Resilient Rural America Project: Meeting the Rural Resilience Imperative by Integrating Resilience into Rural Planning & Action

Resiliency Academy

from Resilient Virginia
November 10, 2020

Model Forest POLICY PROGRAM
ICMA
CPO CLIMATE PROGRAM OFFICE
EcoAdapt
GEOS INSTITUTE

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Program Director

Model Forest POLICY PROGRAM

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Engagement Manager

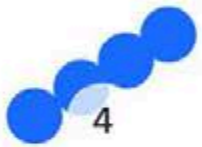
U.S. Climate Resilience Toolkit

Which best describes your role working in rural communities?

Mentimeter

Rural stakeholder

Resilience professional working with rural stakeholders



Resilience professional not directly working with rural stakeholders

None of above

28

By Nicholas A. Tonelli
https://commons.wikimedia.org/w/index.php?curid=6951488

Outline

1. **The Rural Resilience Imperative**
2. Meeting Rural Needs and Priorities
3. Leveraging Resources in the Resilience Ecosystem
4. Opportunities to Participate

The Rural Resilience Imperative

Rural Lands and Waters

Rural Agencies

Rural Economics

Rural Culture and Politics

Rural Resilience:

Environmental, Social, and Economic

- Air Quality
- Water Quality and Supply
- Land and Soil
- Food and Fiber
- Public Health
- Culture
- Recreation
- Wildlife Habitat
- Economic Systems

Enviro-Atlas eco-wheel by Jessica Jahre, EPA Contractor

Extreme Weather Impacts

Current impacts and future risks (including climate) to natural resources and rural communities are escalating rapidly.

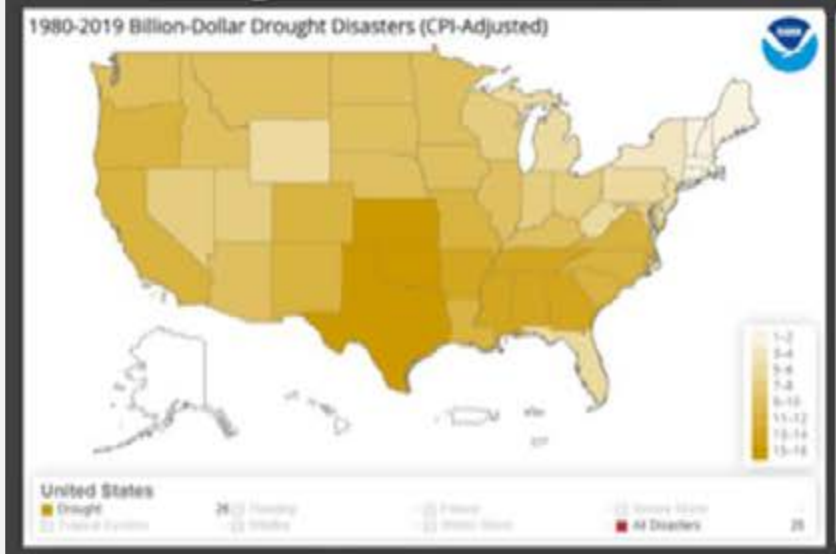
There is an environmental, social, and economic imperative for rural resilience to address these hazards and impacts.

Bigstock 84161099

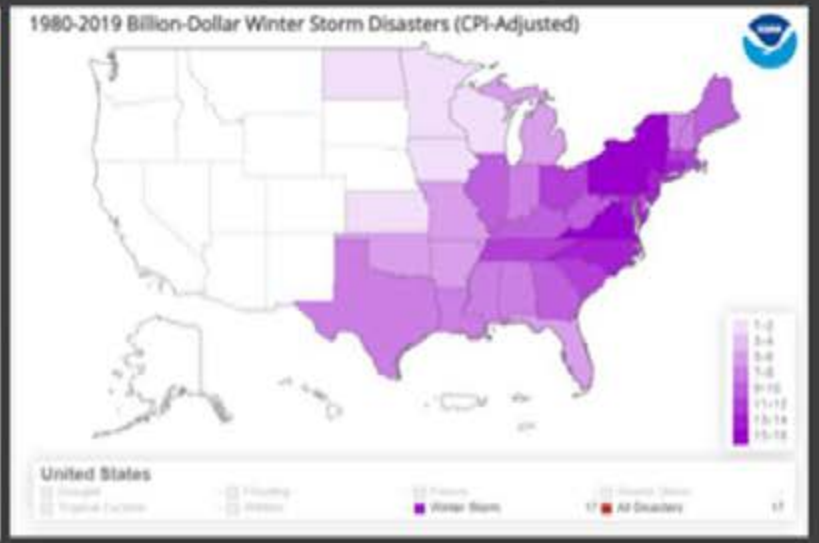
Bigstock 5411312

Billion-dollar weather and climate disasters frequency mapping: 1980-2019

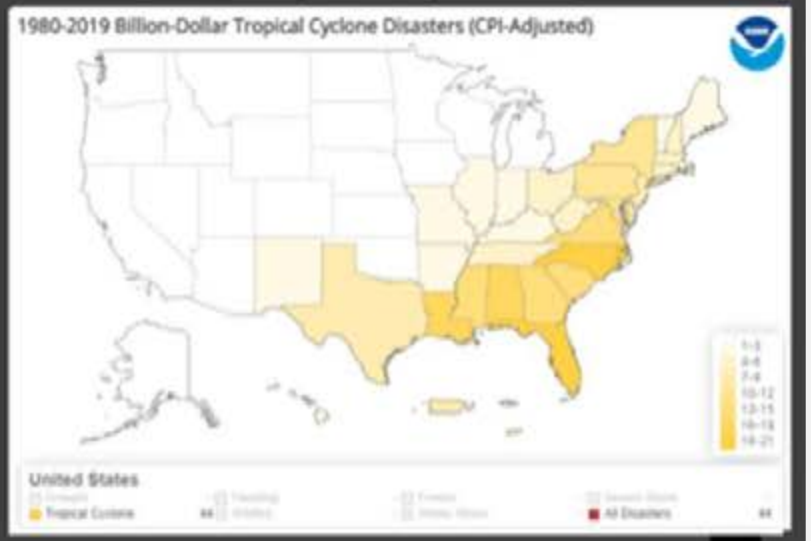
Droughts and Heat Waves



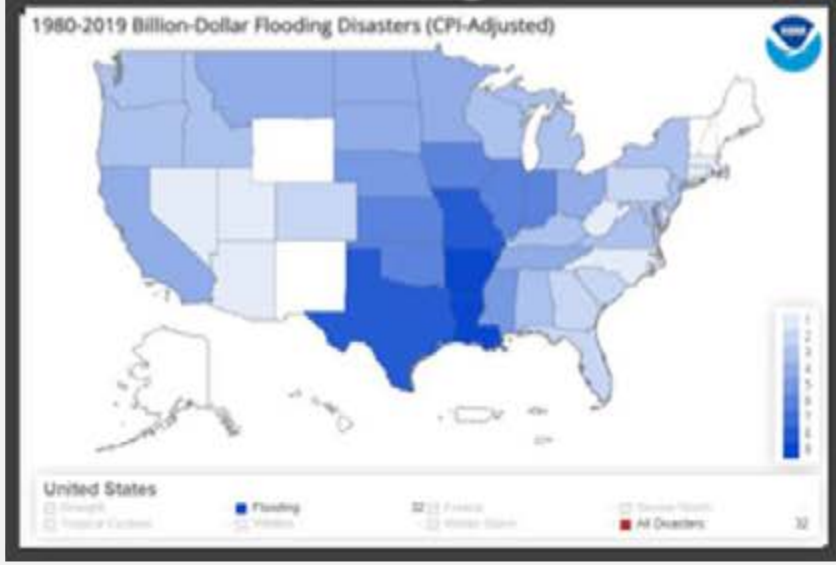
Winter Storms



Tropical Cyclones

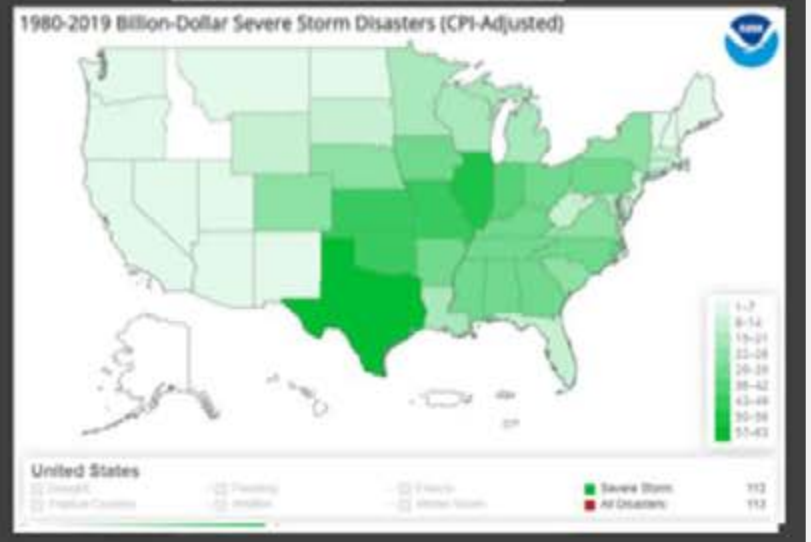


Flooding



Wildfires

Severe Local Storms



Extreme Weather Hazards to Natural Resources and Rural Communities

Heat – Drought - Flood – Severe Storms - Wildfire – Pests – Disease

- ❑ **Increased natural disasters**
- ❑ **Reduced agricultural productivity**
- ❑ **Degradation of soil and water resources**
- ❑ **Loss of natural habitat, recreation, livelihoods**
- ❑ **Health challenges - people, livestock, wildlife**
- ❑ **Damaged infrastructure**
- ❑ **Economic consequences at all levels**
- ❑ **Vulnerability of rural communities**

Billion-Dollar Disasters
Average Annual Cost (by decade since 1980)

2010-2019: unprecedented decade of damage

- Last year (2019) > $45 billion
- Last 3 years (2017-2019) > $460 billion
- Last 5 years (1-15-2019) > $535 billion

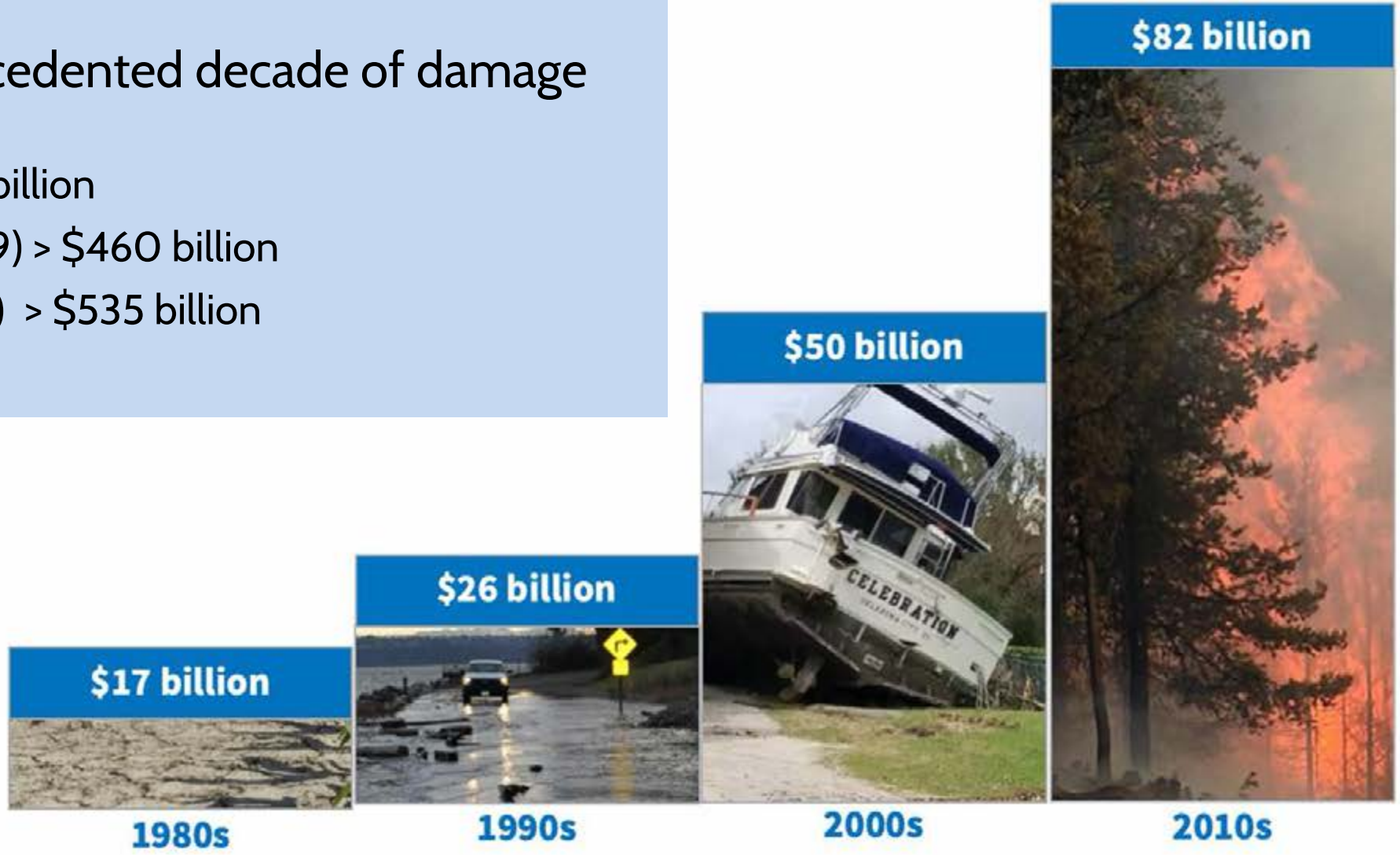


Chart by NOAA CPO/CEE; data courtesy NOAA NCEI

Mitigation Saves:

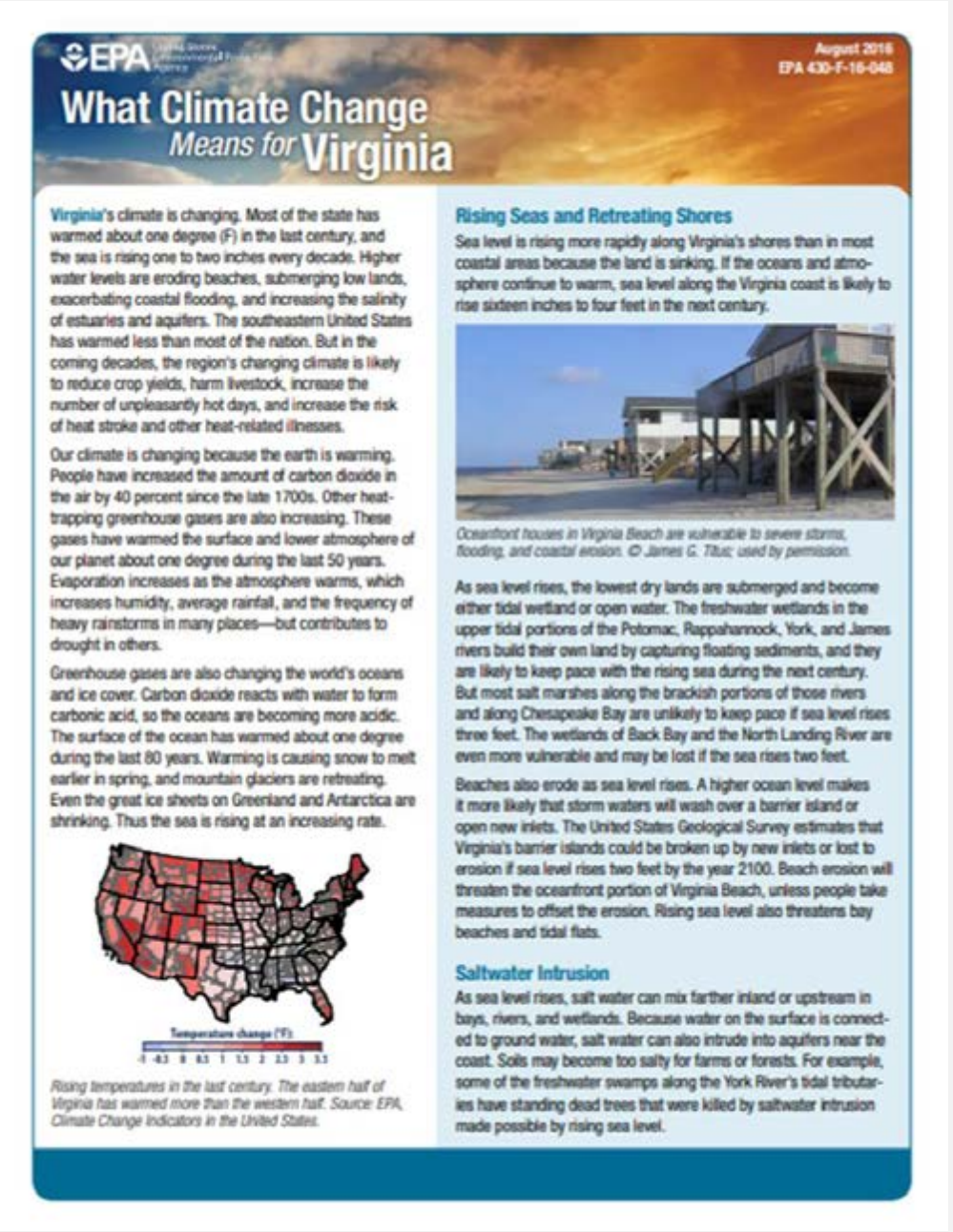
Positive Benefit Cost Ratios (BCR)

National Benefit-Cost Ratio Per Peril *BCR numbers in this study have been rounded	Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio	6:1	4:1
Riverine Flood	7:1	5:1
Hurricane Surge	Too few grants	7:1
Wind	5:1	5:1
Earthquake	3:1	4:1
Wildland-Urban Interface Fire	3:1	4:1

https://www.nibs.org/page/mitigationsaves

The Climate is Changing in Virginia

- Warming weather and heat waves
- Rising sea level and shoreline loss
- Saltwater intrusion
- Damage to coastal ecosystems
- Storms and property damage
- Agricultural impacts
- Energy needs
- Human health risks



EPA

August 2016
EPA 430-F-16-048

What Climate Change Means for Virginia

Virginia's climate is changing. Most of the state has warmed about one degree (F) in the last century, and the sea is rising one to two inches every decade. Higher water levels are eroding beaches, submerging low lands, exacerbating coastal flooding, and increasing the salinity of estuaries and aquifers. The southeastern United States has warmed less than most of the nation. But in the coming decades, the region's changing climate is likely to reduce crop yields, harm livestock, increase the number of unpleasantly hot days, and increase the risk of heat stroke and other heat-related illnesses.

Our climate is changing because the earth is warming. People have increased the amount of carbon dioxide in the air by 40 percent since the late 1700s. Other heat-trapping greenhouse gases are also increasing. These gases have warmed the surface and lower atmosphere of our planet about one degree during the last 50 years. Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others.

Greenhouse gases are also changing the world's oceans and ice cover. Carbon dioxide reacts with water to form carbonic acid, so the oceans are becoming more acidic. The surface of the ocean has warmed about one degree during the last 80 years. Warming is causing snow to melt earlier in spring, and mountain glaciers are retreating. Even the great ice sheets on Greenland and Antarctica are shrinking. Thus the sea is rising at an increasing rate.

Rising temperatures in the last century. The eastern half of Virginia has warmed more than the western half. Source: EPA, Climate Change Indicators in the United States.

Rising Seas and Retreating Shores

Sea level is rising more rapidly along Virginia's shores than in most coastal areas because the land is sinking. If the oceans and atmosphere continue to warm, sea level along the Virginia coast is likely to rise sixteen inches to four feet in the next century.

