnerable Areas</b>							
4-A	<a href="#">Improve Stormwater Management Approaches</a>	●		Water		☁	↻
4-B	<a href="#">Adapt Zoning and Building Codes to Evolving Risks</a>		●	Buildings	☀	☁	↻
4-C	<a href="#">Create Special Districts to Fund Retrofits and Upgrades for Public Buildings and Infrastructure</a>		●	Buildings	☀	☁	↻
4-D	<a href="#">Identify and Address Transportation System Vulnerabilities</a>		●	Transportation	☀	☁	↻
4-E	<a href="#">Implement Heat Island Reduction Strategies</a>		●	Buildings	☀	☁	
4-F	<a href="#">Streamline and Fund the Relocation Process</a>		●	Buildings		☁	↻
<b>5 Encourage Sustainable Growth in Appropriate, Less-Vulnerable Areas</b>							
5-A	<a href="#">Promote Compact, Mixed-Use Development</a>	●		Land Use	☀	☁	↻
5-B	<a href="#">Promote Infill Development in Appropriate Locations</a>		●	Land Use		☁	↻
5-C	<a href="#">Remove Roadblocks to Appropriate Development</a>		●	Land Use		☁	↻
5-D	<a href="#">Adopt Green, Complete Streets Design Standards</a>		●	Transportation	☀	☁	↻
5-E	<a href="#">Update Building Code Requirements</a>			Buildings	☀	☁	↻
5-F	<a href="#">Incorporate Passive Survivability Into New and Existing Projects</a>		●	Buildings	☀	☁	↻



OF HOUSING DEVELOPMENT



# Discourage New Development in Particularly Vulnerable Areas

- Evaluate development incentives provided in particularly vulnerable areas
- Adopt protective regulations
- Direct development away from particularly vulnerable areas on individual sites
- Adopt or adapt a purchase or transfer of development rights program
- Establish a fund to acquire or protect land in particularly vulnerable areas



# Protect People and Assets in Vulnerable Areas

- Improve stormwater management approaches
- Adapt zoning and building codes to evolving risks
- Create special districts to fund retrofits and upgrades for public buildings and infrastructure
- Identify and address transportation system vulnerabilities
- Implement heat island reduction strategies
- Streamline and fund the relocation process



Photo courtesy of Arlington County



# Encourage Sustainable Growth in Appropriate, Less-Vulnerable Areas

- Promote compact, mixed-use development
- Promote infill development in appropriate locations
- Remove roadblocks to appropriate development
- Adopt green, complete streets design standards
- Update building code requirements
- Incorporate passive survivability into new and existing projects



# Green and Complete Street Techniques

Decatur Street,  
Edmonston, MD

Streetlight with  
LED lighting

Sidewalk

Bike lane with  
pervious paving



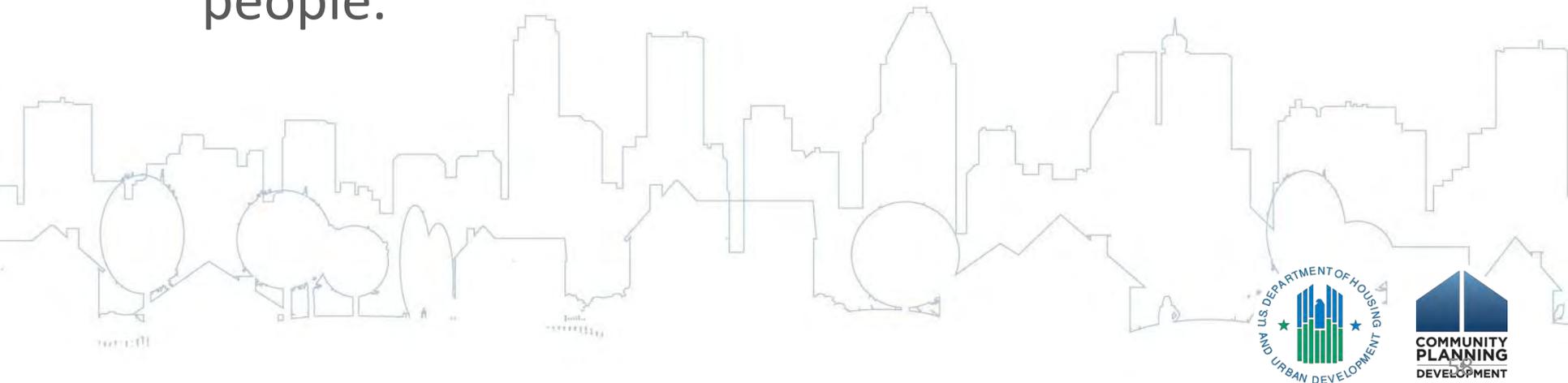
Trees to shade  
street and capture  
and slow rainfall

Rain garden to  
capture, absorb, and  
filter stormwater  
with curb cut to  
release filtered  
stormwater to sewer



# How to Implement Green and Complete Streets Techniques

- Adopt street design guidelines that include green infrastructure and amenities for bicyclists, pedestrians, and transit users.
- Adopt a Complete Streets policy.
- Pilot programs to show benefits and educate people.



