



INTERNATIONAL
ECONOMIC DEVELOPMENT
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States of Resilience



**A Comparison of Resilience Efforts in
U.S. States and Territories**



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Ms. Tracye McDaniel

President

TIP Strategies

2019 Chair of the IEDC Board of Directors

Jeffrey A. Finkle, CEcD

President & CEO

International Economic Development Council

Washington, DC

Authors

Primary author

Gareth Potts, PhD – Senior Economic Development Associate, International Economic Development Council

Contributors

Lynn A. Knight, CEcD – VP Knowledge Management and Development, International Economic Development Council

Eli Dile - Economic Development Associate, International Economic Development Council

EXECUTIVE SUMMARY

The International Economic Development Council (IEDC) undertook research for the West Virginia State Resilience Office. This consisted of semi-structured interviews with 18 organizations in the late Summer of 2018 and extensive internet-based research. This report summarizes and updates (to the publication date) the key findings. The contents are the responsibility of IEDC alone.

The report begins with an attempt to **define resilience**. The interviews found most organizations focus on the impacts of extreme weather, although many also acknowledged the need to look at a broader range of threats.

Most relevant is how state resilience work has taken on an economic dimension. This work is broken down into four categories.

1] **Preparedness** - things that business can plan for before an event occurs. This includes checking insurance coverage, disaster scenario planning, getting data/projections on risk, and raising business awareness around continuity.

2] **Response** - things that need to take place immediately after an event occurs. This includes messaging about the true extent of the problem, accurate and up-to-date business information, and banking continuity.

3] **Rebuilding** – things that need to take place in the medium- and long-term to recover after an event. Recovery efforts need to try and ensure that as much of the rebuilding efforts are undertaken by local companies and workers - even though these groups may have been hard-hit.

In addition to existing finance for economic development, additional disaster-related finance is available in various forms – with CDBG-DR being the most common. Perhaps most proactive is an example from New York of \$10k up-front to small businesses – money that might be a crucial lifeline in the days before business resumes and insurance money comes in.

Examples of available funding include equipment and inventory replacement grants; business grant &/or loan programs; sector-specific grants; low-cost loans; and bridge loans.

There are also several programs from Colorado, Puerto Rico, and Louisiana that offer technical assistance for small businesses.

4] **Mitigation (build back better)** this includes various tactics, including: business opportunities around disaster preparation; redesigning premises; relocating premises out of floodplains; improved downtown urban design; economic diversification in the face of the decline of older sectors, and various infrastructure improvements that keep power running and roads open, etc.

States organize their resilience work in different ways – some with nothing beyond typical emergency management work. The staff sizes of these organizations are almost always small – usually one or two employees and seldom more than half a dozen (the big exceptions being the several-hundred-person staffs for the CDBG-DR-funded New York and Louisiana post-hurricane recovery efforts). All are largely driven by extreme weather events. Most activities are in state government – with some of these having strong governor input and connections. A presence in the statehouse allows ready access to power but is also vulnerable to changes in gubernatorial administrations. Location in a formal department has the advantage of access to that department's on-the-ground offices/networks around a state.

Little resilience-specific activity is run from economic development/commerce departments, although there are several instances of this for CDBG-DR funds (Florida, North Carolina, South Carolina, Mississippi). CDBG-DR funds are not just administered from such departments however – other departments include housing and/or community development (Louisiana, Virginia), a general land office (Texas) and a housing finance authority (U.S. Virgin Islands). Vermont's now-completed Economic Resilience Initiative was led by the state's Agency of Commerce and Community Development. In a couple of instances, organizations that operate in a similar sphere have seconded their staff to oversee state-level organizations.

Given that the major shock to hit West Virginia in recent years has been heavy river flooding, it is useful to list the states that have also experienced this same extreme weather.

Finally, an office of economic resilience is likely to need staff that can oversee the types of activities outlined in the 'What has been done for economic resilience' section. The report outlines the backgrounds of staff leading statewide resilience initiatives – as can be seen, most do not have direct experience in economic development. Rather, what is common is strong experience in the subject and post-graduate education.

INTRODUCTION

The International Economic Development Council (IEDC) undertook research for the West Virginia State Resilience Office. This consisted of semi-structured interviews with 18 organizations in the late Summer of 2018 and extensive internet-based research. Almost all key state-level organizations doing work in this area were contacted, although not all agreed to an interview. This report summarizes and updates (to the time of publication) the key findings. The contents are the responsibility of IEDC alone.

The report has two main sections – the first is an analysis of the research findings and includes:

- An attempt to define resilience;
- Preparedness - things that business can plan for before an event occurs;
- Response - things that need to take place immediately after an event occurs;
- Rebuilding – recovery from a shock, including various sources of finance;
- Mitigation (building back better);
- A look at how states organize their resilience work – for example, is it governmental or nonprofit and how is it funded;
- States that also experienced flooding;
- A look at the backgrounds of staff leading statewide resilience initiatives.

The second section is a state-by-state summary of the interviews that outlines some of the responses in more detail along with supplemental information, such as key contacts and useful hyperlinks to important reports and resources.

There is also a brief appendix that includes useful resources at a national and international level.

SECTION ONE - ANALYSIS

Defining Resilience

The Rockefeller Foundation, which operates an international cities resilience network, defines resilience as:

“The capacity of individuals, communities and systems to survive, adapt, and grow in the face of stress and shocks, and even transform when conditions require it. Building resilience is about making people, communities, and systems better prepared to withstand catastrophic events — both natural and manmade — and able to bounce back more quickly and emerge stronger from these shocks and stresses”.

Stresses are further defined as longer-term events that gradually weaken a place, whereas shocks are sudden, severe events. Examples of more serious stresses and shocks are given in the table below.

There are different ways to categorize stresses and shocks – for example, as natural/environmental, biological or man-made, or as social, economic, and environmental.

Chronic stresses	Acute shocks
aging populations	wildfires
climate change	hurricanes
endemic violence	disease outbreaks
high rates of poverty	cyber-attacks
high unemployment	earthquakes
overtaxed or inefficient public transportation system	floods
prolonged food/water shortages	terrorist attacks
structural budget crises	mass shootings

The interviews found most organizations focus on the impacts of extreme weather, although many also acknowledged the need to look at these wider stresses.