Oceanfront houses in Virginia Beach are vulnerable to severe storms, flooding, and coastal erosion. © James G. Titus; used by permission.

As sea level rises, the lowest dry lands are submerged and become either tidal wetland or open water. The freshwater wetlands in the upper tidal portions of the Potomac, Rappahannock, York, and James rivers build their own land by capturing floating sediments, and they are likely to keep pace with the rising sea during the next century. But most salt marshes along the brackish portions of those rivers and along Chesapeake Bay are unlikely to keep pace if sea level rises three feet. The wetlands of Back Bay and the North Landing River are even more vulnerable and may be lost if the sea rises two feet.

Beaches also erode as sea level rises. A higher ocean level makes it more likely that storm waters will wash over a barrier island or open new inlets. The United States Geological Survey estimates that Virginia's barrier islands could be broken up by new inlets or lost to erosion if sea level rises two feet by the year 2100. Beach erosion will threaten the oceanfront portion of Virginia Beach, unless people take measures to offset the erosion. Rising sea level also threatens bay beaches and tidal flats.

Saltwater Intrusion

As sea level rises, salt water can mix farther inland or upstream in bays, rivers, and wetlands. Because water on the surface is connected to ground water, salt water can also intrude into aquifers near the coast. Soils may become too salty for farms or forests. For example, some of the freshwater swamps along the York River's tidal tributaries have standing dead trees that were killed by saltwater intrusion made possible by rising sea level.

www.epa.gov/climatechange

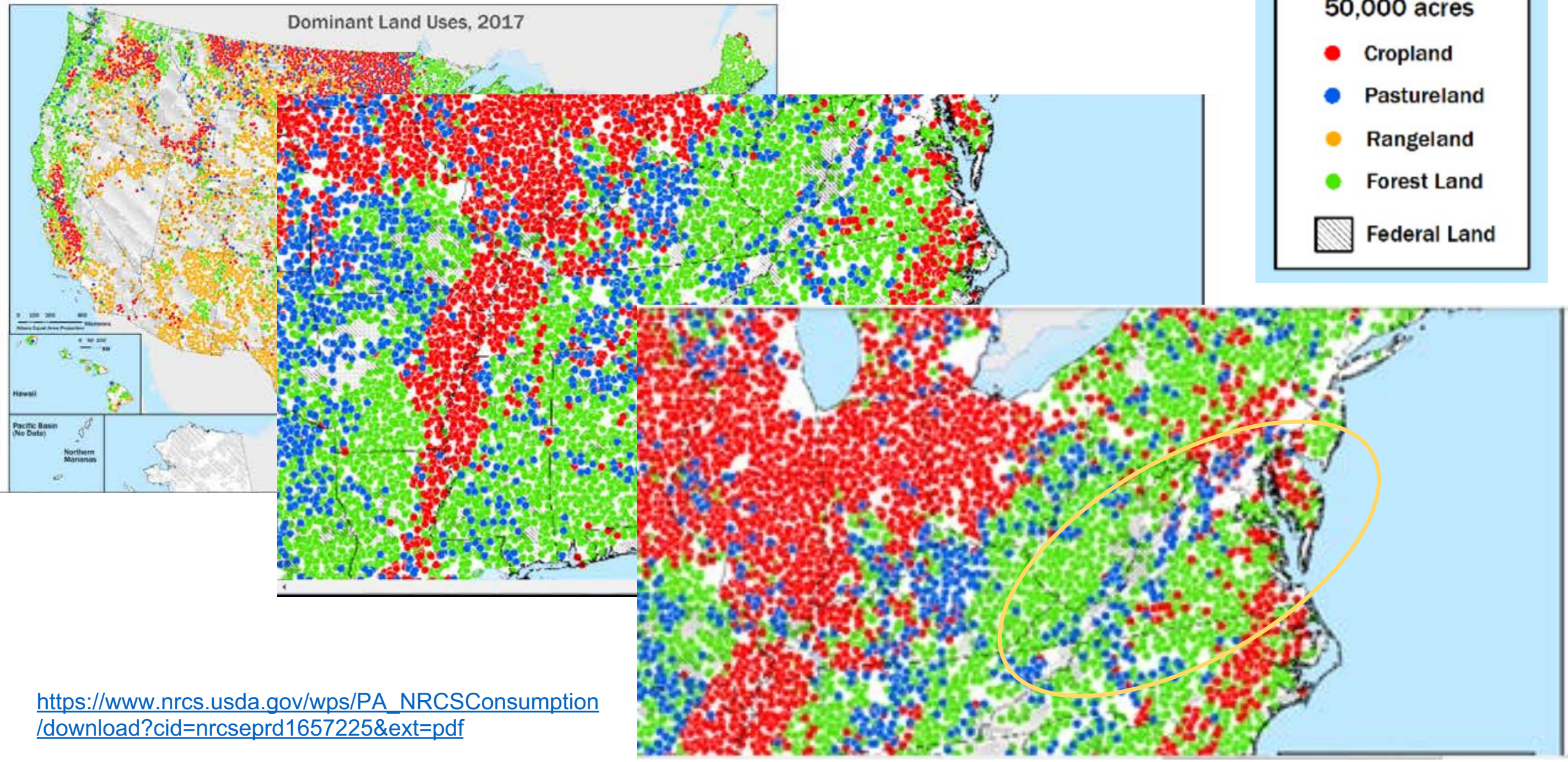
National Climate Assessment 2018
Southeast Region

Key Messages:

- Urban Infrastructure and Health Risks
- Increasing Flood Risks in Coastal and Low-Lying Regions
- Natural Ecosystems Will Be Transformed
- Economic and Health Risks for Rural Communities

https://nca2018.globalchange.gov/downloads/NCA4_Ch19_Southeast_ExecSum.pdf

National Resources Inventory 2017



https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcseprd1657225&ext=pdf

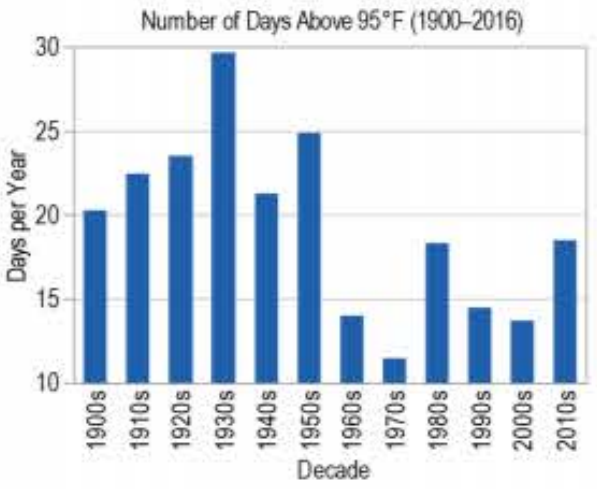
National Climate Assessment 2018

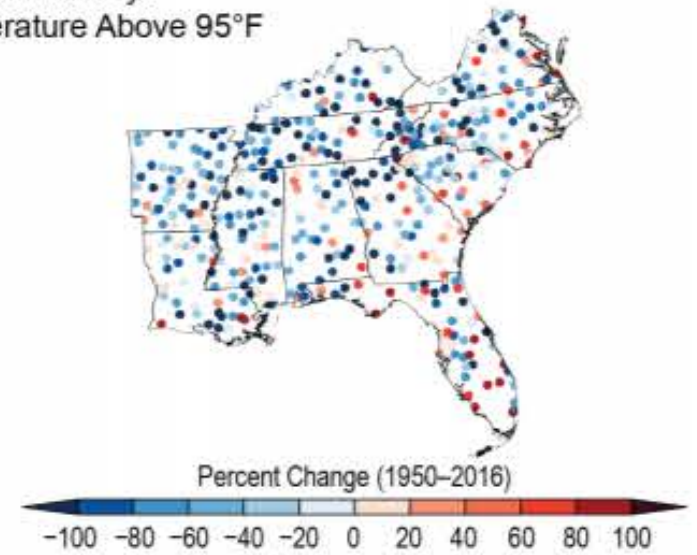
- More heat waves across the southeast
- Summer temps since 2010 warmest on record
- Warmer nights >75°F have doubled in VA & SE
- Impacts human health & agriculture significantly

https://nca2018.globalchange.gov/downloads/NCA4_Ch19_Southeast_ExecSum.pdf

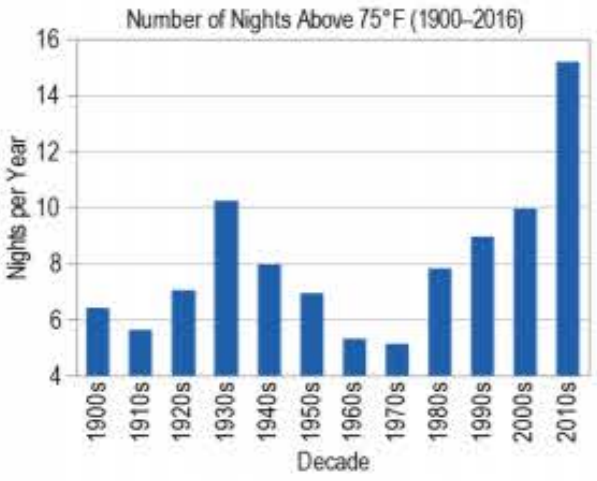
Historical Changes in Hot Days and Warm Nights

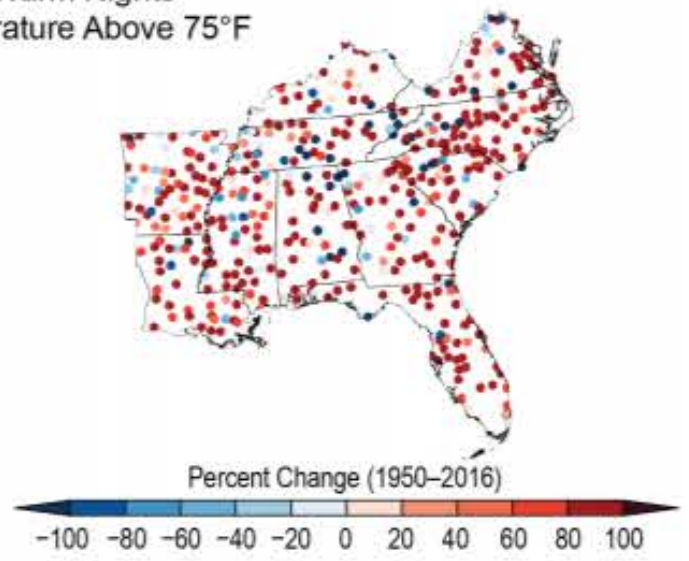
Number of Hot Days
Maximum Temperature Above 95°F





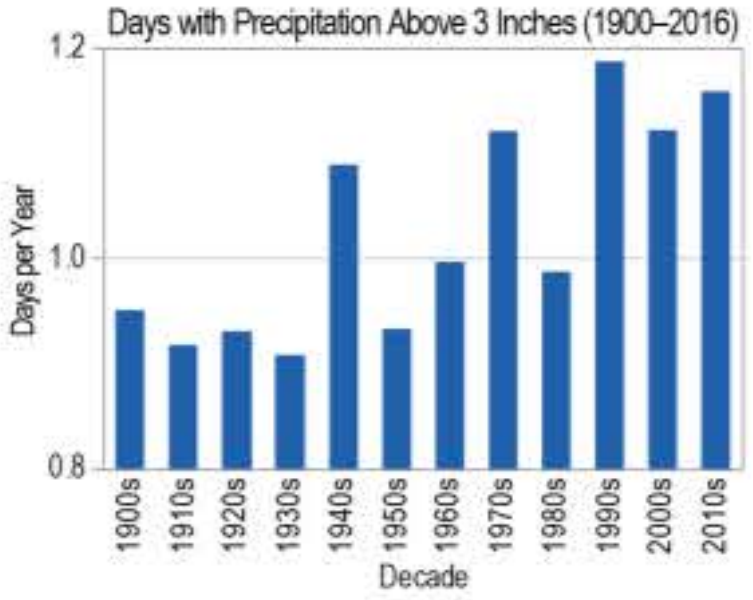
Number of Warm Nights
Minimum Temperature Above 75°F

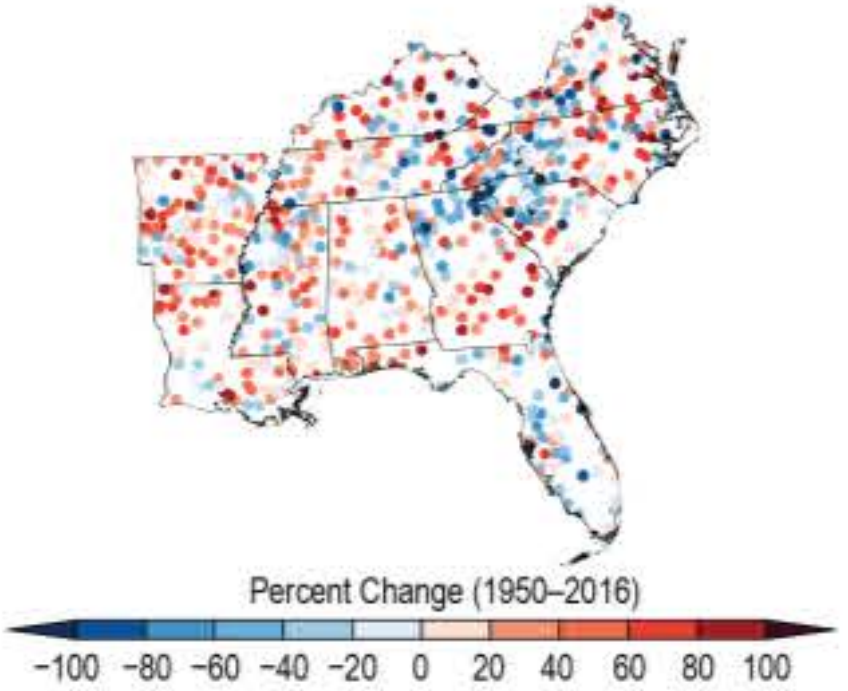




National Climate Assessment 2018

Historical Change in Heavy Precipitation



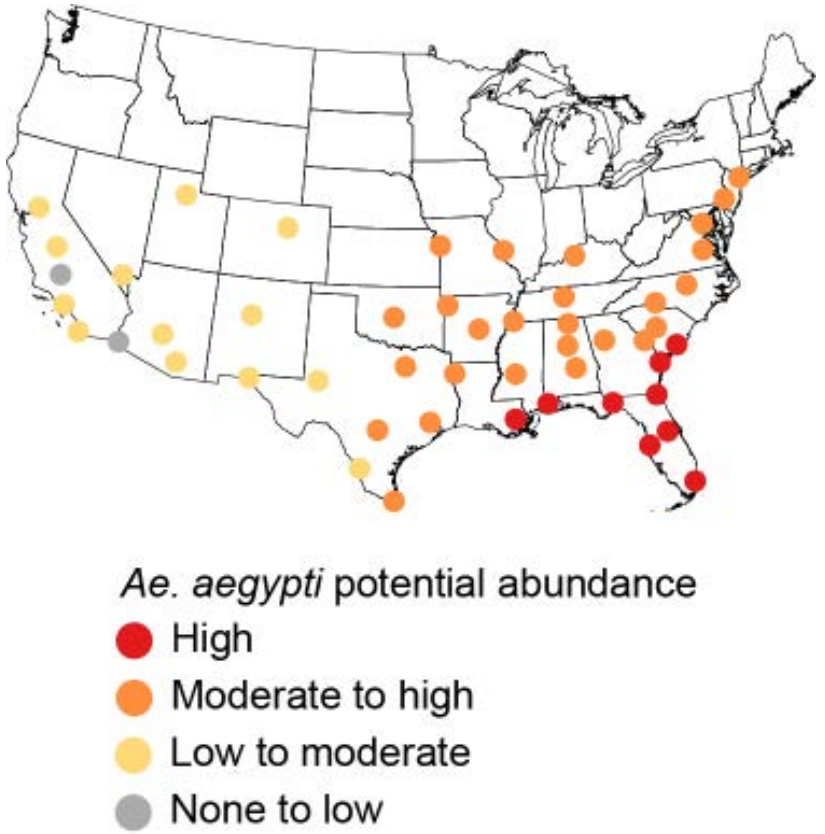


https://nca2018.globalchange.gov/downloads/NCA4_Ch19_Southeast_ExecSum.pdf

- Increasing annual number of days with greater than 3 inches precipitation
- Bars on Left: averaged by decade (1900-2016)
- Dots on Right: individual station trends (1950-2016)

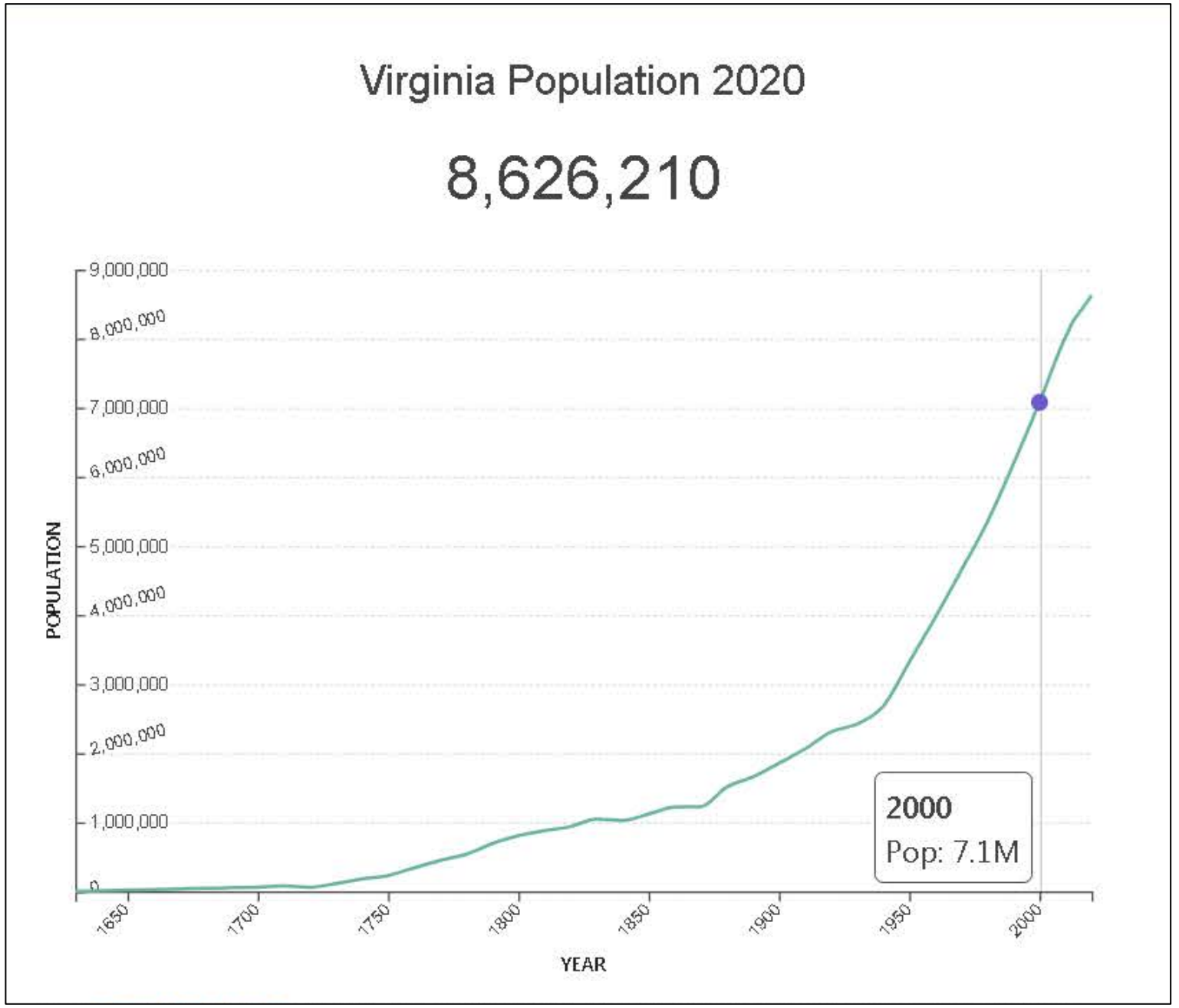
Fig. 19.6: Potential Abundance of Disease-Carrying Mosquito