# Passive Survivability and Green Building Techniques

Langston Brown School and Community Center, Arlington, VA

LEED Silver, 2003



Operable windows for ventilation

White roof to reduce heat island effect

Solar shades block sun in summer but allow it in in winter

Two 11,000-gallon cisterns collect rainwater for nonpotable uses

In a walkable neighborhood on several bus lines



# How to Implement Passive Survivability Techniques

- Prioritize buildings such as police and fire stations, critical infrastructure support facilities, hospitals, schools, and buildings designated as emergency shelters.
- Encourage or require passive survivability techniques through the building code, particularly in places that are more vulnerable to service outages.
- Offer technical assistance, education, and incentives for privately owned buildings.



# Some Ideas for Prioritizing and Getting Started

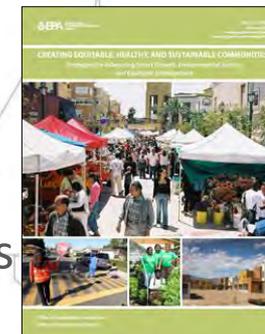
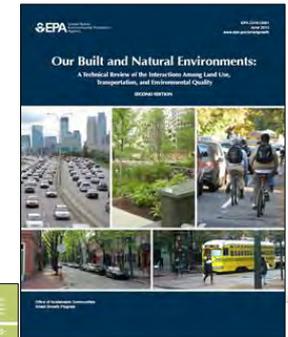
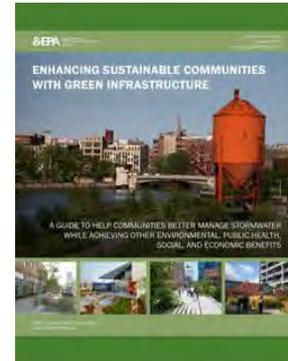
- What policy or regulatory revisions or updates are coming up? (e.g., comprehensive plan, zoning code, street design guidelines, building code)
- What vulnerabilities could you address through any of these policies or regulations?
- Are your codes based on past weather trends or on future projections that take climate change into account?
- What other benefits could you achieve by updating codes and policies to prepare for future climate conditions?
- How can you get input from everyone in the community, including people who are typically left out of development decisions?



# Relevant EPA Publications

## Smartgrowth Publications

- *Using Smart Growth Strategies to Create More Resilient Communities in the Washington, D.C., Region*
- *Enhancing Sustainable Communities With Green Infrastructure*
- *Flood Resilience Checklist from Planning for Flood Recovery and Long-Term Resilience in Vermont*
- *Our Built and Natural Environments (2<sup>nd</sup> ed.)*
- *Creating Equitable, Healthy, and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development*
- *Smart Growth and Economic Success series (reports for local governments, businesses, and developers)*



# Mitigation Planning Process

Federal Emergency Management Agency



# Mitigation Planning Process

Encourage sound decision-making based on a good understanding of hazards and vulnerabilities; and stakeholder values and priorities



# Benefits of Mitigation Planning

- Mitigation planning can be combined with other ongoing planning and risk reduction processes
  - Floodplain management, watershed management, comprehensive planning, land use, zoning, building codes
  - Do not have to recreate the wheel - May use risk assessment information from other planning activities such as floodplain management plan, COOP, emergency response
  - Plans can be multi-jurisdictional, watershed, etc.
- Access resources available in the recovery process to rebuild to mitigate future losses
  - Better positioned to apply for grant and project funds with an approved plan if a disaster affects a jurisdiction
  - Regular update of mitigation plan is a strong incentive to demonstrate mitigation and risk reduction measures



# Benefits of Mitigation Planning

- Ongoing planning process can help raise risk awareness and reduce disaster losses
  - Citizens can learn more about what to do now to protect themselves and their assets, and minimize risk in the future (new development)
- May develop or update plan to identify high risk areas for planning
  - Floodplain management plans for site-specific activities
  - Data can also assist with emergency management
  - Mitigation Actions vs. Response Actions
- Can compliment implementation of the National Flood Insurance Program (NFIP)
  - Mitigation plans must address NFIP compliance
  - Communities can coordinate flood risk and multi-hazard planning activities to earn credits



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# Questions?