The following section attempts to outline how State and territory level resilience work has taken on an economic dimension.

What has been done for economic resilience?

Preparedness for a shock

The following are things that business can plan for should a sudden shock occur.

Activity	State	Details
Checking insurance coverage	Texas, Vermont	One of the interviewees familiar with post-Hurricane Harvey business issues noted how several businesses incorrectly thought they were properly covered. Vermont also mentioned that 'business interruption coverage' is often inadequate.
Collating local knowledge	Idaho	The University of Idaho's Center for Resilient Communities periodically undertakes structured workshops to build near future scenarios on what the landscape will look like in next 20 years and identify possible solutions. It uses stakeholder feedback to direct the data gathered – such stakeholders can include hunters, fishers, farmers, and ranchers.
Disaster scenario planning	Oregon	Oregon held a four-day exercise in June 2016, that imagined it had been hit by the major Cascadia Earthquake and Tsunami that is predicted to hit at some time in the next 50 years. The state had to consider, for example, how fuel can come in – since it currently comes in by sea and pipeline.
Encouraging continuity	Maryland	Thinking about how to keep retail stores open so people can continue to shop and work.
Forward planning	California	A State Economic Recovery Task Force, to be based in the State Office of Emergency Services, is being set up to look at long-term issues rather than immediate crises.
Gathering data/projecting risk	California	The new State Economic Recovery Task Force is already in touch with a team of researchers working on United States Geological Survey 'HayWired earthquake scenario' for the San Francisco Bay area – specifically around possible socio-economic impacts.
Planning for reentry	Washington	A state business reentry program allows businesses to register and get put into a database. While police often need to lock down/patrol big stores, a thorough database can allow staff to prove their identities to be allowed to enter.
Preparing resilient agriculture	Vermont	Farms need to be prepared for disasters – crops must be insured against floods and upstream pollution. Similarly, back-up generators are required for milking cows.
Raising business awareness around continuity	Delaware, Rhode Island, Texas, Vermont, and Washington	Key tactics include: <ul style="list-style-type: none"> ▪ developing checklists for how small business can better prepare for natural disasters. ▪ business continuity training and workshops ▪ access to small business through small business centers and chambers of commerce ▪ getting firms to protect receipts, accounting books, files, etc. – including cloud back-up ▪ firms thinking about moving if located in a major floodplain ▪ businesses thinking about their employees - especially critical ones ▪ businesses thinking about getting raw materials in and product out ▪ using IIB&HS's 'Open for Business-EZ' curriculum.
Resilience planning networking	Oklahoma	The Disaster Resilience Network Business Council is a public-private partnership designed to educate businesses and nonprofits about the need for emergency and continuity planning. Threats covered include fire, flood, wind, and power loss.
Strategy documents	Puerto Rico	A foundation-funded Advisory Commission has undertaken a wide-ranging consultation exercise with islanders and has sought the advice of expert consultants. The result is a series of strategy documents that outline the island's short- and long-term needs.
Supply-chain resilience program	Washington	In disasters, FEMA will often try and fly in ready-to-eat meals, water, etc., yet recent research shows most areas have enough food in regional grocery distribution centers to supply the population for weeks. The need is to see how to help supermarkets do this.
Vulnerability assessments	Delaware	Vulnerability assessments involve running flooding scenarios. The state has decided to plan for 1.5m of rise and can show this to communities that might be affected – with a view to thinking about what they prioritize and how they want to respond – e.g. raised roads, alternative entry/exit routes. Ideally, this needs to be complemented with economic studies of which adaptation practices deliver the most return on investment.

Response to a shock

The following are things that need to take place when a shock has occurred.

Activity	State	Details
Messaging	California	Messages to the media – including pleas for aid – need to be very clear about which areas are affected, or risk frightening off tourists. Areas that are ‘open for business’ need to state this loudly and clearly.
	USVI	The islands have a Tourism Industry Support Program (\$5,000,000), which will require a waiver by HUD, for marketing to communicate that the islands are open for business.
Business information	Maryland	Businesses get up-to-date official information about flash floods, active assailants, etc., and must decide how to respond (e.g., send staff home if major snow storms predicted).
Facilitate business communication	Maryland	During the 2015 Baltimore unrest, the state emergency management team offered a <i>de facto</i> chat forum for business risk analysts to talk to each other – e.g., are you closing your business early, what are you seeing on the streets outside.
Disaster information	Rhode Island	The state created a seat in the State Emergency Management Ops Center for business and industry to enable an official channel of communication directly with state officials during a crisis. Several members of the state Business Resilience Alliance have used the Web Emergency Operations Center (WebEOC), which manages all emergency management ops in state.
Planning for immediate aftermath	Rhode Island	Rhode Island Alliance for Business Resilience is a collection of companies that facilitate business continuity and better collaboration between emergency management agencies and bigger businesses around the state. Many states have business emergency operations centers through which businesses give and receive information and find out about business closures.
Statewide Planning after an CSZ	Oregon	Has developed the Cascadia Playbook for all response agencies, the primary focus is on the first 14-days following a Cascadia Subduction Zone (CSZ) event and it ties into the statewide ‘2-Week Ready’ campaign.
Banking continuity	Texas	After Hurricane Harvey, commercial banks used their places of business as offices for Small Business Administration staff deployed to work with bank customers.

Rebuild – recovery from a shock

Recovery efforts need to ensure that as much of the rebuilding efforts are undertaken by local companies and workers - even though these groups may have been hard hit.

State	Details
Florida	\$20 million for training to support long-term recovery, primarily in housing construction.
New York	The Governor's Office of Storm Recovery has sought to ensure that its public housing work hires Public Housing Authority residents to help and helps them get certified in construction and green building techniques. They also are involved in the operations and maintenance side once projects are completed.
Oregon	The Governor's Disaster Cabinet has two focuses: 1) on policy issues during a response and 2) economics sub-cabinet that is led by her Economic Policy Advisory.
Puerto Rico	The island is keen to promote local jobs, as contracts for wealthy external consultants have proven controversial. Efforts are being made around hiring, training, and capacity building for the local economy. There is \$2 million of annual federal funding available through the Workforce Innovation and Opportunity Act.
Texas	In post-Harvey Houston, attention is focused on how all rebuilding dollars can create opportunity for businesses – for example, through working with black and Hispanic chambers of commerce.
USVI	There is a \$5 million program to train low- or moderate-income residents to fill construction and other jobs resulting from recovery efforts.