The map shows current suitability for the *Aedes aegypti* mosquito in July in 50 different cities. *Aedes aegypti* mosquitoes can spread several important diseases, including dengue fever, chikungunya, and Zika fever. The Southeast is the region of the country with the greatest potential mosquito activity. Warming temperatures have the potential to expand mosquito habitat and disease risk. *Source: adapted from Monaghan et al. 2016.*[30]

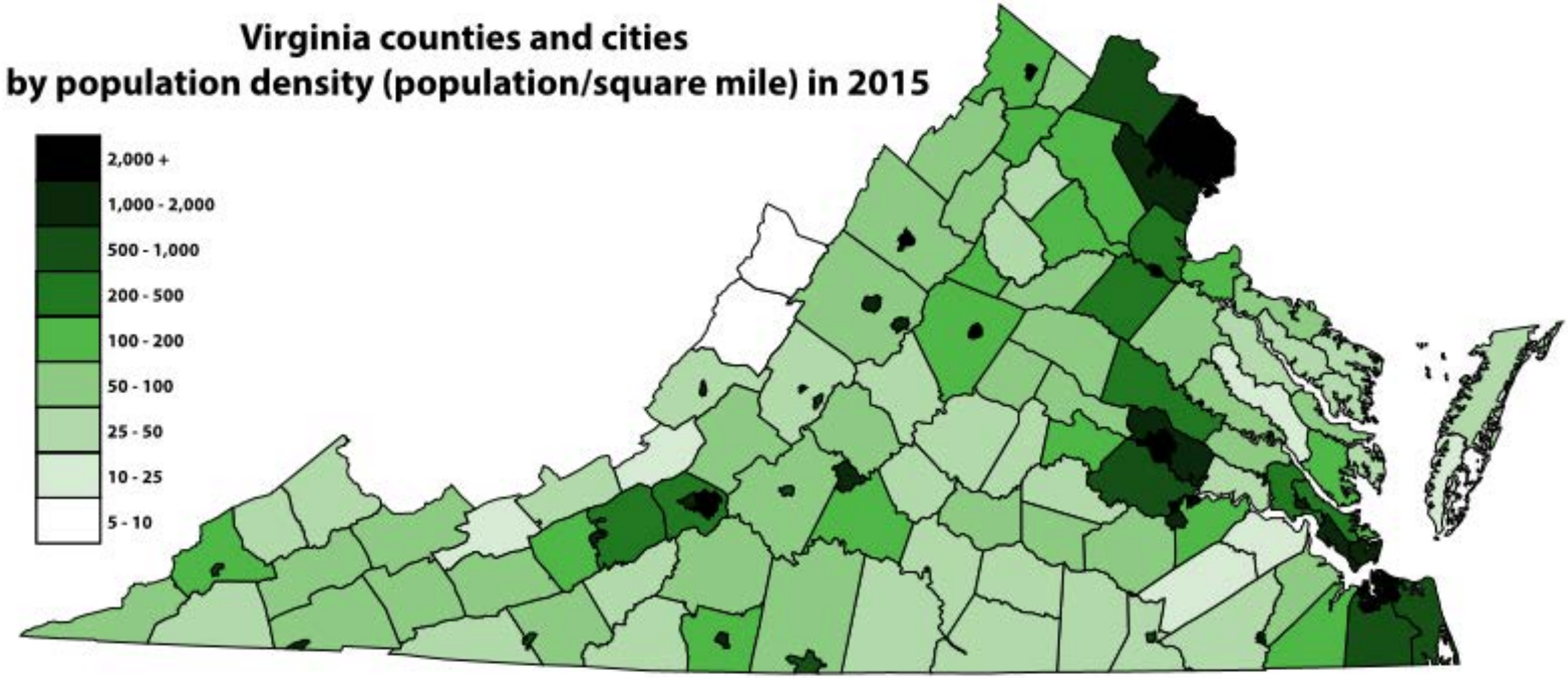


Growing Population

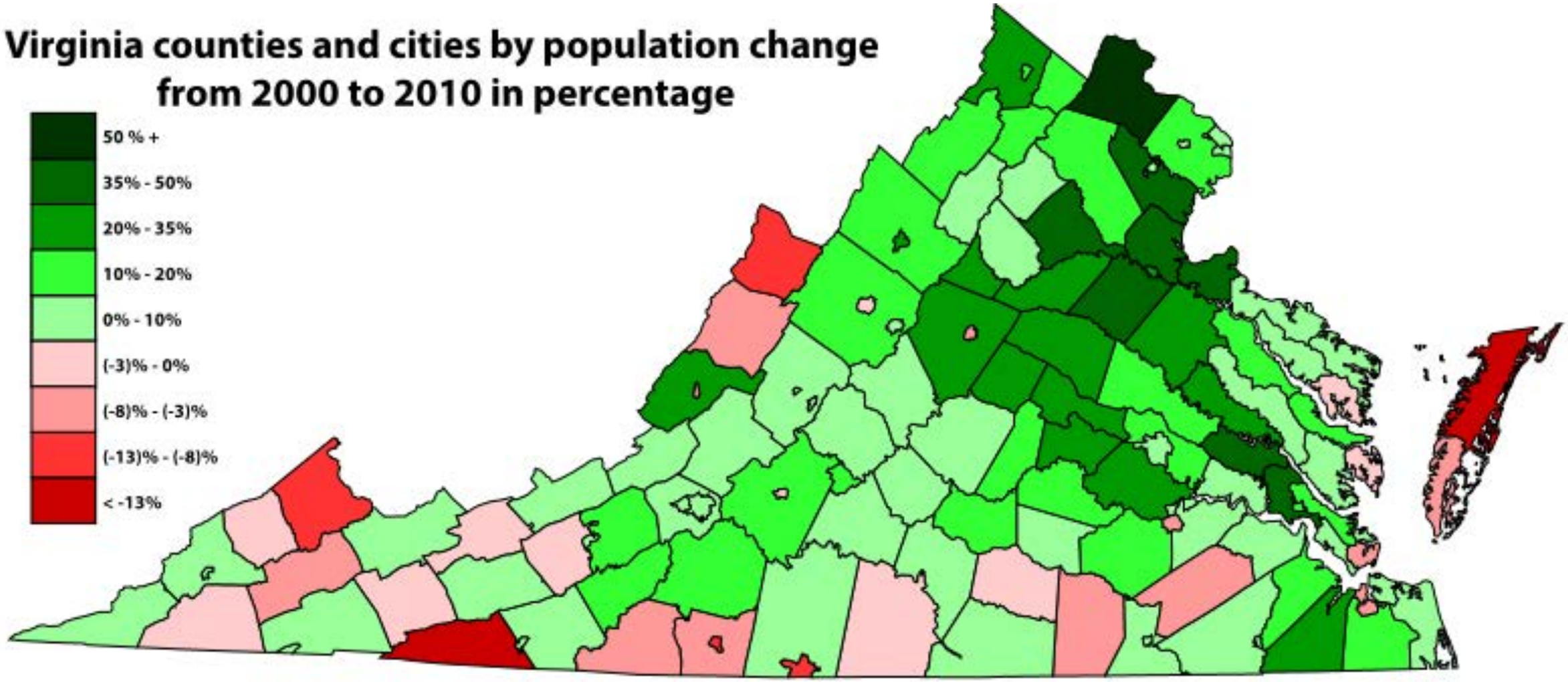
1980 – 5.3 Million
2000 – 7.1 Million
2020 – 8.6 Million



https://worldpopulationreview.com/states/virginia-population

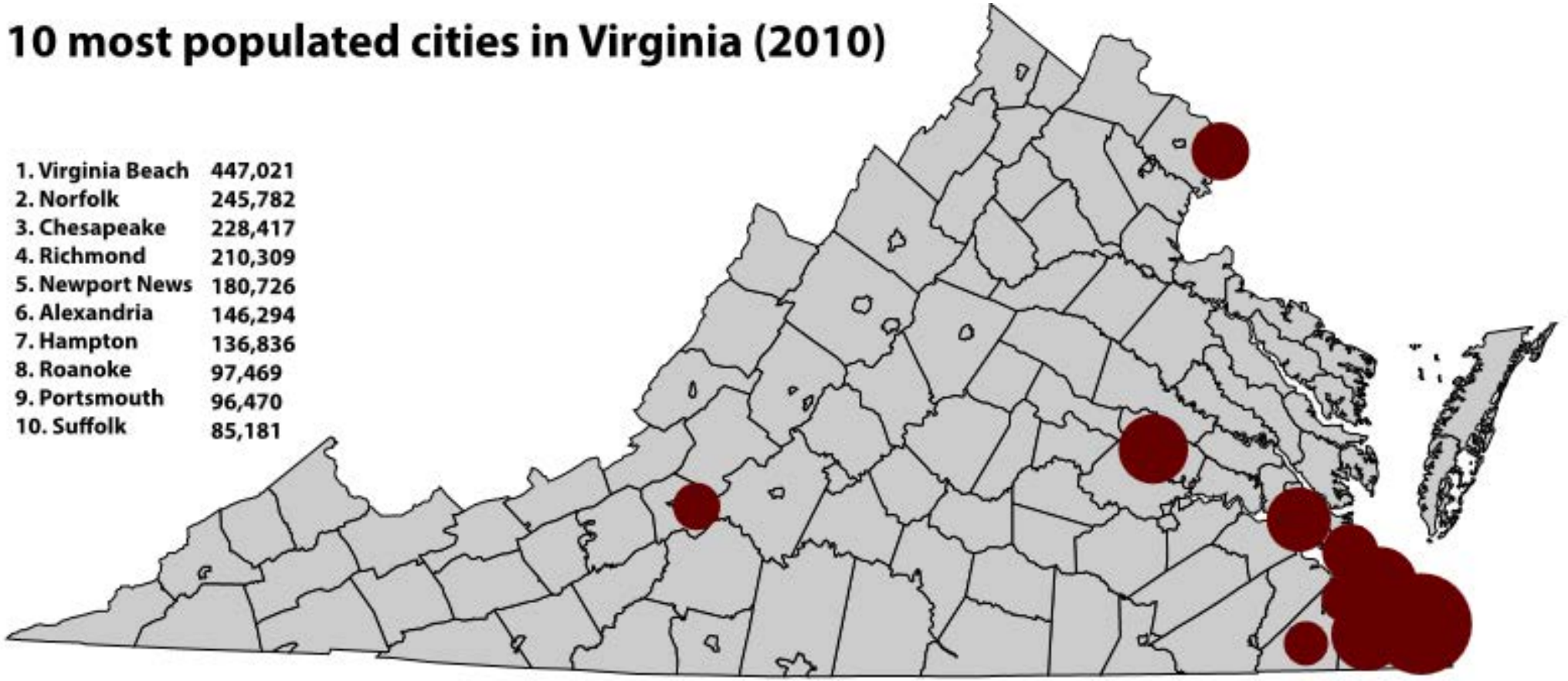


https://en.wikipedia.org/wiki/Demographics_of_Virginia#/media/File:Virginia-Density.svg



https://en.wikipedia.org/wiki/Demographics_of_Virginia#/media/File:Virginia-Density.svg

- Largest populated areas along coastline
- Prepare rural development rules for migration away from coasts in future decades



https://en.wikipedia.org/wiki/Demographics_of_Virginia#/media/File:Virginia-_Largest_cities.svg

Virginia Agriculture at a Glance

Economic Impact:

$70B

Annually

Farmland covers

8.1M acres

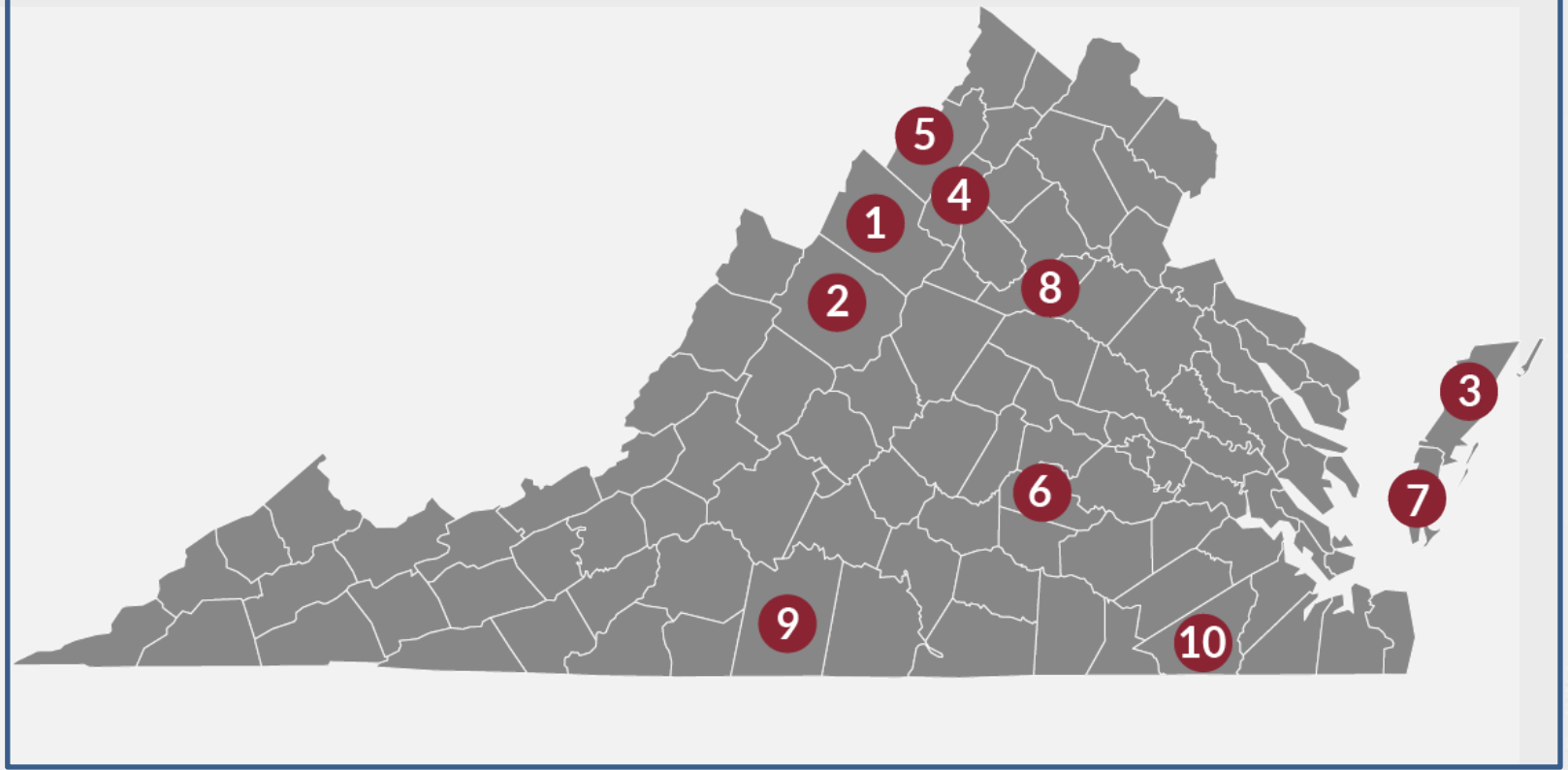
32% of Virginia

Agriculture creates

nearly 334,000

jobs in Virginia

Virginia's Top 10 Agricultural Counties



Virginia's Top 10 Agricultural Commodities

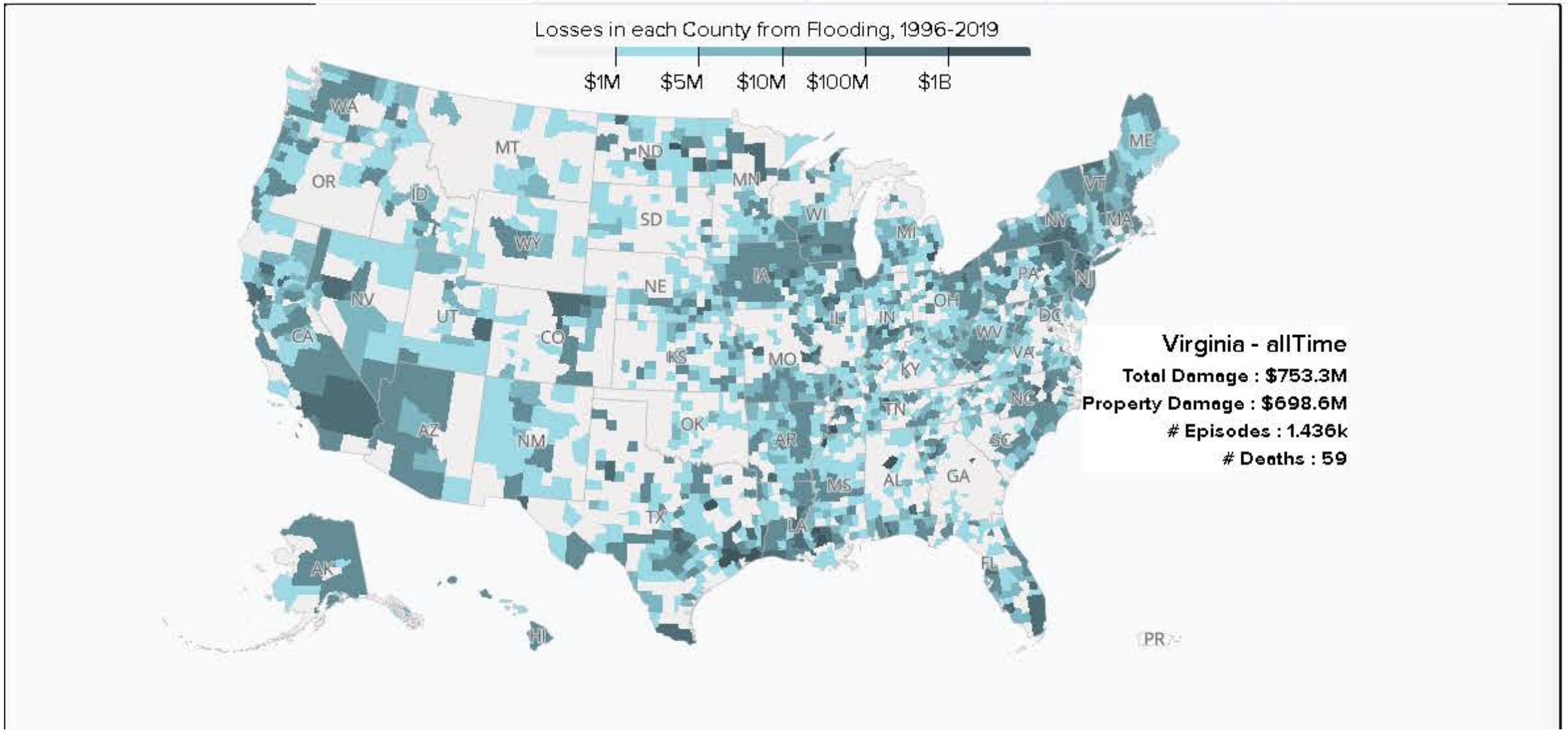
Crop / Livestock	Farm Cash Reciepts
Broilers	$918M
Cattle & Calves	$714M
Milk	$478M
Turkeys	$326M
Greenhouse, Nursery & Other Crops*	$298M
Soybeans	$259M
Corn & Grain	$219M
All Other Animals+	$216M
Hay	$119M
Tobacco (Unprocessed Leaf)	$117M

*Misc. Crops includes Greenhouse/Nursery, roughly 90 percent of the total, plus mushrooms, sunflowers, rye, sorghum, seed crops and other field crops.