In addition to existing finance for economic development, additional shock-related finance is available in various forms – with CDBG-DR being the most common source. Perhaps most proactive is the example of a New York program that offers \$10k up-front to small businesses – money that might be a crucial lifeline in the days before business resumes and insurance money comes in. Examples of available funding include:

Type	State	Details
Equipment & inventory replacement grants	Florida	\$60 million for eligible business owners who are seeking reimbursement for the cost of replacing equipment and inventory damaged by Hurricane Irma.
Business grant &/or loan programs	Colorado	Recover Colorado Business Grant & Loan program assists small business and non-profits (including special districts).
	Louisiana	Economic Revitalization Program - for areas affected during hurricanes Gustav and Ike
		Agreements with local community development organizations to implement and administer a lending program for disaster-impacted small businesses for non-construction expenses.
	New Jersey	Stronger NJ Business Grant: eligible small businesses and non-profits that sustained physical damage may apply for grants of up to \$50,000. These grants can be used for rehabilitation, new construction, equipment, inventory, mitigation, refinancing, and working capital among other uses. The working capital and other uses may be structured as forgivable loans.
		Stronger NJ Business Loans: up to \$5 million to assist small businesses and non-profits that suffered physical damage, as well as to spur economic revitalization by providing funding for expansion and new businesses in storm-impacted areas.
		Micro-loans for storm-related damage.
	New York	The Governor's Office of Storm Recovery's main economic development work is grants for working capital to small businesses - \$10k up-front with the necessary paperwork being signed subsequently.
	Texas	Interim assistance (unclear if grant or loan) up to \$250,000 to small businesses in exchange for job creation or retention.
	Puerto Rico	Grants of up to \$50,000 for eligible businesses.
Construction and commercial revolving loan program that will provide up to \$1 million per loan to eligible businesses (total pot is \$35 million).		
Grants of up to \$2,500,000 for small business incubators and accelerators (total pot is \$10,000,000).		
Sector-specific grants	Colorado	Tourism Marketing Grant Program.
		Agriculture Business Grant Program: based on documented damages.
		Ditch Program assistance to private and non-profit ditch companies, as well as watershed coalitions, to implement repairs and resilience measures.
Louisiana	Critical Farm Infrastructure Grant - towards aiding the improvement of infrastructure related to agriculture, such as storage areas affected during hurricanes Gustav and Ike	
Low-cost loans	Louisiana	Project-Based Recovery Opportunity Program - low-cost loans for mid-size businesses
Bridge Loans	Louisiana	Small Business Bridge Loan Program

There are also several programs, from Colorado, Puerto Rico, and Louisiana, that offer technical assistance for small businesses. It is unclear if the funding is to the provider or the recipient of the services. Such services include business plan guidance, accounting services, licensing information, and financial management guidance.

Mitigation (build back better)

Activity	State	Details
Business opportunities around disaster preparation	Louisiana	New Orleans has become a major international hub of business in the resilience and disaster management field. The city plays host to ResCon, the premier annual international conference in this area.
	Virginia	A new nonprofit, RISE, is trying to find economic development opportunities through resiliency. It is currently running a Challenge which sought innovative solutions around major resilience issues that can be demonstrated in the Hampton Roads region of Southeastern Virginia; built into sustainable businesses; scalable to other communities. RISE's vision is to position flood-prone Hampton Roads as the global leader in addressing the impacts of sea-level rise, recurrent flooding, and extreme weather events.
Redesigning premises	New York	Businesses have been helped with elevating vital machinery so that water can't reach it. New York State has a building code that takes sea-level rise into consideration.
Relocating premises	New York	Businesses have been helped with moving structures out of floodplains through buy outs (although since many small businesses don't own their premises, it can be difficult to do this without displacing them).
	Colorado	Longmont has a multi-year project to rebuild its storm drain corridor and address the natural landscape around the storm drain creek. This has included relocating some businesses in the floodplain.
Downtown urban design	Connecticut	In downtown areas, like Bridgeport, retreat is challenging due to historic and transportation infrastructure. Efforts have instead focused on protecting that infrastructure in place from coastal and riverine flooding. Flood barriers must be incorporated into the urban landscape.
Economic diversification	Colorado	The 4R (Rural Response Recovery and Resilience) program is focused on supporting economic diversification in a part of the state that is seeing decline in coal mines and power plants. For example, one area wants to grow entrepreneurship, outdoor recreation, and agricultural industries. The State Office of Economic Development also has a Blueprint 2.0 initiative to give tech assistance to help economic diversification in rural communities.
Improved downtowns	Vermont	Eight historic downtowns turned massive flooding into opportunities to improve their physical design and build back stronger. The Vermont Department of Housing and Community Development used CDBG-DR funds to assemble an interdisciplinary team of marketing, urban design, and planning experts that used the Main Street Four Point Approach to develop and implement community-tailored economic recovery plans for eight of the hardest hit communities.
Improved governance	Colorado	In Colorado, the 4R program (see above) is helping ensure that state agencies communicate with distressed areas in a coordinated fashion. The recent REACT Act (Rural Economic Assistance for Colorado Towns) ensures that communities experiencing economic disruption can contact the Department of Local Affairs and receive a coordinated state response.
Improved governance	Florida	In early 2018, the mayors of the four counties of the Southeast Florida Regional Climate Change Compact and the area's regional economic development community agreed to cooperate on: expanding business education on community and economic resilience; identifying and advocating for the state and federal investments needed for regional resilience; and communicating that the area is leading the way in planning for resilience.
Infrastructure improvements	Connecticut	Alternative sources of power can be essential in disasters. The state has funded a dozen or so micro-grid projects.
	USVI	The economic aspect of CDBG-DR funds has consisted of \$23 million for ports and airport enhancements, including harbor dredging to allow for larger cruise ships.
Technology	Delaware	The State Department of Transportation has used sensors to monitor road flooding in Slaughter Beach – specifically to put on a flashing sign at the beginning of the road so drivers don't have to drive all way down and then come back. The sensors are also accessible via 'del.app' so drivers can check flooding without even leaving home or work.

Which states have units dedicated to resilience or planning for extreme weather events

States organize their resilience work in different ways. Some having nothing beyond their emergency management work (a function present in all states). The staff sizes are almost always small – usually one or two and seldom more than half a dozen (the big exceptions being the several-hundred-person staffs for the CDBG-DR-funded New York and Louisiana post-hurricane recovery efforts). All are largely driven primarily by extreme weather events that threaten their states. Most activities are housed in the state government, and some have strong governor input and connections. Location within state government allows ready access to power but is also vulnerable to changes in gubernatorial administrations. Location within a formal department can have the advantage of access to that department’s on-the-ground offices/networks throughout a state.

Little resilience-specific activity is run from economic development/commerce departments, although there are several instances of CDBG-DR funds (Florida, North Carolina, South Carolina, Mississippi) being managed from these. CDBG-DR funds are not just administered from such departments however – other locations include housing and/or community development (Louisiana, Virginia), a general land office (Texas) and a housing finance authority (U.S. Virgin Islands). Vermont’s now-completed Economic Resilience Initiative is led by the state Agency of Commerce and Community Development. In a couple of instances, organizations that operate in a similar sphere have lent their staff to oversee state-level organizations.

State	Organizations	Nature of organization	Location	Type of work	Funding
California	State Economic Recovery Task Force	State-led body	California Office of Emergency Services	Longer-term resilience	State
	State Business Operations Center	State-led body	California Office of Emergency Services	Response	State
	California Resiliency Alliance	Nonprofit; membership is free	Independent	Information sharing and partnerships for local and regional resilience	Corporate sponsors, government grants, and project funding.
Colorado	Colorado Resiliency Office	State agency	Was in governor’s office – now in Department of Local Affairs	Promoting resilience in the state and across state government; supporting and coordinating long-term disaster recovery efforts	Office operations funded through State resources; some projects and initiatives funded through CDBG-DR.
Connecticut	SAFR Council (State Agencies Fostering Resilience)	State-led body	Chair is meant to be from Office of Policy and Management. But currently the acting chair is the deputy commissioner in Department of Economic & Community Development	Discussion of resilience	State

State	Organizations	Nature of organization	Location	Type of work	Funding
Delaware	The Resilient Community Partnership	State-led body	State Department of Natural Resources and Environmental Control	Help communities become more resilient to coastal and climate hazards. Also leads practitioner network - Delaware Resilient and Sustainable Communities League (RASCAL)	Federal-state partnership so get NOAA money
Delaware	Delaware Resiliency Program	State-led body	At SBDC, in the University of Delaware's Office of Economic Innovation and Partnerships	General business resilience advice, not just weather-related.	Supplemental grant from the Small Business Administration
Florida	Resiliency Florida	N.G.O. /PPP	Office in state capitol	Repair or replace Florida's infrastructure and prepare and ensure future infrastructure projects are built to withstand extreme weather impacts.	Unclear
Illinois	Office of Water Resources	State body	Illinois' Department of Natural Resources	Director has served as chair of the Illinois Association for Floodplain and Stormwater Management	State
Louisiana	Rebuild.Louisiana.Gov	State program	Disaster Recovery Unit within the Division of Administration's Office of Community Development (this unit also oversees CDBG-DR) / Governor's Office of Homeland Security	Website detailing public investments in infrastructure and residential properties following hurricanes.	State

State	Organizations	Nature of organization	Location	Type of work	Funding
Montana	Montana Ready Communities Initiative	State program	Montana Department of Commerce	Proactive, holistic, and collective approach at the state-level regarding natural disasters, economic shocks, and other adverse events.	State
New Jersey	Governor's Office of Recovery and Rebuilding	State agency	Governor's Office	State aims to help Sandy-impacted homeowners, renters, businesses, and communities recover and rebuild. State has committed to building back better and stronger.	State
New York	Governor's Office of Storm Recovery	State agency	Office in NYC	Housing, economic development, infrastructure, and community reconstruction	100% funded by HUD grant but ends in 2022
Oklahoma	Disaster Resilience Network Business Council	PPP	Office in Tulsa	Educate businesses and nonprofits about the need for emergency and continuity planning	Funding from individuals, grants, communities, and business
Oregon	State Resilience Office	State agency	Governor's Office	Disaster mitigation	\$650,000 on biennial basis (1.5 staff)
	Seismic Safety Policy Advisory Commission	State Commission	Governor's Office	Seismic Resiliency	State support
Puerto Rico	Advisory Commission for a Resilient Puerto Rico	Nonprofit	Independent and inclusive entity headed by Puerto Ricans	Strategy and networking around 6 themes: energy, housing, economic development, physical infrastructure, health, education, and social services	The Rockefeller Foundation, Open Society Foundations, and Ford Foundation

State	Organizations	Nature of organization	Location	Type of work	Funding
Rhode Island	Chief Resilience Officer	Rhode Island Infrastructure Bank	At the bank – which, like state government, is in Providence. Reports to bank CEO but also have direct line to governor's office and meets with them regularly. CDBG-DR funds are overseen from the Office of Housing and Community Development.	Advance resilience and preparedness of state. Many of the actions are more umbrella/high-level actions (as in a lot of state resilience strategies). CRO role is to lead implement of strategy itself.	Bank pays the CRO's salary, as it dovetails with the officer's bank work
Rhode Island	Rhode Island Alliance for Business Resilience	Public-private partnership (PPP) but no legal form	c/o Rhode Island Emergency Management Agency	Business continuity and better collaboration between emergency management agencies and bigger businesses around the state	Quasi-state employee on contract to Rhode Island Emergency Management Agency (RIEMA), who donates his or her time to the Alliance
Vermont	Resilient Vermont Network	University Center	Norwich University Center for Global Resilience and Security – previously run by Institute for Sustainable Communities	Initially about driving the state resiliency framework. Serve as the point of contact for the various entities interested in or doing resilience work in the state.	Previously had some foundation funding. Not clear if any funding at present.
Virginia	Resilient Virginia	Nonprofit	Independent – Arlington P.O. box	Events and awareness raising. Wants to work on developing a state resilience framework and local government resiliency planning	Private company has been supporting Executive Director's time. Building up members and annual sponsors for events.
Virginia	Chief Resilience Officer Governor's Office & Cabinet Secretariats	State role	CRO is Secretary of Natural Resources (part of Governor's Cabinet). Department of Housing and Community Development also important.	Natural catastrophe planning and resilience	State & Department of Housing and Urban Development (HUD) CDBG-DR funding