+All Other Animals includes horses, aquaculture and all other livestock.

Source: 2014 USDA NASS and ERS data figures rounded to the nearest million dollars.

Total Flood Losses by County, 1996-2019



https://www.hazarddata.org/

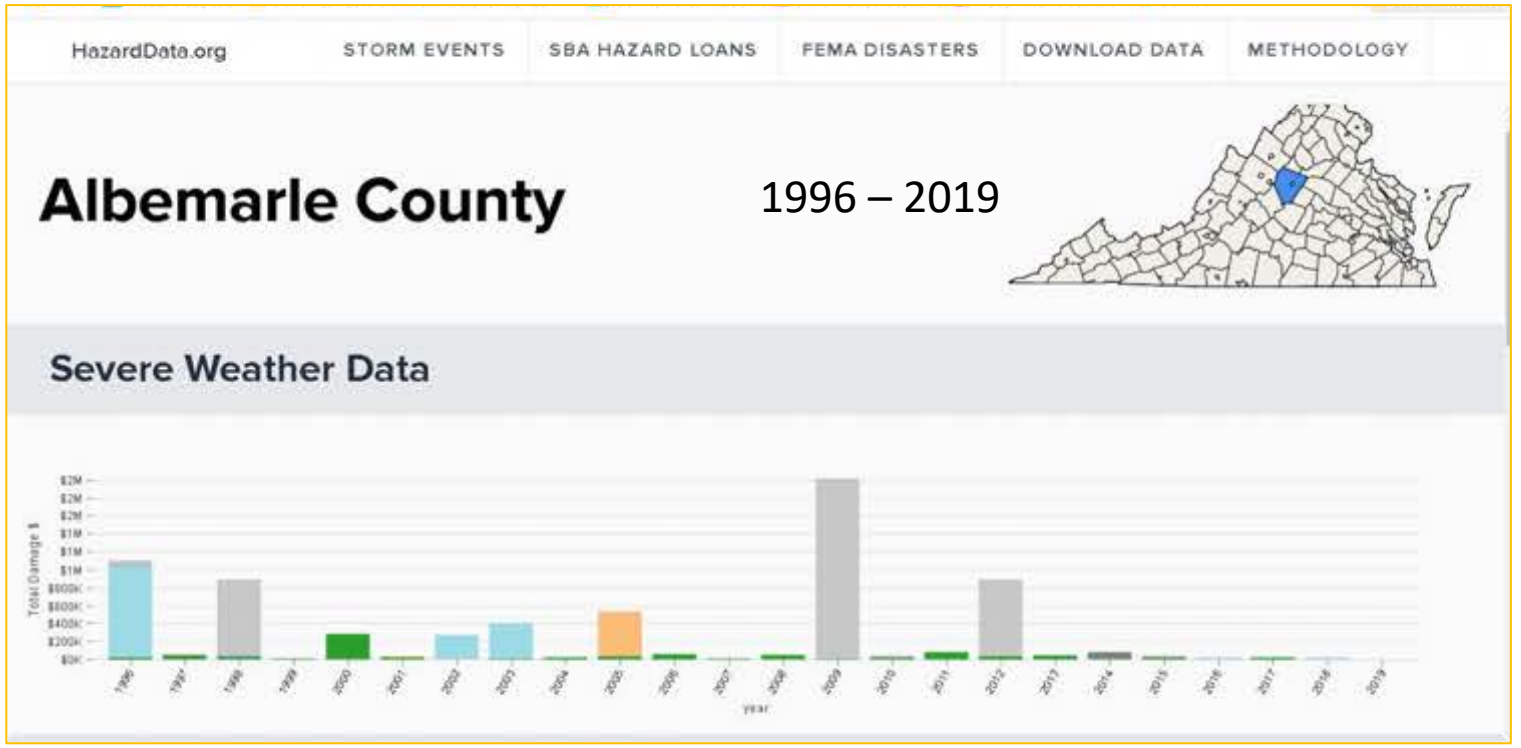
Severe Weather Losses

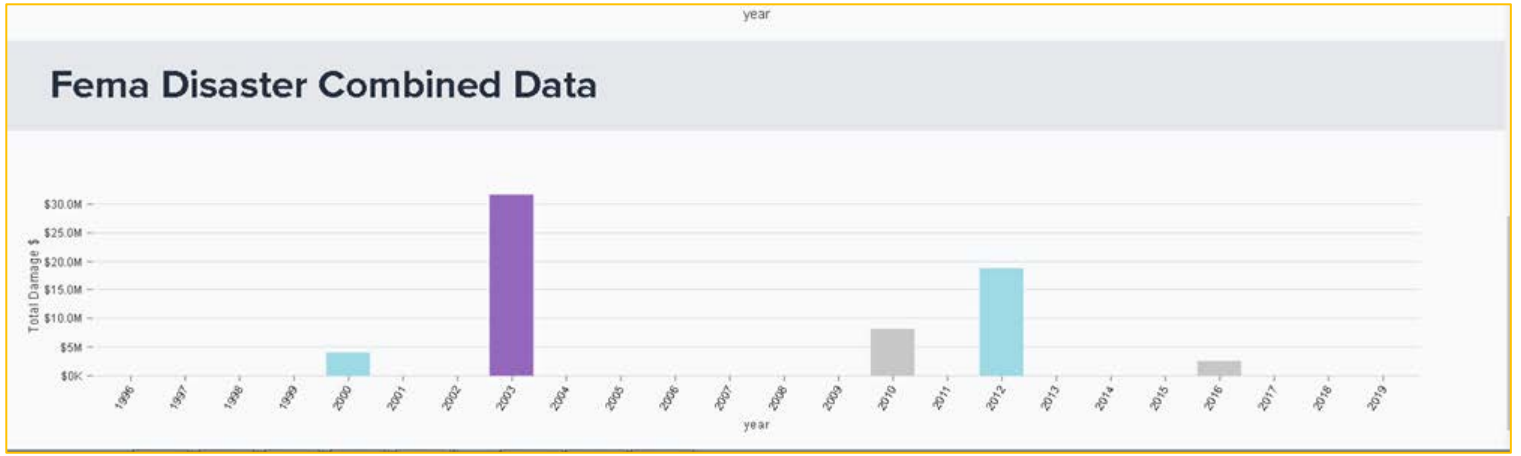
2003: Hurricane $31.7 M

2012: River floods $18.8 M

2016: Winter weather $3 M

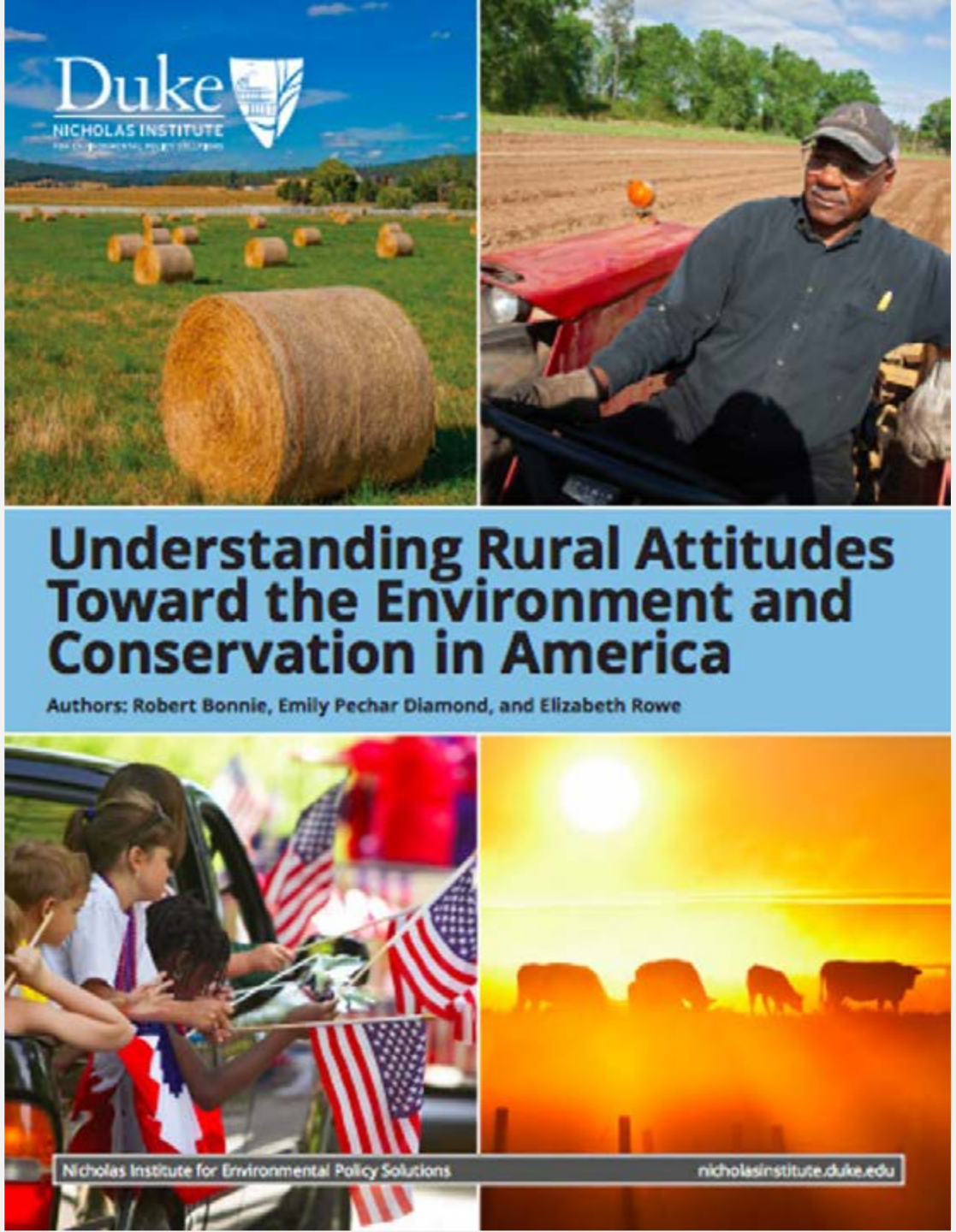
2020: Winter weather $8 M





https://www.hazarddata.org/

"Rural Americans matter—a lot—to the fate of U.S. environmental policy. Not only do farmers, ranchers, and forest owners manage huge portions of American lands and watersheds, but rural voters also have an outsized impact on national policy."



https://www.cakex.org/documents/understanding-rural-attitudes-toward-environment-and-conservation-america

Rural Attitudes and Framing: Overall Caring & Knowledgeable

Who

- ❑ Prefer local and state gov't oversight. Trust other farmers & ranchers, university scientists, & agency scientists

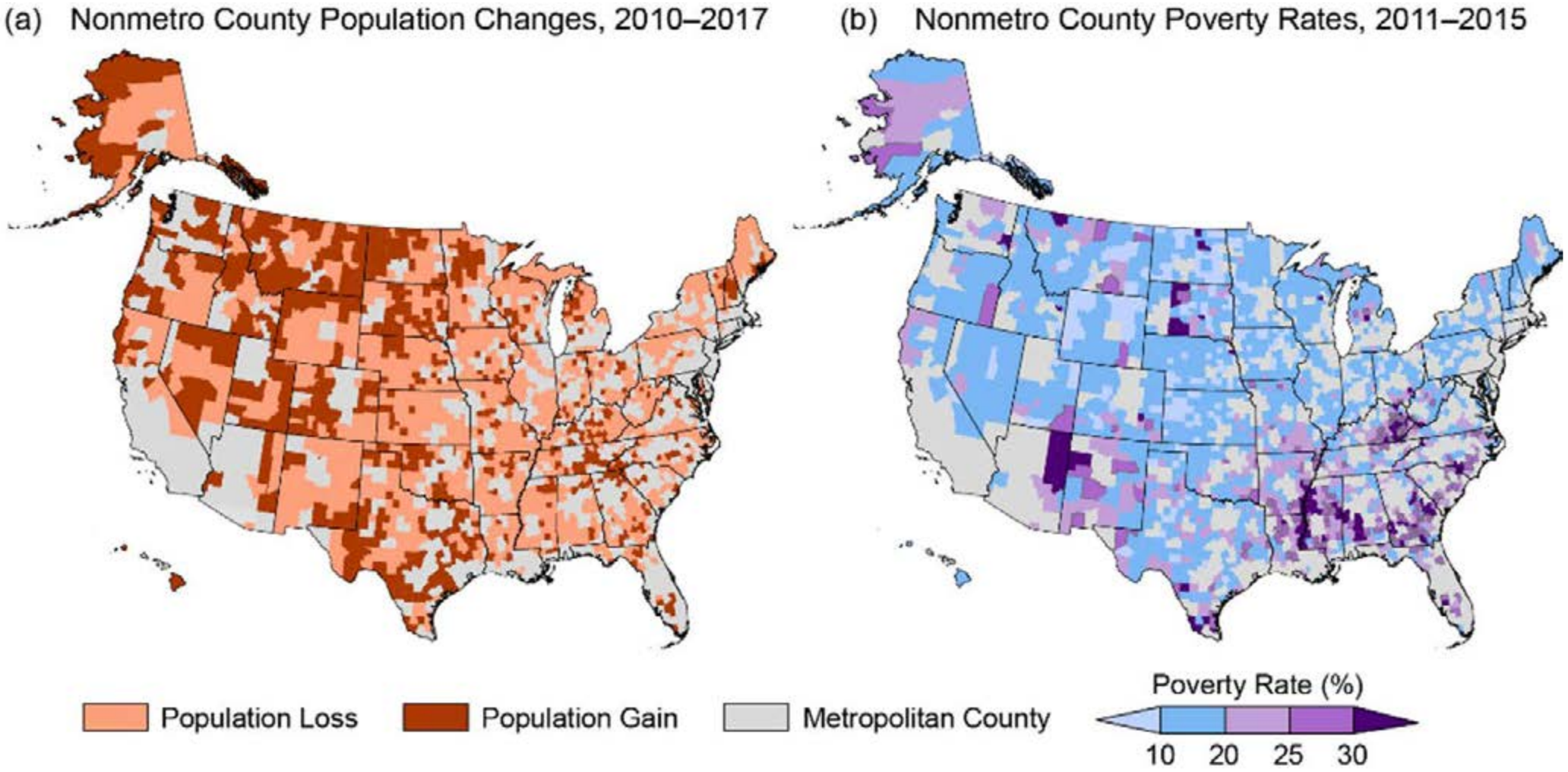
What

- ❑ Recognize impacts of severe weather

How

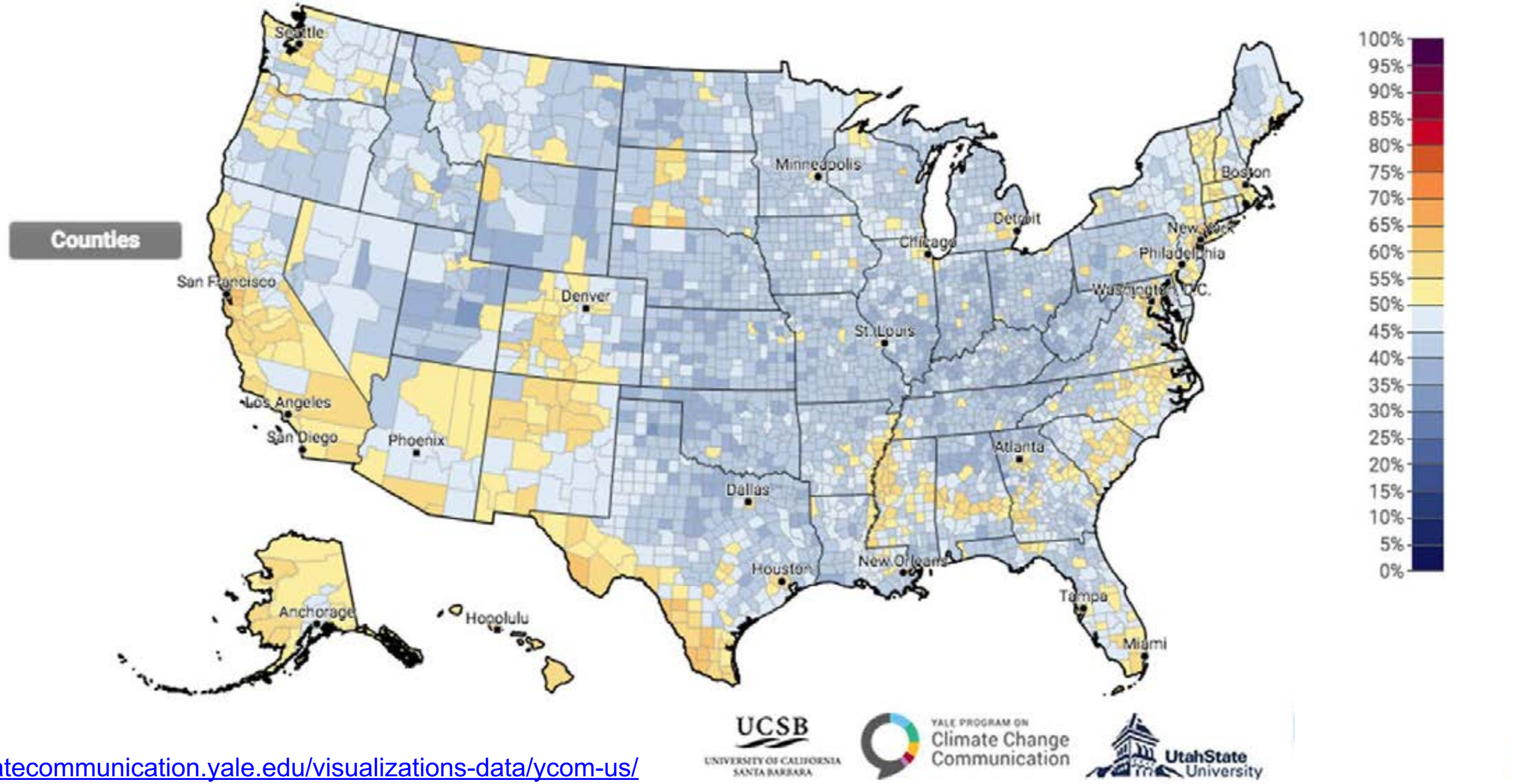
- ❑ Appreciate being engaged in the dialogue

- ❑ Skeptical view of federal government science & policies
- ❑ Skeptical of climate & agriculture connections
- ❑ Concerned about climate regulations



Population Changes and Poverty Rates in Rural Counties

https://nca2018.globalchange.gov/chapter/ecosystems



https://climatecommunication.yale.edu/visualizations-data/ycom-us/

Estimated % of adults who think global warming is already harming people in the US now or within 10 years, 2018

Outline

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2. Meeting Rural Needs and Priorities

3. Leveraging Resources in the Resilience Ecosystem

4. Opportunities to Participate

GOAL

The Resilient Rural America Project (RRAP) accelerates rural resilience by understanding rural needs and priorities, co-producing training resources, and strengthening the ability of resilience service providers to meet the needs of underserved rural communities.

GAPS

Address lack of staff, resources, and technical capacity
Promote focus, coordination, synergy, and efficiency

ACTION

Collaboration and co-production of training module series

Meeting Rural Needs

Rural communities have specific needs, gaps, and constraints that are obstacles to resilience.

Understanding rural priorities and needs is key to success.