State	Organizations	Nature of organization	Location	Type of work	Funding
West Virginia	West Virginia Office of Economic Resiliency	State agency	Department of Commerce	Prepare communities for extreme events (e.g., floods, storms, severe downturn in economic sectors) through innovative resilience projects	CDBG-DR
Washington	Resilient Washington Subcabinet	State body	Led by Washington Military Department n.b. Emergency Management Division in this department also does mitigation, recovery (helping local governments prepare for fire and floods) and preparedness (business continuity)	Leads and coordinates mitigation, preparedness, response, and recovery in Washington State to minimize the impact of disasters and emergencies on the people, property, environment, and economy.	State

Which states are also recovering from heavy flooding?

Given that the major shock to hit West Virginia in recent years has been heavy river flooding, it is useful to list the states that have also experienced this same extreme weather. The table below outlines these – the names of events usually referring to the hurricanes that brought the flooding.

State	Year	Flooding event/location
California	2017	atmospheric river event
	2019	atmospheric river event
Colorado	2013	unnamed
Connecticut	2012	Sandy
Delaware	2006	Mid-Atlantic United States flood
	2011	Irene
		Lee
Louisiana	2005	Katrina
	2005	Rita
	2008	Gustav
	2008	Ike
Maryland	Ongoing	Annapolis
	2015	Ellicott City
	2018	Ellicott City
Montana	2011	unnamed
New York	2012	Sandy
	Ongoing	Upstate
	Ongoing	Long Island and New York City heavy storms and storm surges
North Carolina	2016	Matthew
	2018	Florence
Oregon	2012/3	Flood
	1996	Northwest part of state
Rhode Island	2012	Sandy
	2011	Irene
Texas	2008	Ike
	2008	Dolly
	2005	Rita
	2015	Texas–Oklahoma flood
	2016	North American storm complex
	2017	Harvey
USVI	2017	Maria
		Irma
Vermont	2011	Irene
		Torrential spring rains
Virginia	Ongoing	Hampton Roads
West Virginia	2016	Devastating flooding

What background and skill sets might an Economic Resilience Officer need?

An Office of Economic Resilience needs staff that can oversee the types of activities outlined in the 'What has been done for economic resilience' section. The table below outlines the backgrounds of those who are leading statewide resilience initiatives – as can be seen, very few have direct economic development experience. Rather, what is common is strong experience of the subject and post-graduate education. Iain Hyde (see table) had just left his post at the time of the research and was not interviewed – although his team was – and it was not possible to secure an interview with Representative Jacobs.

Name	State	Selection	Summary of background
Monika Stoeffl	California	Executive Director, California Resiliency Alliance	<ul style="list-style-type: none"> ▪ Over 10 years' experience in emergency management and risk analysis, including writing plans, designing table-top and full-scale exercises, conducting trainings, facilitating cross-agency collaboration, and conducting risk analyses. ▪ MBA in international business - focus in operational risk management and competitive intelligence. ▪ Maintains that her key skill is the ability to foster partnerships/relationships. Also important is the ability to present/communicate and write. ▪ She claims that someone in her role needs to be a generalist – “They need to bring all parties to the table and understand different ‘languages’ (business, government, etc.)”
Iain Hyde	Colorado	Chief Resilience Officer and Director, Colorado Resiliency Office	<p>n.b. Iain left the post in the week of the interview – see later for the new leadership</p> <ul style="list-style-type: none"> ▪ 12 years of experience in emergency management and public administration ▪ Deputy Director Colorado Resiliency and Recovery Office ▪ State Disaster Recovery Manager ▪ Mitigation Specialist - state ▪ M.P.A ▪ Dewberry - Hazard Mitigation Planner/Disaster Specialist ▪ Association of State Floodplain Managers - Mitigation Committee Co-Chair
Rebecca French	CT.	Director of Resilience, Connecticut Department of Housing	<ul style="list-style-type: none"> ▪ Director of Resilience for CT Department of Housing starting in April 2018. Responsible for \$64 million in disaster resilience grants for the Department. ▪ Prior to this was Director of Community Engagement for the Connecticut Institute for Resilience and Climate Adaptation at the University of Connecticut. Responsible for orchestrating workshops, white papers and translating scholarly research on climate science and adaptation for municipalities and the state. ▪ Served as an AAAS Science & Technology Policy Fellow and AGU Congressional Science Fellow at the US EPA ORD Innovation Team and Office of Senator Sanders (I-VT) ▪ Doctorate in geosciences from Virginia Tech, masters in soil science from Cornell University, and bachelor's in chemistry and environmental studies Oberlin College.