Co-Production Process:

- Collaboration
- User Input
- Recruit Beta Testers and Advisors
- Update Module Periodically

ICMA 2015 Sustainability Research
576 Nonmetro Local Governments

- **30%** have adopted a **sustainability plan**; **less than 4%** have a **climate mitigation** and/or **adaptation plan**
- **50%** lack any sustainability **staff, task force, goals,** or **committees**
- **77%** have experienced a **major disaster** in the last 15 years (flooding + winter storms most common)
- Biggest **motivations** of sustainability efforts: **fiscal savings, local electeds, funding opportunities**
- Biggest **barriers**: **funds/funding restrictions, staff capacity & information**

Initial Surveys

178 Rural Users

- ❑ Who works on resilience
- ❑ Local risks and impacts
- ❑ Status of actions
- ❑ Support needed
- ❑ Training preferences

56 Service Providers

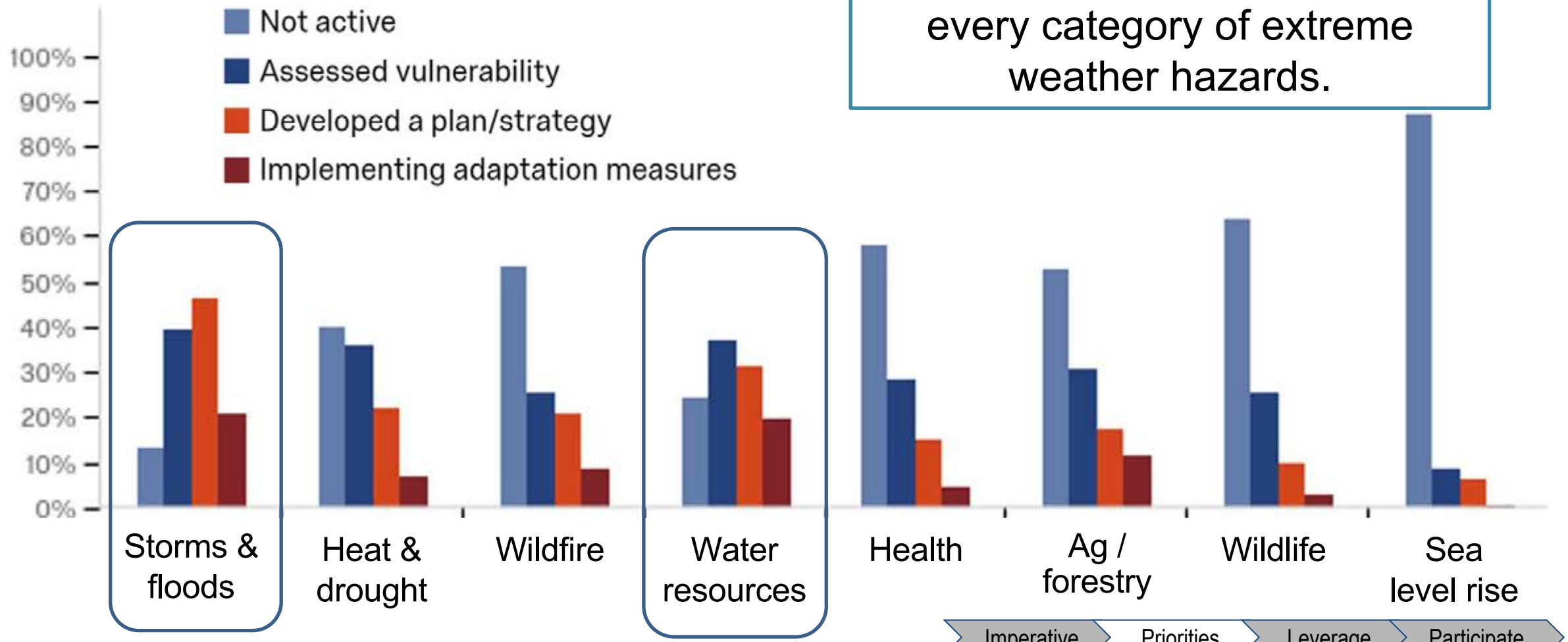
- ❑ Top risks
- ❑ Gaps in capacity for rural communities & providers
- ❑ Effective strategies
- ❑ Leads on resources and funding sources

Perception of Current Local Climate Risks

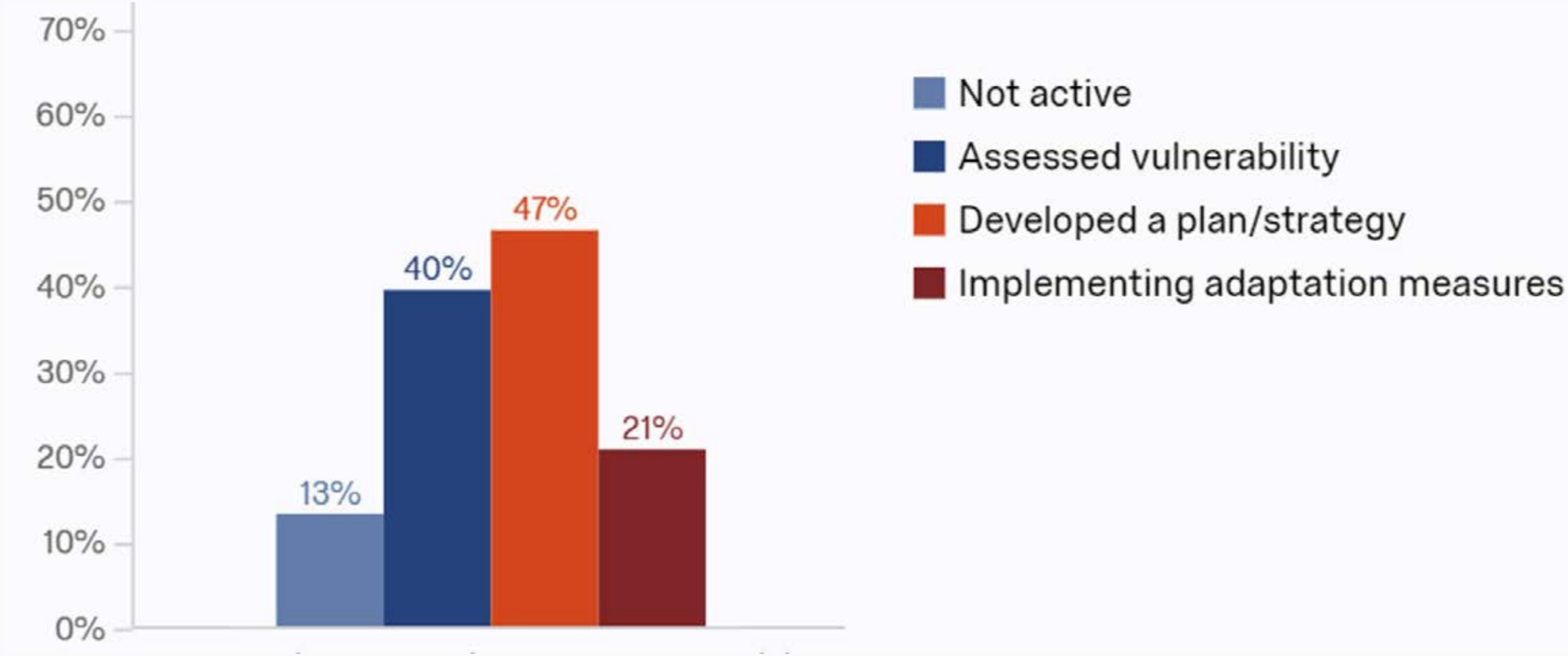
Severe: 6%

Current Status of Resilience Efforts (n=178)

Water plays a major role in every category of extreme weather hazards.



Current Status of Resilience Efforts - Storms and Floods (n=178)



Survey Findings

- ❑ Extreme weather top risk
- ❑ Flexible self-guided learning with time limits
- ❑ Integrate resilience into existing comprehensive and hazard mitigation plans
- ❑ Use actionable information
- ❑ Identified advisors and beta testers

What climate-related hazards concern you?

Mentimeter

food systems	flooding	Flooding and erosion
ecosystem impacts	Flooding	drought
Food security.	Energy security	Flash flooding

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What climate-related hazards concern you?

Mentimeter

public health impacts

wildfires

Flooding, high temperatures

Warmer days and nights

Flooding, wind, power loss

hurricanesforest fires

-Disruption to food system increasing access concerns-
Local food production disruption

Drought

Coastal flooding

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What climate-related hazards concern you?

Mentimeter

Ecosystem impacts

Wildfire

flooding

increased floodingloss of buildable landdroughtagricultural growing seasons & crop selection

Energy security

Water supply

food security

frequent severe storms and extreme weather that cause flooding and wildfires; economic challenges, population loss

tornados

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What climate-related hazards concern you?

Mentimeter

- insect spread
- Drought
- Energy security
- Power loss, energy instability
- flooding impact on infrastructure
- Flooding
- Flooding
- Food security
- Reduced chill time in winter

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What climate-related hazards concern you?

Mentimeter

species shift (invasives, ag pests, and disease vector insects)

Flooding, higher temperatures, major hurricanes greater than cat 3

My greatest concern is agriculture, and its vulnerability to erratic weather. My concern is that soil health to curb effects of drought and floods is not yet part of resilience planning.

Extreme weather

Weather undtable

resource related violence, food insecurity related to agricultural impacts, horrible treatment of climate migrants (but I'm not typical of my area)

Inceasing heat, impacts to other species. Collapse of our ecosystems that sustain us.

Collpase of civilized society

forgot to mention, human health and inequitable impacts of climate change with poor rural health workforce and closing of hospitals, etc.

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What climate-related hazards concern you?

Mentimeter

did I mention transportation is a lifeblood for living rural and yet fuels climate crisis and is already a health access problem here.

We need to shore up food systems to be resilient to disruptions, whether pandemic-related or climate-related or civil strife-related. See Future Harvest's https://www.futureharvestcasa.org/resilient-crisis-ready-food-system-rcr

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Outline

1. The Rural Resilience Imperative

2. Meeting Rural Needs and Priorities

3. Leveraging Resources in Resilience Ecosystem

4. Opportunities to Participate

RESILIENT RURAL AMERICA PROJECT

(Module #1) Rural Resilience to Extreme Weather
Integrating Land Use Strategies in Comprehensive Plans

Project information:
www.mfpp.org/rrap

Free Training Module
www.resilientruralamerica.org

RESILIENT RURAL AMERICA PROJECT

A free online training program to help rural communities become more resilient to extreme weather and changing climate conditions.

PREPARE

Self-assessment, team building and community engagement

EXPLORE EXTREME WEATHER HAZARDS

Understand changing local conditions and the range of potential hazards posed to people, infrastructure, and natural systems

ASSESS RURAL VULNERABILITIES

Prioritize risks and understand the relative likelihood and severity of consequences to community assets

PRIORITIZE ACTIONS

Identify adaptive land use strategies that address high priority local risks and opportunities

UPDATE COMPREHENSIVE PLAN

Integrate resilient land use policies and practices into a comprehensive plan update

TAKE ACTION

Identify and implement policies and projects that advance land use resilience strategies in your comprehensive plan

RESULTS AND OUTCOMES

- Increased local capacity for rural resilience to extreme weather through local planning, funding, and implementation
- Climate-ready comprehensive plan that advances resilient land use strategies
- Climate-ready local policies and practices that are funded and implemented

Model Forest Policy Program · ICMA · EcoAdapt · GEOS Institute · Climate Program Office

Project funded by the Climate Resilience Fund, Harmonic International & NOAA Climate Program Office

www.mfpp.org/rrap

RESILIENT RURAL AMERICA PROJECT

- Begin where you are in your planning
- Online training module
- > 100 page Workbook of step-by-step instructions
- Links to literature, tools, resources from partners
- Worksheets to guide you through critical decisions
- Aligned with U.S. Climate Resilience Toolkit Steps to Resilience

RESILIENT RURAL AMERICA PROJECT

Climate Change Adaptation through Local Comprehensive Planning:

Guidance for Puget Sound Communities

Lara J. Hansen, Stacey Justus Nordgren
& Eric E. Mielbrecht

February 2017

EcoAdapt™
Meeting the challenges of climate change

Bainbridge Island, WA www.EcoAdapt.org

RESILIENT RURAL AMERICA PROJECT

Streamlined Training Using a Tested Framework

1. Prepare
2. Explore Hazards
3. Assess Vulnerability & Risk
4. Identify Options for Action
5. Update Comprehensive Plan
6. Take Action on Resilience Strategies

Steps to Resilience

U.S. Climate Resilience Toolkit

https://toolkit.climate.gov/#steps

Have you viewed the Steps to Resilience videos on the U.S. CRT?

Mentimeter

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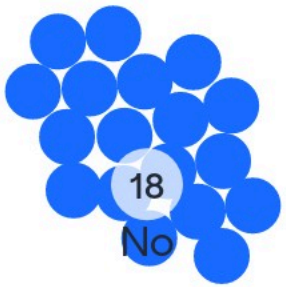
Yes



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No

0

I don't know what you're talking about

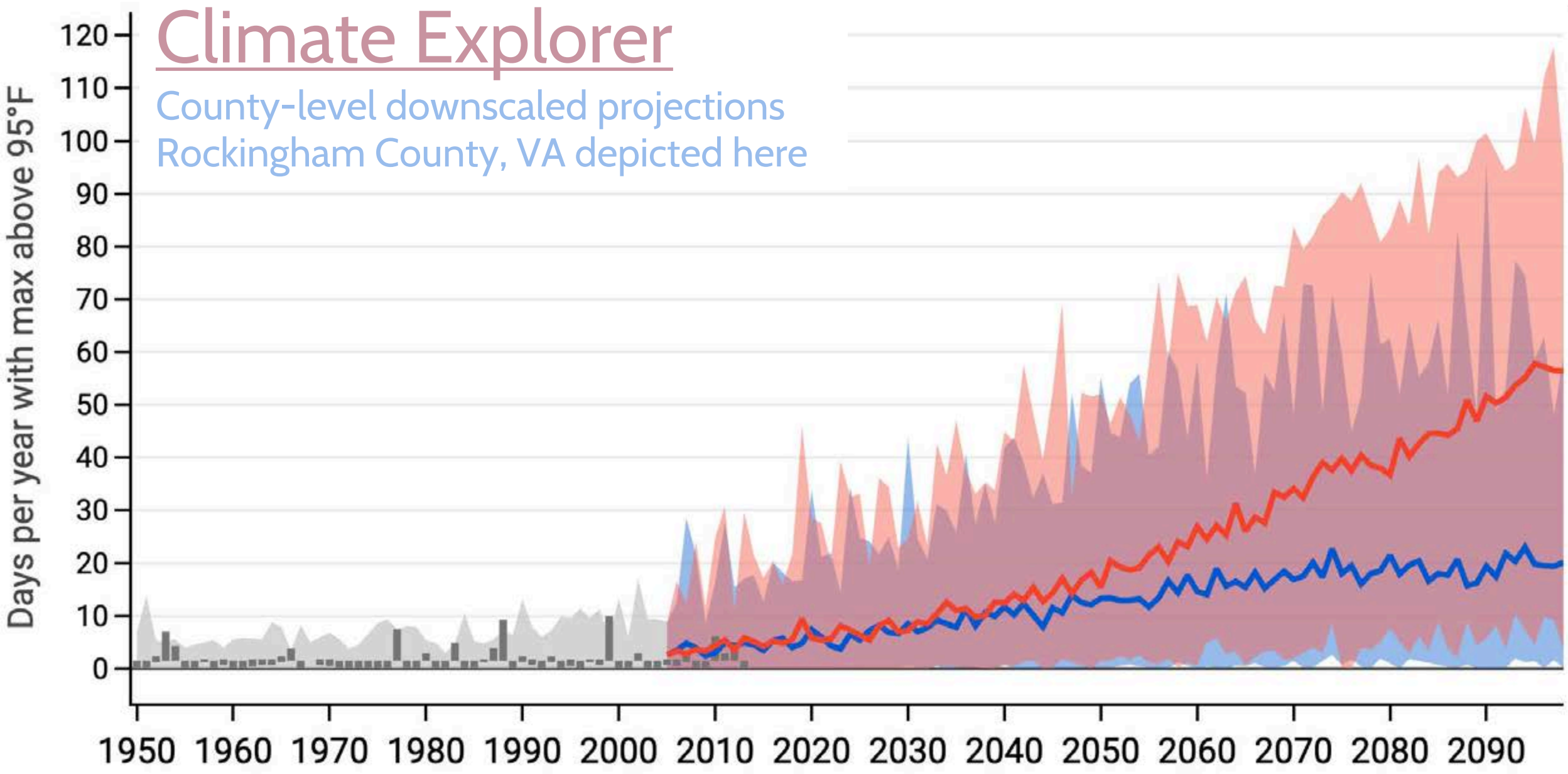
22

Explore Hazards

https://toolkit.climate.gov/steps-to-resilience/explore-hazards

Climate Explorer

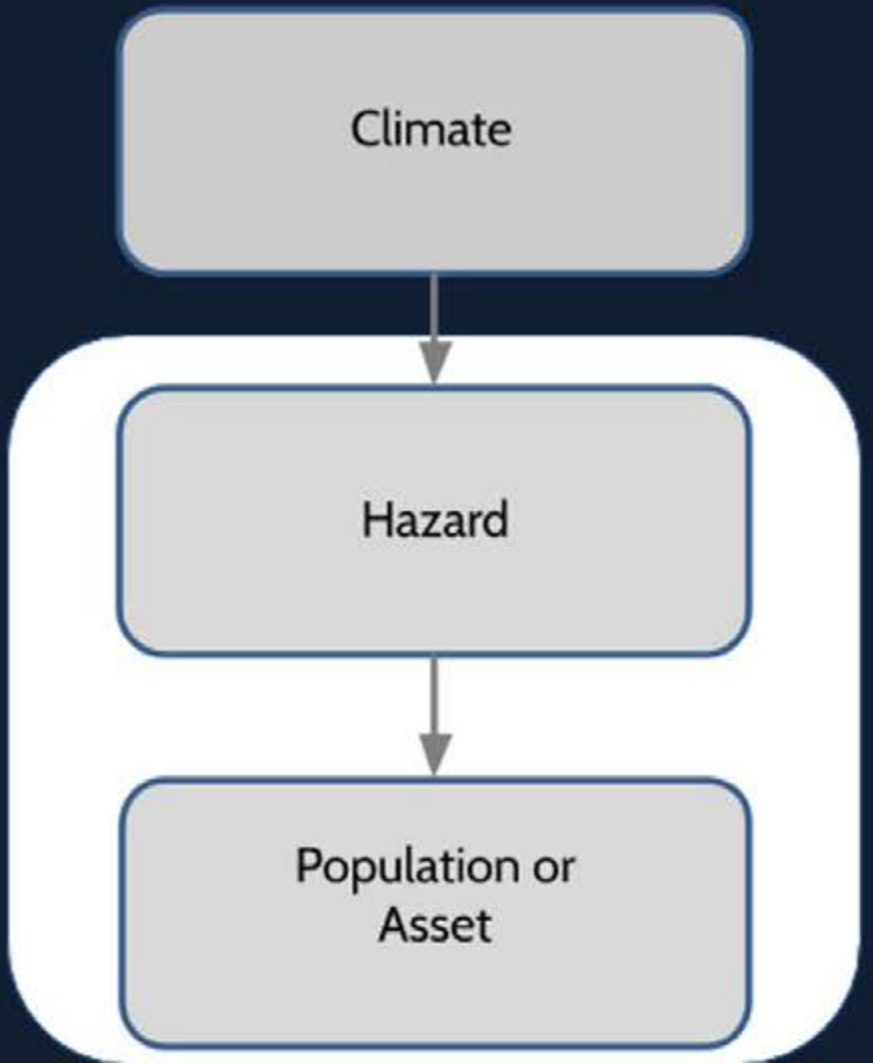
County-level downscaled projections
Rockingham County, VA depicted here



Tutorial: https://arcg.is/15mvy80

Imperative | Priorities | Leverage | Participate

Impacts involve both a hazard and an asset



CIRC
Climate Impacts Research Consortium

RISA
Regional Integrated Sciences and Assessments

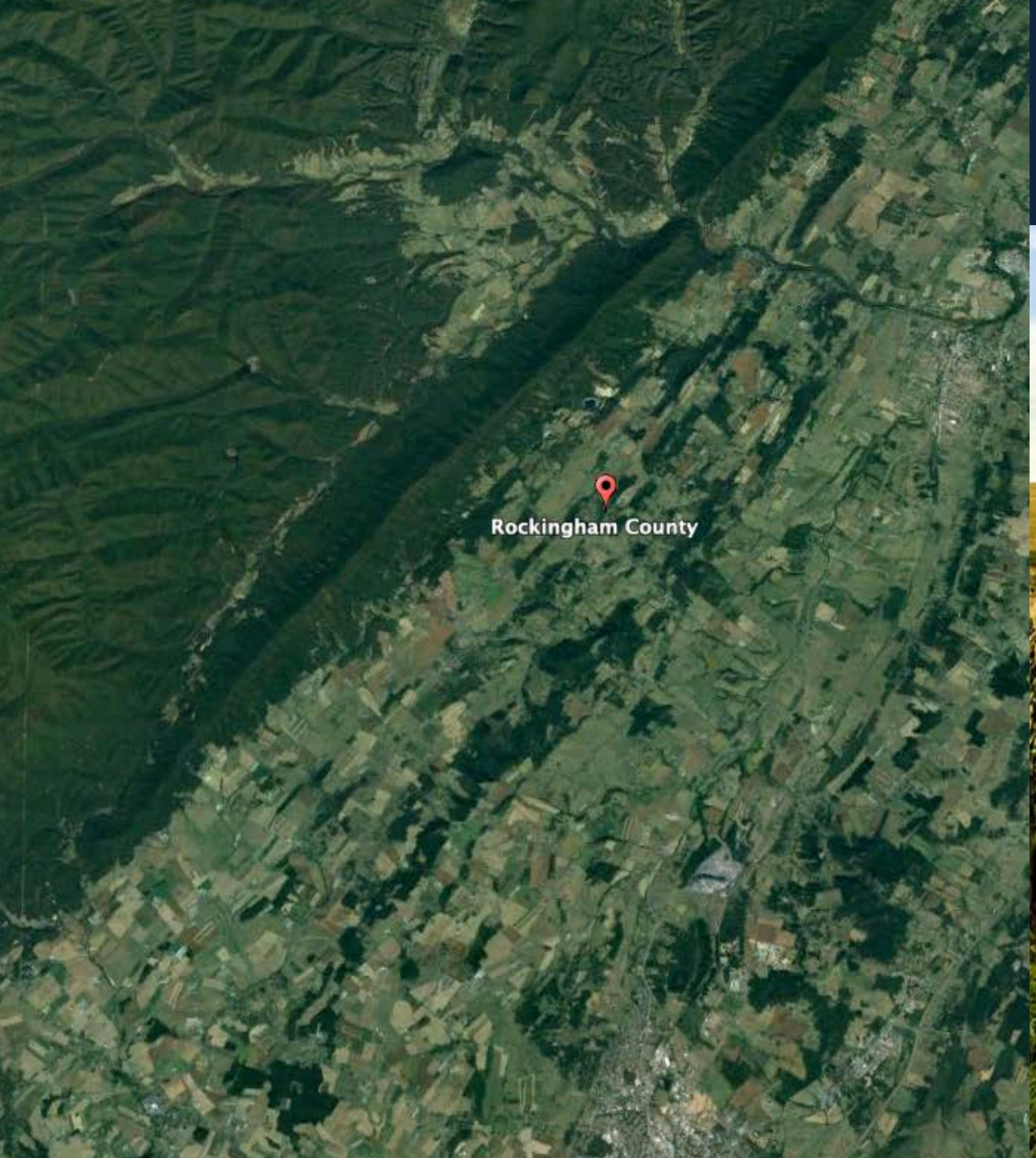
https://pnwcirc.org/science/socialscience

Imperative | Priorities | Leverage | Participate

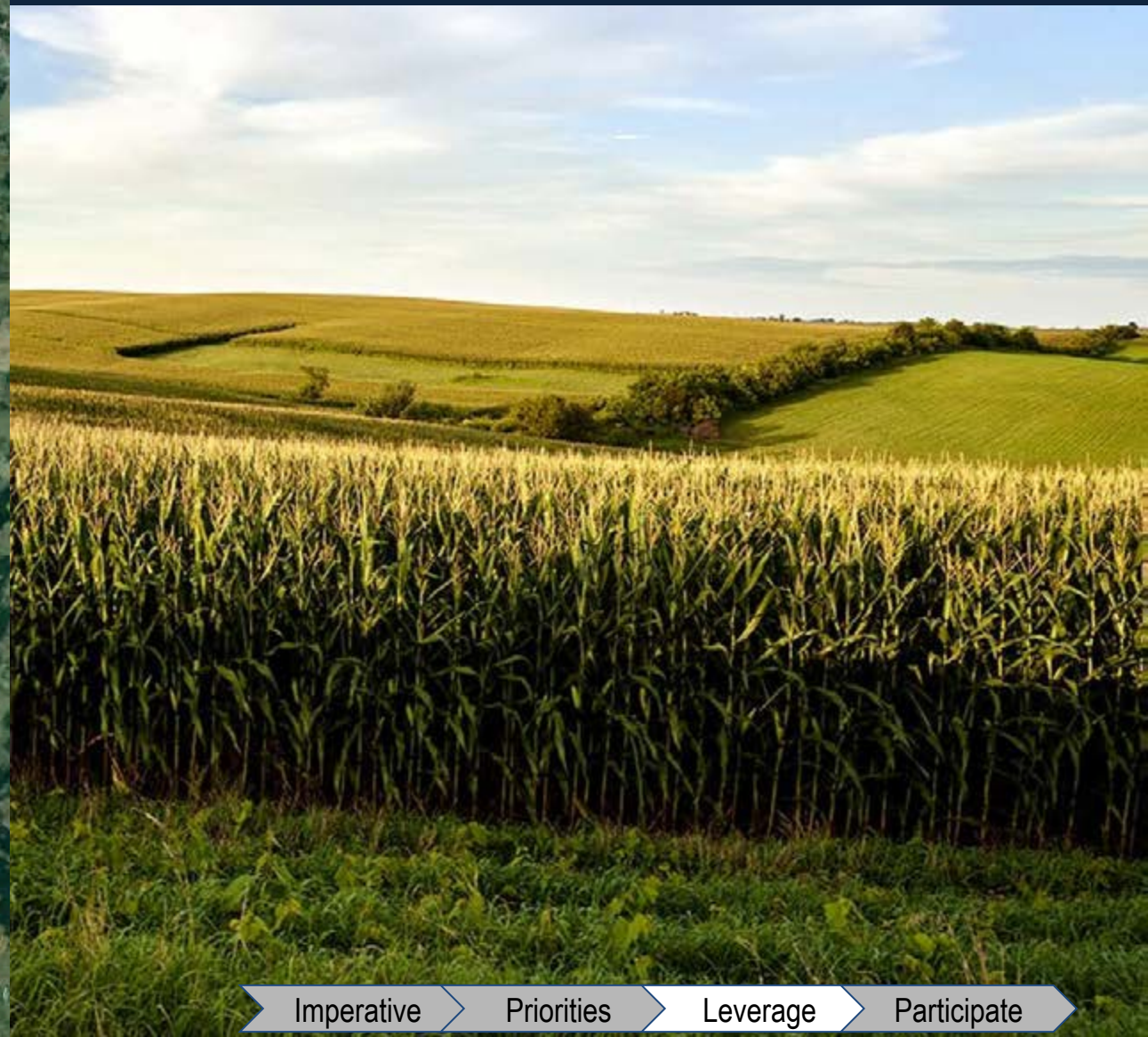
Does extreme weather represent a hazard to assets you value?

Assess Vulnerability and Risk

https://toolkit.climate.gov/steps-to-resilience/assess-vulnerability-risks



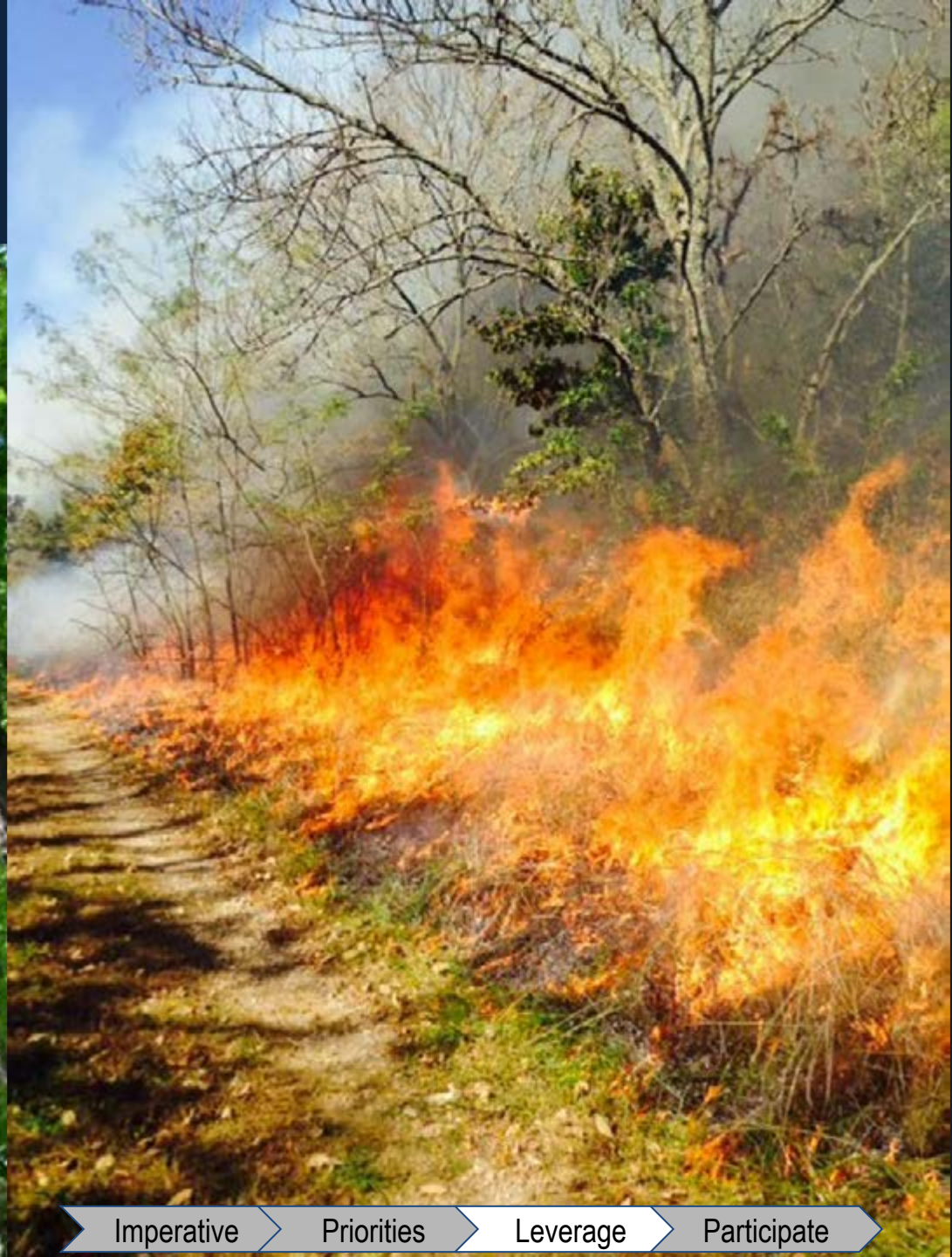
Sensitivity: timing of planting, fertilizer application, harvesting , fallow, …

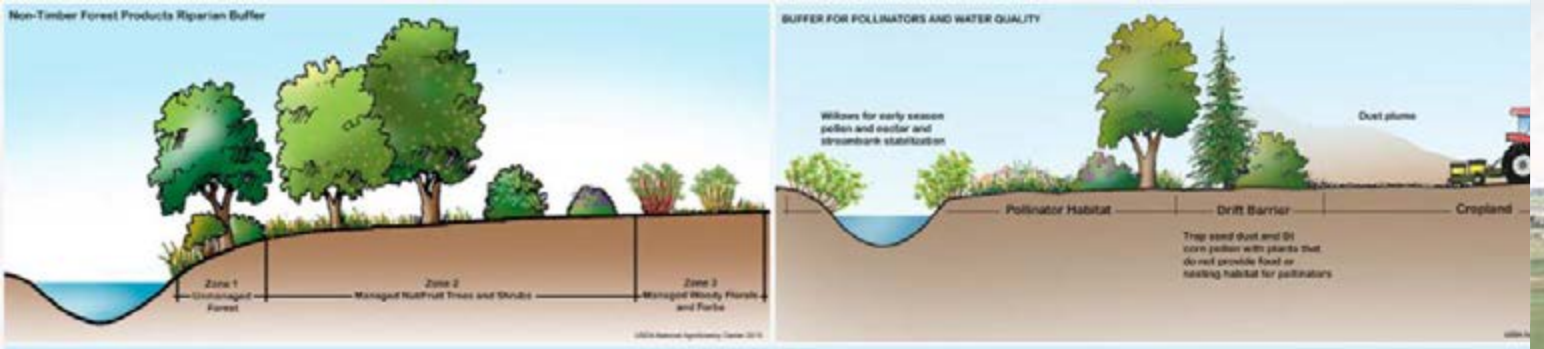


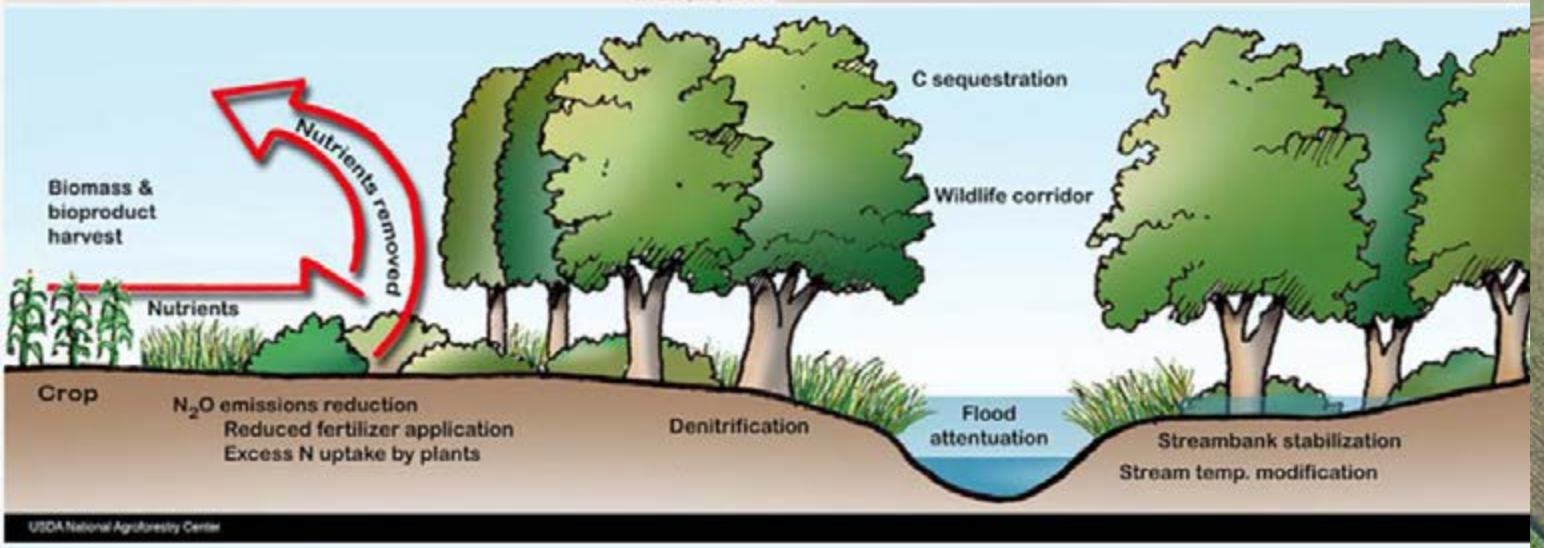
Imperative | Priorities | Leverage | Participate

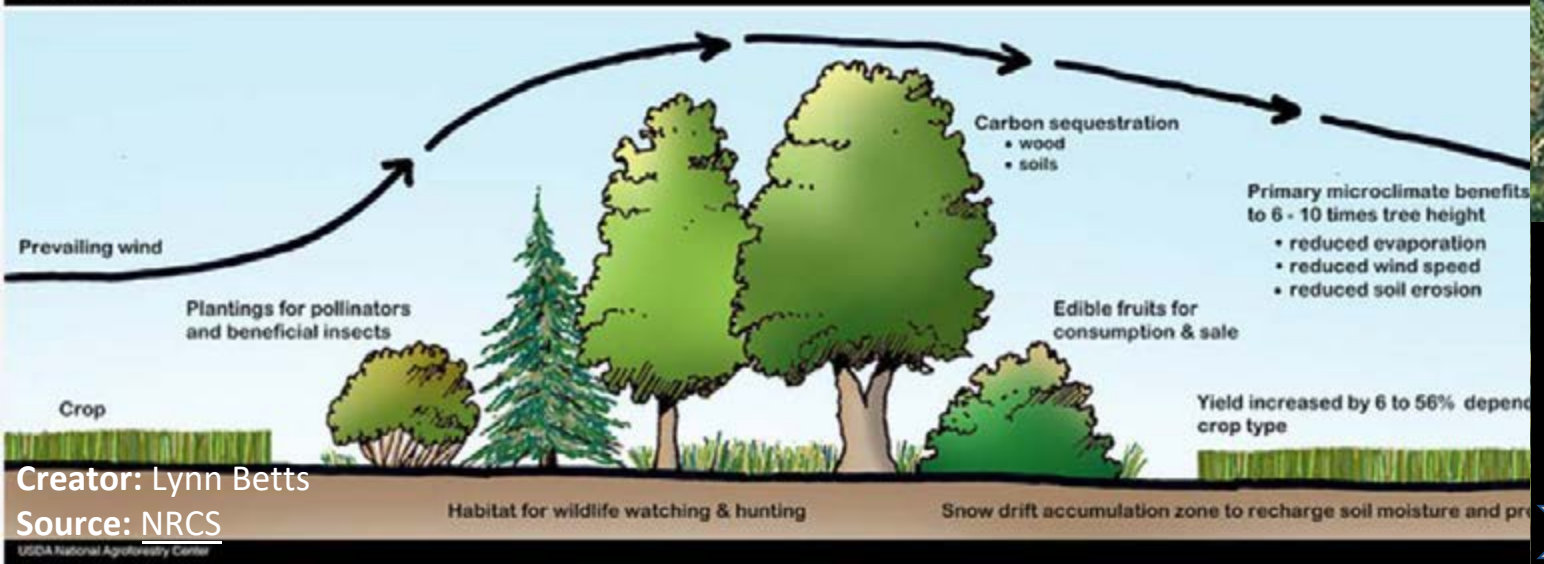
Adaptive capacity: silviculture and understory management (e.g., controlled burn)