Name	State	Selection	Summary of background
Kristin Jacobs	Florida	Executive Director of Resiliency Florida	<ul style="list-style-type: none"> ▪ Member of the Florida House of Representatives since 2014 ▪ Serves on Agriculture & Natural Resources Appropriations Subcommittee ▪ Prime founder of Southeast Florida Regional Climate Change Compact (nonpartisan forum for the political leadership of 5.5 million residents to speak with one voice to federal and state government) ▪ Broward County Commission, Mayor, 2004-2005 and 2012-2013 ▪ Broward County Commissioner, 1998-2014 ▪ Chair of the (Obama) White House National Ocean Council's Governance Coordinating Committee ▪ Appointee to (Obama) Local and Tribal Leaders Task Force on Climate Preparedness and Resilience
Mike Harryman	Oregon	State Resilience Officer	<ul style="list-style-type: none"> ▪ Previously Director of Emergency Operations for the Oregon Health Authority's Public Health Division. ▪ The Division is respected for its work in responding to disasters, and he helped design it. Harryman saw this as his key experience ▪ As director, Harryman played a pivotal role as Oregon's incident manager for Oregon's 2014 Ebola preparedness and response efforts and was integral in leading response teams following a community college shooting. ▪ National networks: Community Development Corporations, Health and Social Services, Association of State and Territorial Health Officers. ▪ Master's degree in emergency and disaster management
Shaun O'Rourke	Rhode Island	Chief Resilience Officer	<ul style="list-style-type: none"> ▪ Director, Stormwater and Resiliency Rhode Island Infrastructure Bank ▪ Director of Sustainable Design Boston Architectural College ▪ Faculty at Boston Architectural College School of Landscape Architecture (ongoing) ▪ Green Infrastructure Program Director - the Trust for Public Land ▪ AECOM - Landscape and Ecological Designer ▪ USDA Forest Service - Urban Forest Station Researcher ▪ Master's degree in landscape architecture.

SECTION TWO – STATE AND TERRITORY SUMMARIES

Alabama

Lead body	Alabama Emergency Management Agency
Status	State agency
Interviewed	NO
Website	http://ema.alabama.gov
Key person	Director Brian Hastings brian.hastings@ema.alabama.gov
Senior staff background(s)	Retired Air Force Colonel Master of Science degree in Resourcing National Security Strategy from the Eisenhower School, National Defense University.
Start date	September 2017
Disasters seen in the State	In September 2017 the State Emergency Operations Center was activated for Hurricane Irma to receive and shelter more than 250,000 evacuees from Florida, while caring for the needs of Alabamians. The impact of Hurricane Irma resulted in a Presidential Emergency Declaration from the Federal Emergency Management Agency and strengthened enduring partnerships with both Florida and the U.S. Virgin Islands (information gathered from their website), which received a disaster declaration from the same hurricane.

California

Lead body	California Office of Emergency Services
Status	State agency
Interviewed	NO
Website	http://www.caloes.ca.gov
Key person	Director Mark Ghilarducci Abby Browning, Chief, Office of Private Sector / NGO Coordination Abby.browning@caloes.ca.gov
Senior staff background(s)	Experience in International Trade & Foreign Direct Investment with the Governor's Office of Business and Economic Development Experience with International Affairs and Corporate Relations with the California Chamber of Commerce Master of the Arts in Government, focusing on Political Theory
Start date	2015 (Office of Private Sector / NGO Coordination)
Disasters seen in the State	2017 & 2018 saw numerous disasters in the state spanning from floods and debris flows/mudslides to wildfires. This followed several years of significant drought. The North Bay Fires of October 2017 hit the region hard and was considered the true urban wildfire in modern times and was called by FEMA "the worst fire in the world in modern history in terms of losses." The December 2017 Thomas Fire was followed by the January Montecito Mudslides. Recently, the 2018 wildfire season surpassed the devastating 2017 year in terms of records for the largest, most destructive, and highest death toll with fires such as the Mendocino Complex, Carr, Camp, Ferguson, Hill, Holy, and Woolsey Fires.
About the organization/program	State Economic Recovery Task Force - part of the disaster recovery framework. As part of RSFs – California has a task force specifically focused on economic recovery. The goal of the task force is to return economic and business activities (including food and agriculture) to a healthy state and develop new business and employment opportunities that result in a sustainable and economically viable community. The intention is that it will be more active during normal times, rather than simply in times of crisis.

Key Partner	California Resiliency Alliance
Status	Nonprofit. Membership is free.
Interviewed	YES
Website	https://caresiliency.org
IEDC Contact	Monika Stoeffl, Executive Director, mstoeffl@CAresiliency.org
Senior staff background(s)	Monika Stoeffl has more than 10 years of experience in emergency management and risk analysis, including writing plans, designing table-top and full-scale exercises, conducting trainings, facilitating cross-agency collaboration, and conducting risk analyses. She received her MBA in International Business from Thunderbird School of Global Management with a focus in operational risk management and competitive intelligence. With her passion for finding connections in complex systems, Monika brings together her diverse background and experiences in emergency management, business continuity, competitive intelligence, science, anthropology, psychology, project management, and international travel to offer a multi-perspective cross-disciplinary approach to resiliency. Monika has been in emergency management since 2000. Her undergraduate degree is in anthropology.
Start date	Organization formed in 2009, Monika Stoeffl stepped up as the Executive Director in November 2015.
About the organization/program	<p>The California Resiliency Alliance (CRA) is a non-profit sitting at the nexus between the public and private sectors fostering information sharing and partnerships across the various sectors. Founded in 2009, the CRA was spun off from Business Executives for National Security, to focus on public-private partnerships in the state. Its funding models have varied over time and include corporate sponsors, government grants, and project funding.</p> <p>The organization takes a holistic approach to resiliency covering the spectrum from planning and mitigation to response and recovery. The types of events it covers include natural disasters such as fires, earthquakes, windstorms, floods; man-made crises such as active shooters and terrorism; infectious disease; and cyber-attacks.</p> <p>Mitigation & Preparedness: During times of steady state, the CRA's focus is on supporting information sharing and building partnerships to strengthen local and regional resilience.</p> <p>The CRA helps bring the private sector voice into state-wide and large regional resiliency planning initiatives, such as the rewrite of the Southern California Catastrophic Earthquake Plan, and serves as the private sector representative on the California Office of Emergency Services Regional Advisory Committee - Coastal Region.</p> <p>The CRA had a role in setting up the state business operations center (BOC) and previously managed it until the state took it in-house. The CRA still maintains an active relationship with the state BOC and provides support during times of activation leveraging its connections and information sharing channels. In addition to supporting the State BOC, the CRA also supports the development of BOCs at the operational/county level.</p> <p>The organization's connections and networks span from the local and regional up to the national level. Some of the groups, committees, and initiatives the CRA is involved with/connected into include:</p> <ul style="list-style-type: none"> • California Office of Emergency Services Mutual Aid Regional Advisory Committees • Californiafirst Financial Coalition • FEMA National Business Emergency Operations Center • HayWired Scenario Coalition • San Francisco Bay Area Infragard Chapter • Regional Consortium Coordinating Council • San Mateo Climate Ready Initiative • San Francisco Lifelines Council • Silicon Valley Disaster Resiliency Alliance