Source: National Park Service









Creator: Lynn Betts
Source: NRCS

Adaptive Capacity: riparian zones

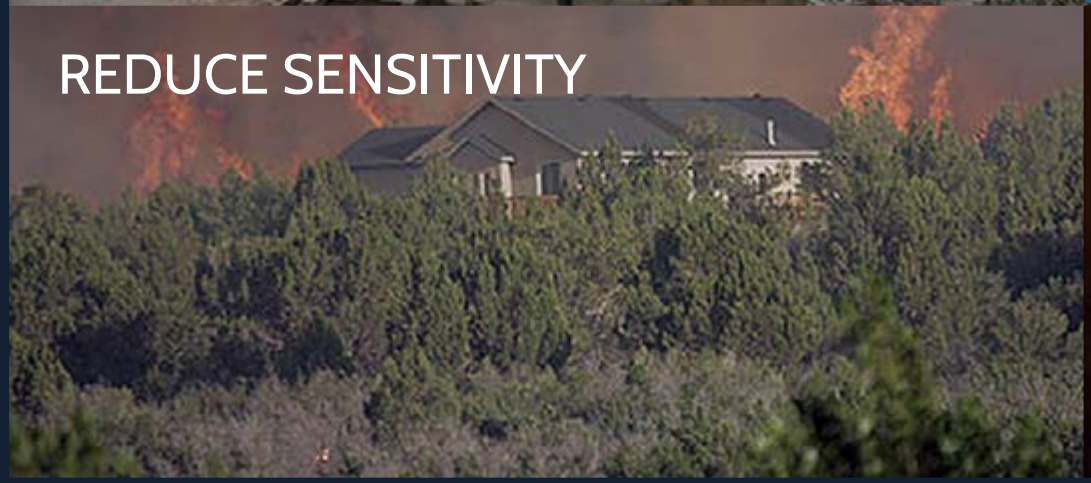
Imperative | Priorities | Leverage | Participate

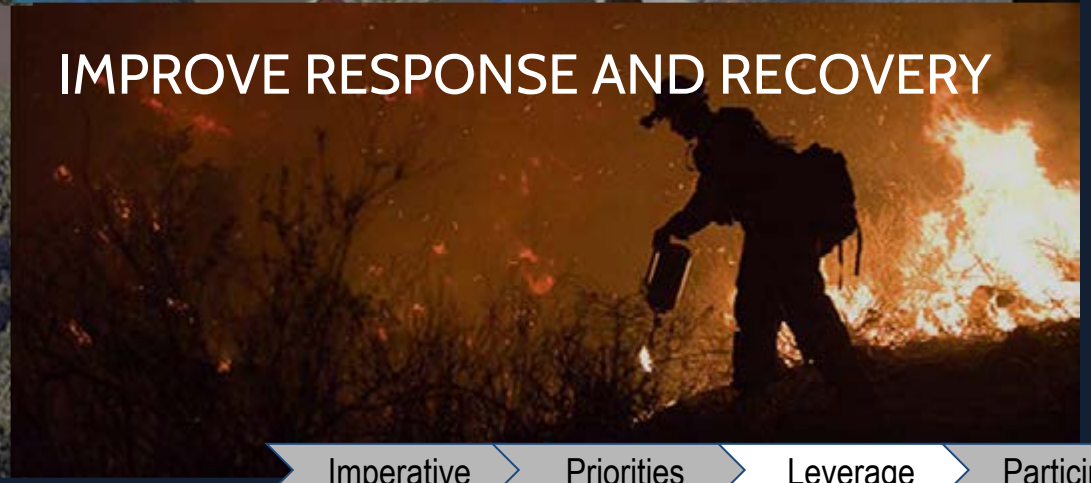
Can you accept the risk that climate presents to your assets?

Investigate Options

https://toolkit.climate.gov/steps-to-resilience/investigate-options

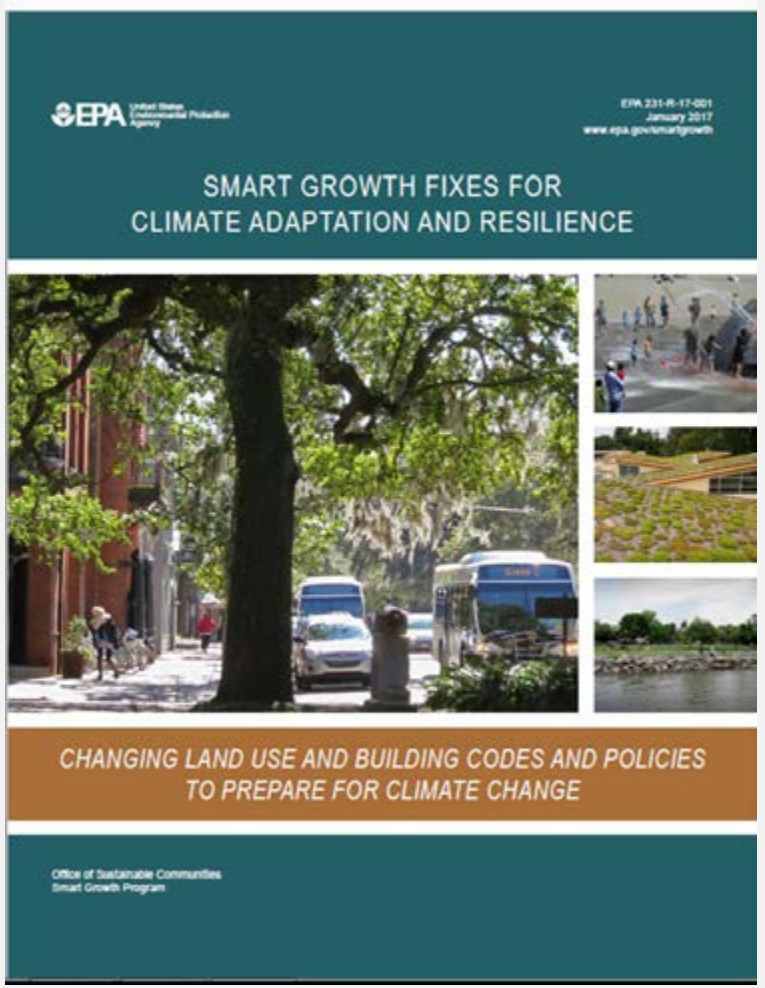
Identify options that target different aspects of vulnerability and risk (brainstorm)



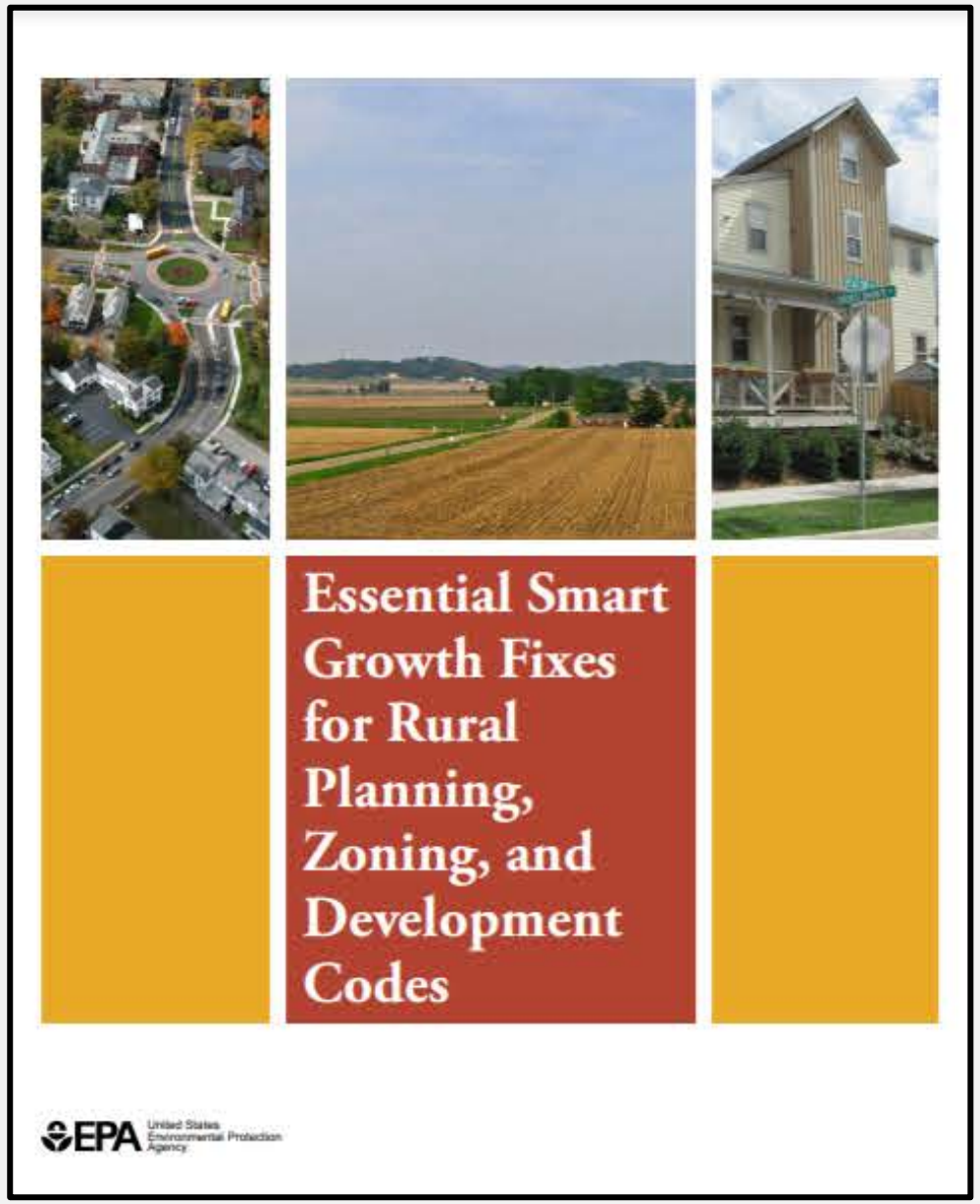


Adaptive Land Use Strategies for Extreme Weather Resilience

- ✓ Smart Growth Management
- ✓ Floodplain management
- ✓ Shoreline management
- ✓ Stormwater codes & ordinances
- ✓ Green infrastructure practices
- ✓ Extreme heat and cold mitigation
- ✓ Drought mitigation / water conservation
- ✓ Green space conservation
- ✓ Regenerative agriculture practices
- ✓ Sustainable forestry practices
- ✓ Wildfire mitigation development rules



https://www.epa.gov/smartgrowth/smart-growth-fixes-climate-adaptation-and-resilience



https://www.epa.gov/sites/production/files/documents/essential_smart_growth_fixes_rural_0.pdf

Integration of resilient land use strategies into all plans and management practices is the most cost effective pathway to increase rural resilience

Are your active stakeholders committed to the options you generated?

Prioritize & Plan

https://toolkit.climate.gov/steps-to-resilience/prioritize-plan

Integrate Resilient Land Use into Comprehensive Plan

GOAL: Recommend policy updates with prioritized resilient land use strategies

PROCESS: Analyze each comprehensive plan element for potential climate resilience objectives

Land use is a FEMA Priority 1 Hazard Mitigation Strategy for both Floods and WUI Wildfire Resilience

Climate Change Adaptation through Local Comprehensive Planning:

Guidance for Puget Sound Communities

Lara J. Hansen, Stacey Justus Nordgren
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February 2017

EcoAdapt™
Meeting the challenges of climate change

Bainbridge Island, WA www.EcoAdapt.org

Comp Plan Elements

1. **Existing conditions**
2. **Goals and objectives**
3. **Implementation**
4. **Future land use maps**

Optional elements

- **Housing**
- **Water**
- **Transportation**
- **Environment**
- **Health**
- **Infrastructure**
- **etc.**

Analytical Worksheets to Guide Strategy Development

- **Comp Plan Elements & Climate Impacts**
- **Extreme Weather Implications**
- **Goals and Policy Updates for each Element**

❖ Comp Plan Elements & Climate Impacts

PLAN ELEMENT	IMPACTS		
	Temperature	Precipitation	Sea Level Rise
Water Resources	Higher temps increase water demand	More intense rainfall increases stormwater volume	Increase risk of saltwater intrusion
	Increased evaporation	More flooding events	Increased shoreline erosion
	Reduce water quality	Reduced water quality	Reduced water quality

❖ Extreme Weather Implications

IMPACT	PLAN ELEMENT
	Land Use Implications
Precipitation: Changing patterns and extremes, long duration and greater intensity	**Changing patterns may affect function of infrastructure:** · **Stormwater inundation and localized flooding** · **Chronic nuisance floods, erosion, landslides** · **Increased maintenance needed**
	Changing patterns and extreme cause shifts in vegetation types and habitat
	Groundwater recharge diminished and further reduced by impervious surfaces

❖ Goals and Policy Updates for each Element

PLAN ELEMENT	Actions that Support Mitigation	Actions that Support Adaptation	Implementation / Toolkit Actions
Land Use	Conserve energy and ecosystem functions by preventing sprawl	Locate all new growth outside of hazard zones	Develop a certificate for resilient land use criteria to fulfill: · Identify lands suitable for development · Align with hazard mitigation plans · Promote compact development patterns

Will your plan protect what you value?

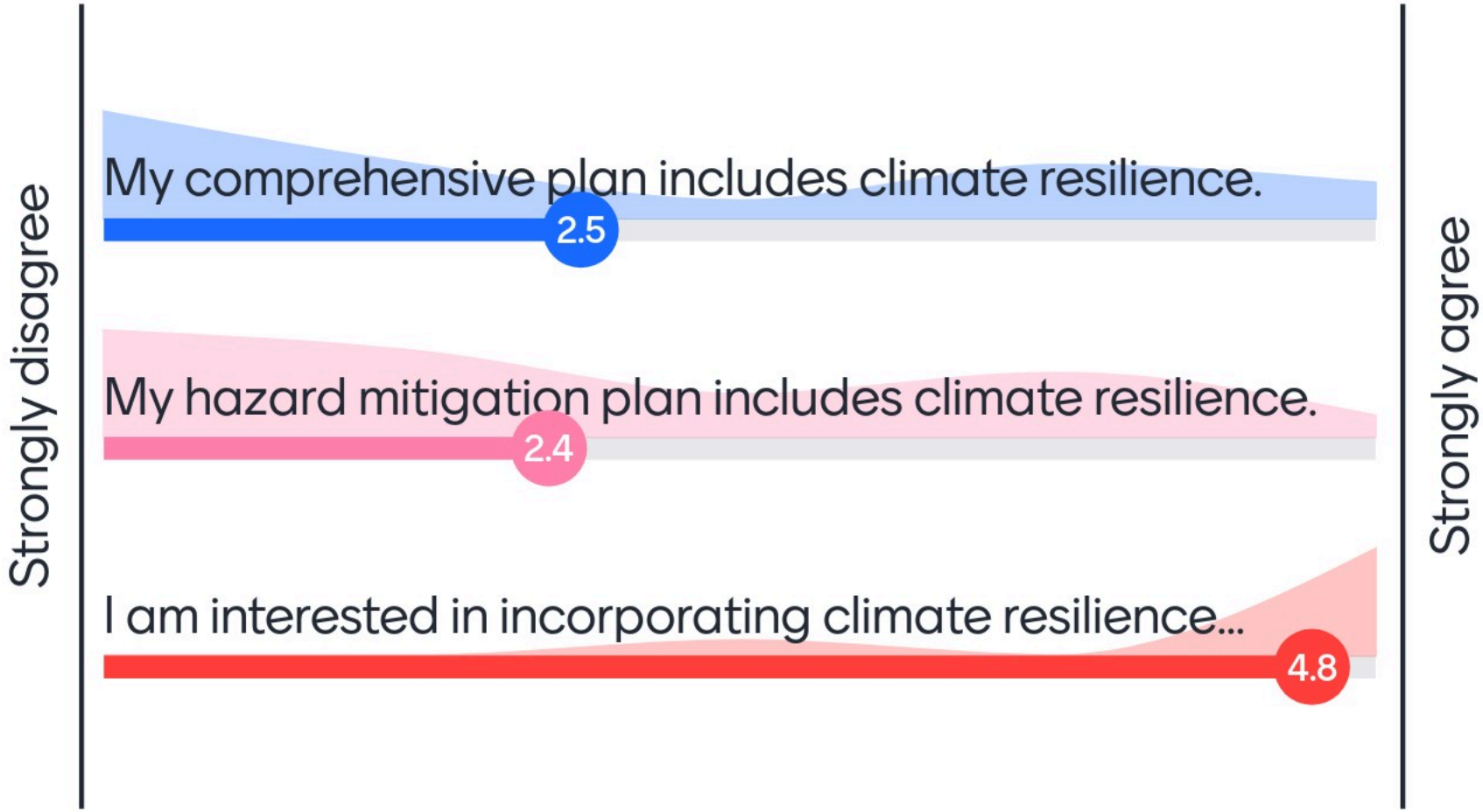
Take Action on Comprehensive Plan

https://toolkit.climate.gov/steps-to-resilience/take-action

Action and Outcomes for Resilience Integration

- ❑ Planning provision changes
- ❑ Policy/codes/ordinance changes
- ❑ On-the-ground practice changes
- ❑ Budget / investment changes
- ❑ Health and safety improvements
- ❑ Measurable environmental changes
- ❑ Socioeconomic benefits
- ❑ Learning, attitude, behavior changes
- ❑ Other outcomes?

Does your county address climate resilience?



Mentimeter

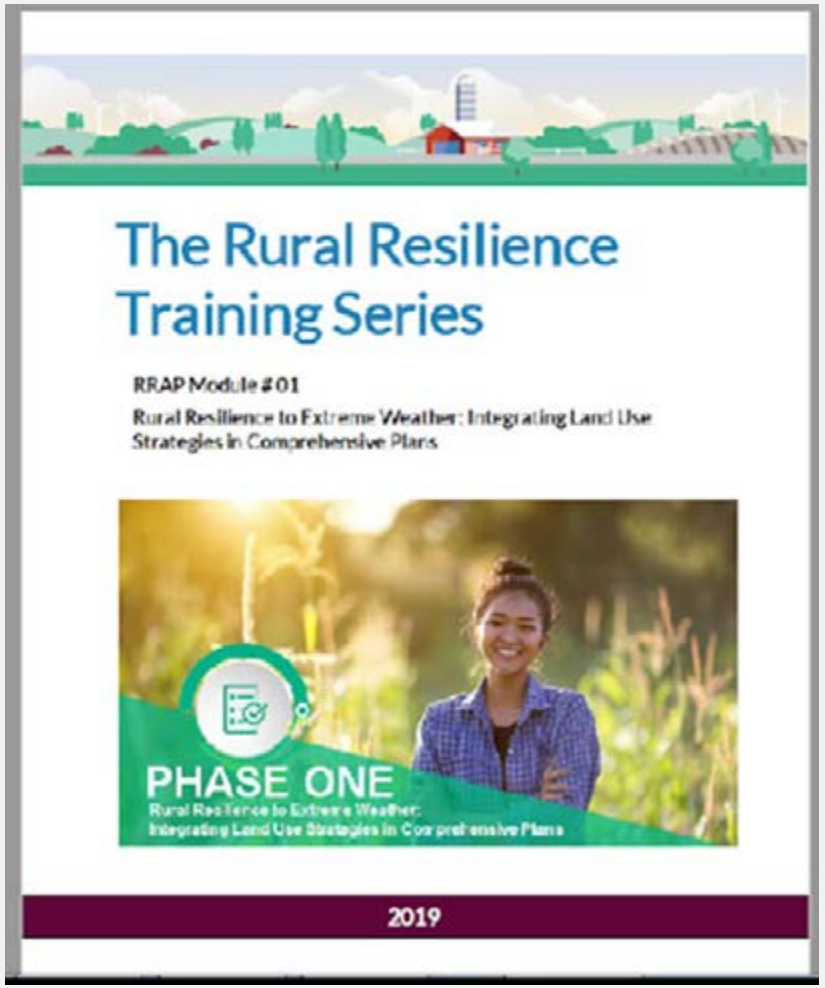
Outline

1. The Rural Resilience Imperative
2. Meeting Rural Needs and Priorities
3. Leveraging Resources in Resilience Ecosystem
4. **Opportunities to Participate**

RRAP #1 – Opportunities to Participate

RRAP Module #1:
Rural Resilience to Extreme Weather: Integrating Land Use Strategies in Comprehensive Plan Updates