	<ul style="list-style-type: none"> • Southern California Critical Lifelines Workgroup <p>Through its dynamic distribution list, the CRA shares information about resources and events with its membership. To enhance access to resiliency related resources, the CRA is working to build out an online resource center that should be launched summer of 2019.</p> <p>The CRA also coordinates webinars and in-person events on a variety of resiliency related topics. These events are often done in partnership with local, state, and/or federal partners.</p> <p>Response & Recovery: For events outside of the cyber arena, the CRA also supports the sharing of situational information on active and pending incidents. This information sharing is via:</p> <ul style="list-style-type: none"> • Situational Information Briefs – detailed briefs providing information in support of operational decision making. • Weekly Wildfire Briefs – snapshot overviews of wildfires active in the state (only produced from about May -November) • Weather Threat Briefs – sharing NWS weather threat briefs for the state <p>In addition to information sharing the CRA also connects with the State and County BOCs to support their efforts by leveraging its networks, connections, and access to information.</p>
<p>Useful contacts and links</p>	<p>Collection of some resilience and recovery related websites / initiatives within California:</p> <p>Berkeley - Resilient Berkeley https://www.cityofberkeley.info/Resilience/</p> <p>Butte County Recovers https://buttecountyrecovers.org</p> <p>California Wildfire Recovery Website http://wildfirerecovery.org</p> <p>Coastal Resilience https://coastalresilience.org/project/california/</p> <p>Los Angeles County Recovers (Woolsey Fire) https://www.lacounty.gov/lacountyrecovers/</p> <p>Los Angeles (City) Office of Resilience https://www.lamayor.org/Resilience</p> <p>Oakland – Resilient Oakland https://www.oaklandca.gov/topics/resilient-oakland</p> <p>San Francisco Office of Resilience & Recovery https://sfgov.org/orr/</p> <p>Santa Barbara County Recovery https://www.countyofsb.org/fire-recovery.sbc</p> <p>Sonoma County Recovers https://www.sonomacountyrecovers.org</p> <p>Sonoma County Office of Resilience and Recovery https://sonomacounty.ca.gov/Office-of-Recovery-and-Resiliency/</p>

<p>Other interesting & non-local resources shared</p>	<p>Analysis of Economic Resiliency of Communities Affected by Natural Disasters: The Bay Area Case Study https://www.sciencedirect.com/science/article/pii/S2212567114010235</p> <p>National Voluntary Organizations Active in Disaster (VOAD) – all states have at least one VOAD. California has two state level VOADs (northern and southern California) and many of the counties and larger cities have their own VOADs. https://www.nvoad.org/about-us.</p> <p>A City Rebuilds – The Recovery of Canterbury Story (New Zealand) http://www.eqrecoverylearning.org/assets/downloads/A-City-Rebuilds-The-Recover-Canterbury-Story.pdf</p>
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Colorado

<p>Lead body</p>	<p>Colorado Resiliency Office located in the Colorado Department of Local Affairs (DOLA)</p> <p>In the wake of the devastating 2012 and 2013 wildfires and the September 2013 flooding, the State of Colorado saw the need and opportunity for the State and communities to build a culture of resilience. By prioritizing resiliency efforts, Colorado can reduce future disaster impacts and set communities up to thrive in the face of changing conditions and threats from shocks and stresses.</p> <p>In 2014, the Colorado Recovery Office (now the Colorado Resiliency Office) formed the Colorado Resiliency Working Group (CRWG). Made up of State, local, and federal agencies, the CRWG not only acted as the body to better coordinate flood recovery efforts, but it also served as the steering committee for the creation of the State’s Resiliency Framework, and set forth the goals and strategies for incorporating resiliency into the day-to-day activities of the State of Colorado.</p> <p>With the adoption of the Colorado Resiliency Framework in 2015, Governor John W. Hickenlooper formalized the CRWG as a steering committee and coordinating body for the State’s ongoing resiliency work. It recently moved out of the Governor’s Office and into the Department of Local Affairs in 2017, and was renamed the Colorado Resiliency Office (CRO) in 2018 following the passing of HB 18-1394.</p> <p>As the State’s designated resiliency lead, the Colorado Resiliency Office (CRO) supports and helps empower local governments in building stronger, safer, and more resilient communities in the face of natural disasters and other major challenges. The CRO coordinates overarching resiliency and community recovery activities by collaborating with local, State, federal, and private partners to set priorities, leverage resources, provide technical assistance, and deliver measurable results to shape an adaptable and vibrant future throughout Colorado.</p> <p>The CRO educates communities on the value of resiliency and recovery planning to address the priority social, environmental, and economic risks they are most vulnerable to. By being able to adapt to ever-changing conditions, a resilient Colorado community is likely to experience less damage and fewer losses from future shock events, and will be poised to recover faster, bounce back stronger, and preserve and enhance its quality of life.</p> <p>The CRO provides guidance and technical assistance to local communities to develop resiliency frameworks or incorporate resiliency into existing plans and community projects like comprehensive plans, economic diversification strategies, and flood and wildfire mitigation activities. These efforts can advance community resiliency through strategies that build capacity and develop flexible, risk-informed approaches to protect and enhance their health, safety, and economic vitality.</p> <p>The CRO empowers communities and regions across Colorado to act and develop a culture of every-day resiliency. The office provides tools, replicable best practices, and other resources for communities to meet their resiliency and recovery goals. The CRO also coordinates activities across</p>
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	<p>multiple State agencies to implement the <i>Colorado Resiliency Framework</i> (2015), and to build resiliency into State investments and operations through the Colorado Resiliency Working Group.</p> <p>For more information visit the CO Resiliency Resource Center at coresiliency.com.</p> <p>Many other departments are critical to recovery, but the Colorado Department of Public Safety (CDPS) Division of Homeland Security and Emergency Management is the primary lead for disaster response and recovery. The CRO still has a key role supporting local long-term recovery efforts.</p> <p>The move from the Governor’s Office to DOLA allowed for a more statewide approach given DOLA’s statewide vision of “strengthening Colorado’s local communities and building capacity by providing strategic training, research, technical assistance, and funding to localities.”</p> <p>Though DOLA is responsible for coordinating resilience activities across State departments, resiliency is a responsibility shared by all departments.</p>
Status	Government agency
Interviewed	YES
Website	www.coresiliency.com and https://www.colorado.gov/pacific/dola/rural-response-recovery-and-resilience-4r-program
IEDC contact(s)	<p>Anne Miller – CRO Director – anne.miller@state.co.us</p> <p>Rob Pressly - Resiliency Program Manager - rob.pressly@state.co.us</p> <p>Kate Busse - Local Resiliency Program Manager – kate.busse@state.co.us</p> <p>Trish Thibodo - 4R (Rural Response, Recovery & Resiliency) Program Manager trish.thibodo@state.co.us</p>
Key person	Anne Miller – CRO Director
Senior staff background(s)	<p>Anne: has a master’s in urban and regional planning and a background in community development. n.b. previous CEO’s experience is outlined in the analysis section</p> <p>Rob: has a master’s in urban planning and is a generalist - housing, economic development, natural resources etc.</p> <p>Kate: came from Boulder Resilience Office (part of local government) and her background is in managing a local business in her city.</p> <p>Trish: human social services primarily with some experience in economic development diversification. Her advice is that it’s important to know rural issues and have experience and sensitivity to that. One must be generalist, but have a passion for, and belief in, your community.</p>
Disasters seen in the State	Floods and wildfires in 2012 and 2013. Major flooding in September 2013 affected 24 Colorado counties and caused nearly \$4 billion in damage. The Governor was prompted to launch the Colorado Resiliency and Recovery Office, which has guided resiliency actions throughout the state.
About the organization	<p>The Colorado Resiliency Office has 2 key focuses:</p> <p>1Expanding statewide efforts. The office’s initial resilience efforts were focused on recovery and resiliency in response to the 2013 floods. Much of the HUD CDBG-DR funding required the office’s work to be connected to that disaster . This office spearheaded projects in communities that were impacted by the floods - e.g. with Boulder, Larimer and El Paso County to develop their own version of the Colorado Resiliency Framework. The framework looked at vulnerability to shocks and stresses in these communities [for the 6 sectors in the state framework: Community, Economic, Health and Social, Housing, Infrastructure, and Watersheds and Natural Resources] and at the inter-dependency between those sectors and what can be done. A lot of work has been done in building understanding of the concept of resiliency and its relevance to local communities. The office has provided local technical assistance for communities that have approached them and hired a local resiliency planning manager in November 2018 to build up a local planning program for a statewide engagement effort.</p>