- Use as guide to your next plan update (Comp, HMP, Watershed, etc.)
- Organize a local team or a cohort of local communities for a 4-6 week facilitated module training process
- Share information with colleagues and stakeholders



www.resilientruralamerica.org

RESILIENT RURAL AMERICA PROJECT

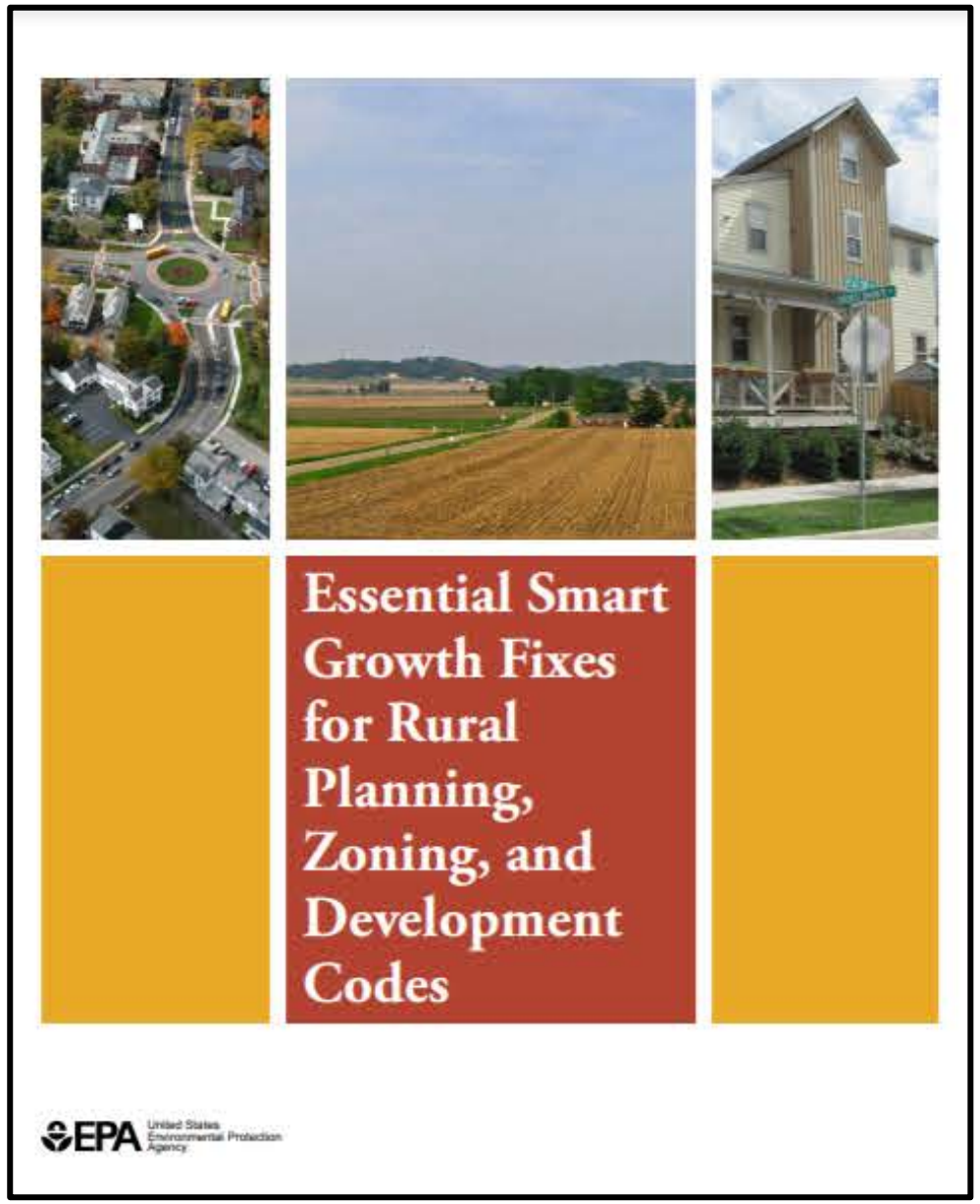
RRAP Module #2. Rural Resilience to Extreme Weather: **Implementing** Resilient Land Use Strategies

Goal: Translate resilient land use strategies into specific **action steps** that address **local impacts and future risks**

Project-Based Training: A learning guide thru 2-3 resilient land use action projects.

- Analyze project **climate-readiness**
- Conduct an **economic analysis**
- **Communicate** to leaders, residents, and landowners
- Integrate **land use policy** change
- Update **codes and ordinances**
- Modify natural **resource management** practices
- Secure **funding sources** for incentives and project execution

www.mfpp.org/rrap



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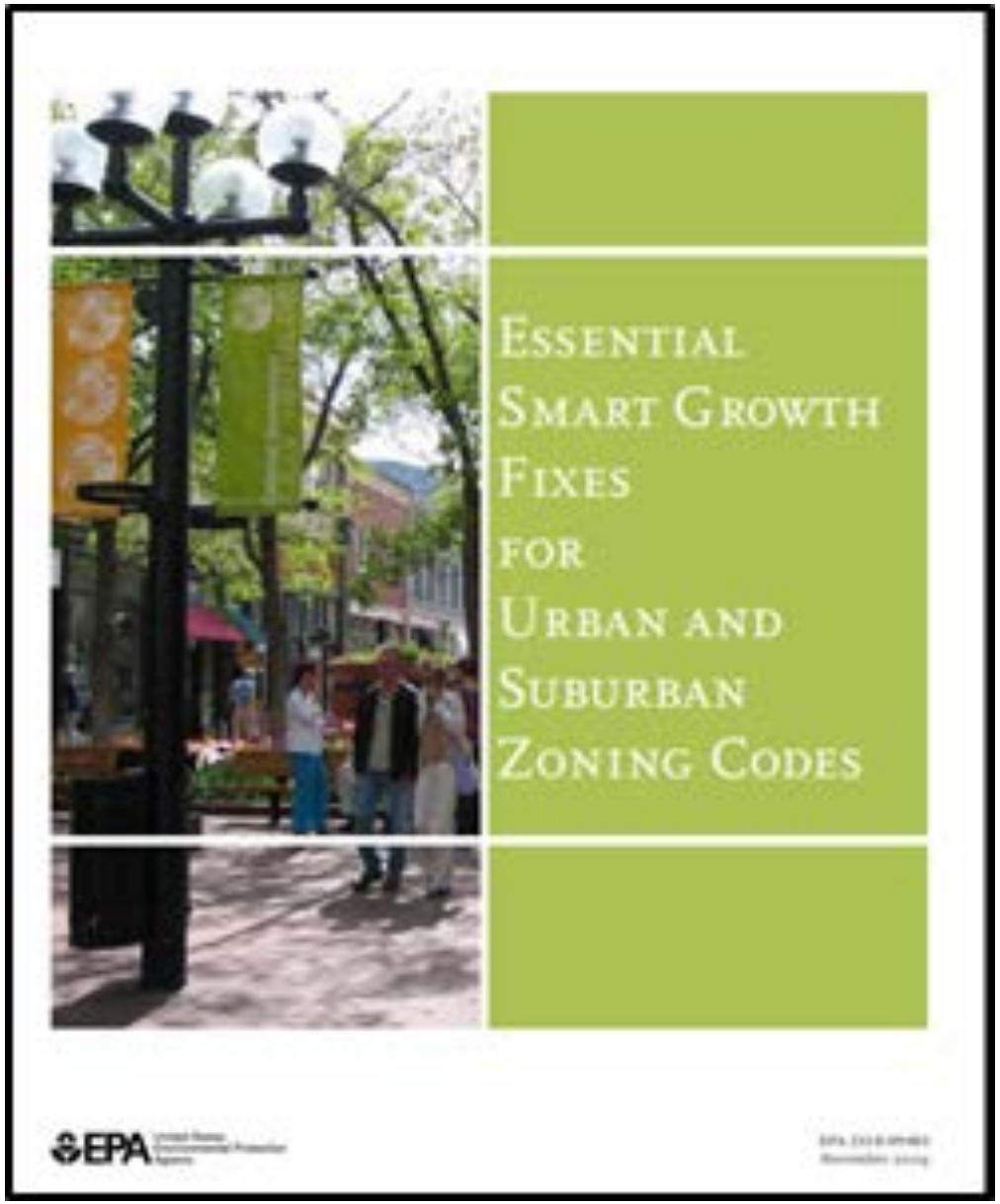

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RESILIENT RURAL AMERICA PROJECT

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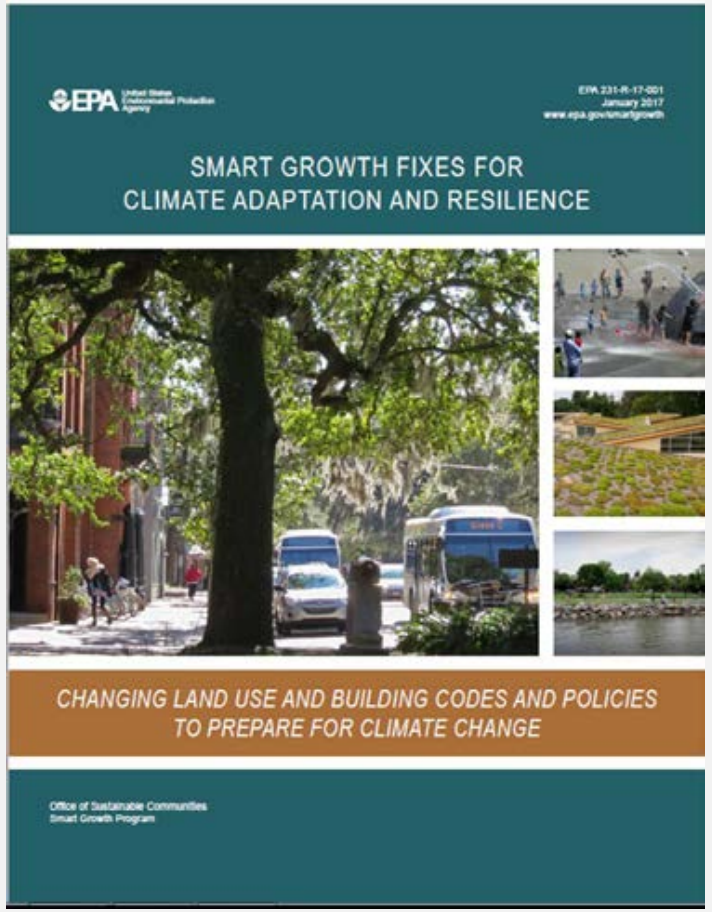


https://www.epa.gov/smartgrowth/smart-growth-fixes-climate-adaptation-and-resilience

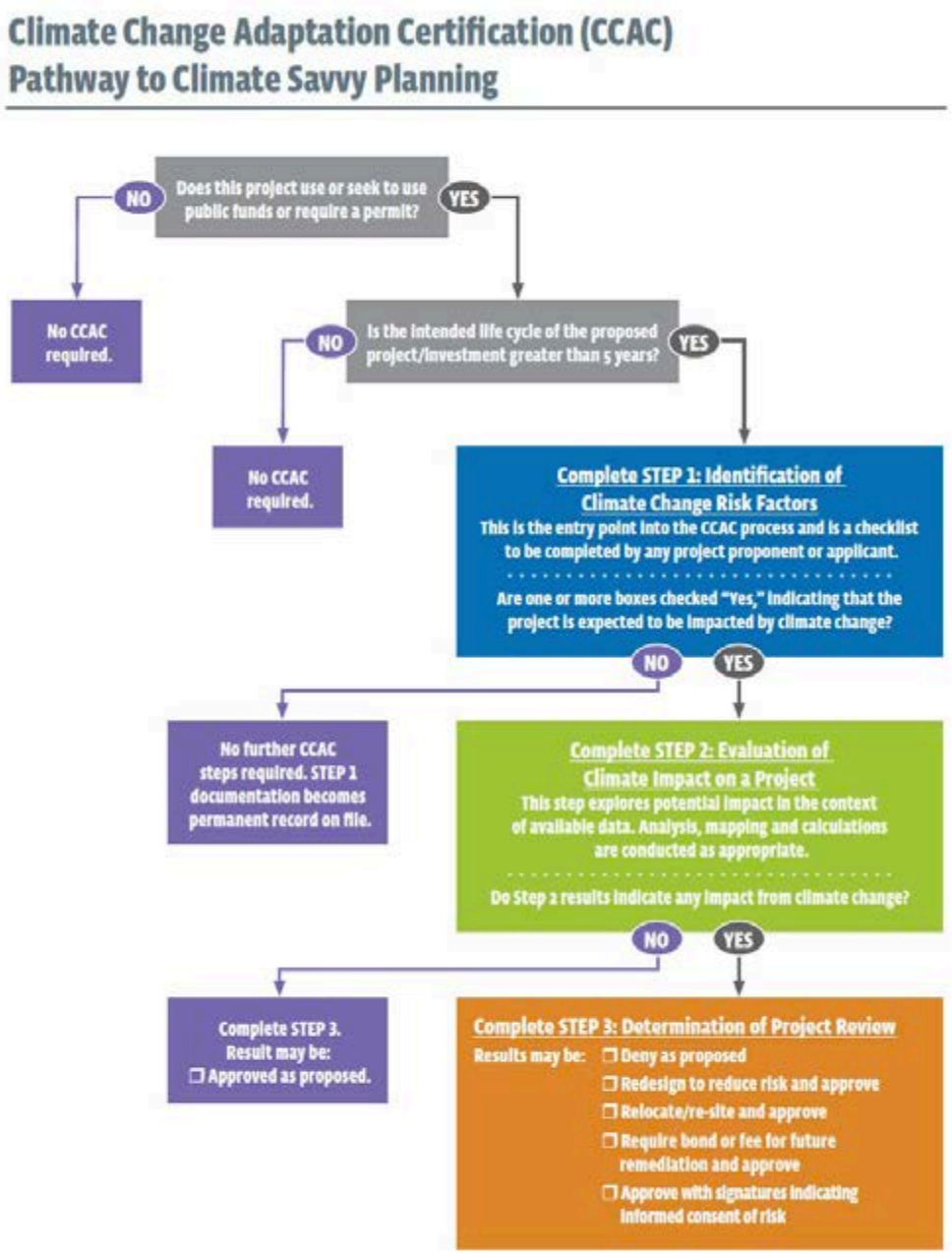
Is your policy or project resilience-ready?

Use the CCAC Tool for decisions that:

- ✓ Use public funds
- ✓ Have life cycle beyond five years
- ✓ Impact the public good

Such as, fiscal expenditures, capital planning, permitting, infrastructure design and siting, farm or forest management upgrades

https://www.cakex.org/tools/climate-change-adaptation-certification-tool



Objectives of CCAC Tool:

- ✓ Evaluate future conditions for project function and longevity
- ✓ Understand long-term sustainability of project at funding or permitting phase
- ✓ Reduce community risk from actions today that may become liabilities under future conditions
- ✓ May also enhance funding success

https://www.cakex.org/tools/climate-change-adaptation-certification-tool

Potential Mixture of Action Topics

- Planning– comprehensive plans, hazard mitigation plans, regional open space plans, etc.
- Regulatory– zoning, floodplains, building codes, setbacks, development regulations, rebuilding restrictions, subdivision rules, armoring permits, coastal management
- Finance, Tax, & Markets– incentives, TDRs, capital improvement programs, acquisitions & buyouts, conservation easements (static or rolling)
- Natural Resource Management– regenerative agriculture, sustainable forestry, soil restoration, green infrastructure, etc.
- Communications – Engagement, outreach, & messaging

RESILIENT RURAL AMERICA PROJECT

RRAP Module #2:
Rural Resilience to Extreme Weather:
<u>Implementing</u> Resilient Land Use Strategies

Module development in progress now:

- ❖ Complete & share 2020 Rural Resilience Survey
- ❖ Volunteer as Beta Tester or Project Advisor

Project information: www.mfpp.org/rrap

Survey: https://www.surveymonkey.com/r/VXCVTGV

What land use implementation topics or skills do you want to learn more about or put into action ?

Mentimeter

- forest management in a changing climate
- Biodiversity conservation
- creative zoning/code approaches to nudge toward resilience
- Flood mitigation
- housing
- integrating local comprehensive plans and hazard mitigation plans to reach mitigation goals
- considerations around solar farms
- Role of soil health

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By Nicholas A. Tonelli
Northeast Pennsylvania, USA
https://commons.wikimedia.org/w/index.php?curid=6951488

Remember:

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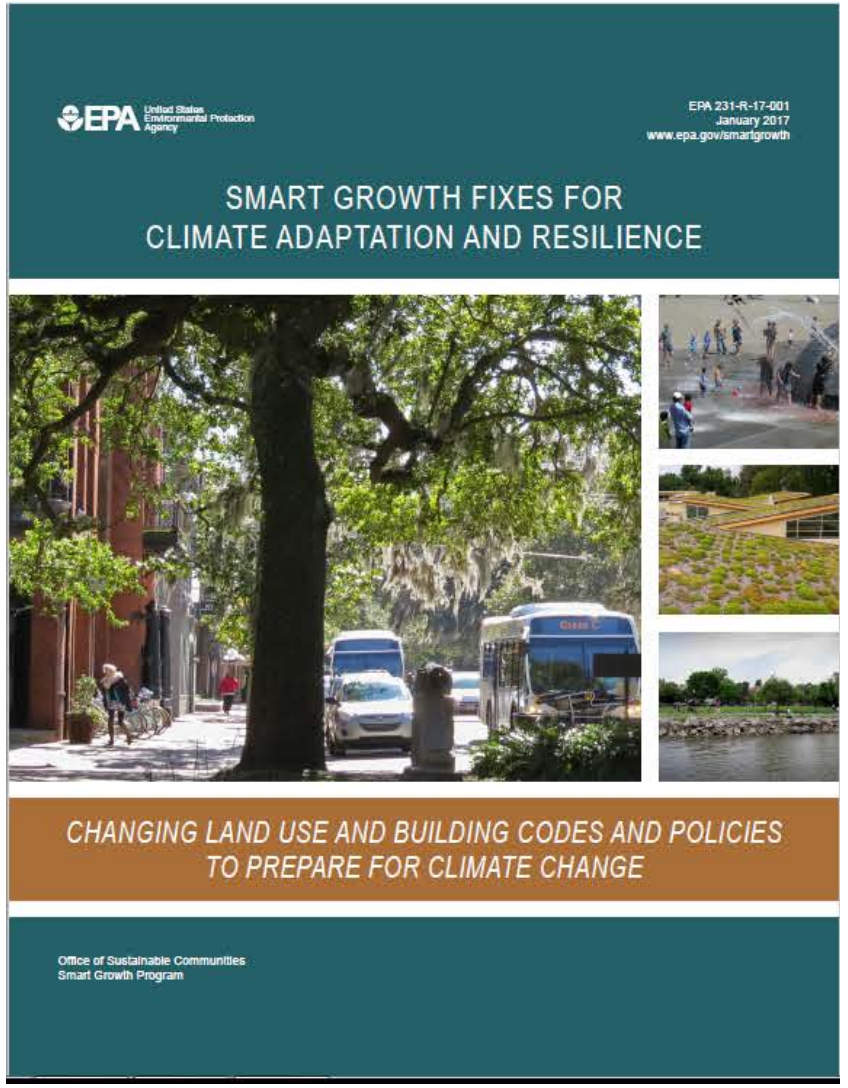
Integration of resilient land use strategies into all plans, policies, and management practices is the most cost effective pathway to increase rural resilience



Collaboration and Co-Production of Training Module

Model Forest Policy Program · ICMA · CPO Climate Program Office · EcoAdapt · GEOS Institute

Rural Beta Testers & Project Advisors

Two rounds of funding

Climate Resilience Fund · Harmonic International (Be Certain.) · NOAA

RESILIENT RURAL AMERICA PROJECT

THANK YOU!

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Questions?

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