Boulder and El Paso Counties never adopted the frameworks the state resiliency office created but use them as reference when they talk about resiliency. The Larimer County Board of Commissioners adopted the Larimer Community Resiliency Framework's goals in 2016. They have subsequently been implementing some of the projects identified. The state office is also trying to stress that resiliency is not only about natural disasters such as fires and floods but can also include major shocks and stresses like economic downturns or an affordable housing crisis (currently being experienced by the state).

2] The state is looking to build resilience as a focus right now. The Colorado Resiliency Office manages the Colorado Resiliency Working Group, which is the steering committee and implementing body for the Colorado Resiliency Framework. Some 13 state agencies are tasked with implementing the state resilience framework. They are currently looking to institutionalize resilience into everyday work as part of its Colorado Resiliency Institutionalization Project - e.g. building resilience into operations and policies. The office will also help guide state investments - e.g. how can resilience be built into competitive grant programs (e.g. through DOLA's Energy and Mineral Impact Grants

Enhancing resilience understanding statewide and the ability to build capacity at the local level will be key to the success of this office. They are working to develop technical assistance and "Resilience 101-type" training for communities.

Communities have already been addressing their risk and vulnerabilities to shocks and stresses. e.g. the City of Longmont has its Resilient St. Vrain project – a multi-year project working to rebuild the St. Vrain Creek's channel and surrounding areas ahead of future flood events. The City of Manitou springs was also impacted by the 2013 floods. This summer the City still received flooding but suffered fewer losses due to mitigation efforts they have taken post 2013.

The office is studying how to plan for resilience and developing guiding documentation on how to incorporate resiliency into comprehensive plans, land-use plans, hazard mitigation plans, etc.

To help with understanding the office is developing a series of case studies in best practices from across Colorado and sharing contact information to facilitate peer learning as part of its COResiliency Resource Center.

Charrettes on the resilience framework have been held in past years. Communities also asked to involve outreach to the business community. There has been no direct targeting by the office towards Chambers of Commerce, though they recognize the need to engage more with the private sector. Most of their outreach is currently through planning and emergency management organizations like American Planning Association (APA) Colorado, CO Municipal League (CML), Colorado Counties Inc. (CCI), and local emergency disaster groups.

Other contact with the business community comes through SBDCs, which local Economic Development Directors are typically not involved with. In some communities they are doing business assessments and getting out and talking to businesses directly.

In mid-2015, Governor Hickenlooper announced the adoption of the Colorado Resiliency Framework, a plan that represents Colorado's long-term investment and commitment to a more resilient future following the natural disasters that have impacted the state. The Framework received the Gold 2017 National Planning Achievement Award for Environmental Planning from the American Planning Association (APA). Saying it serves as a model for other states, the APA pointed to the Framework's online resource center, which features tools for resiliency planning, including training modules, webinars, case studies and templates.

The CO Resiliency Resource Center, <http://www.coresiliency.com> is a first-of-its-kind online platform for resiliency knowledge and technical resources which provides government agencies, elected officials, community organizations, the private sector and individual resiliency champions with knowledge and resources to understand, plan for, and act on resilience.

	<p>2013 Colorado Flood Recovery (http://maps.co.gov/cofloodrecovery): 'Three Years of Progress', an interactive Geographic Information Systems (GIS) storymap, illustrates advances made in recovery efforts since the historic flooding Colorado experienced in September of 2013. The storymap utilizes data, analysis, pictures, and stories to provide an overview of the incredible ongoing work from local communities, non-profits, state and federal agencies, and flood survivors.</p> <p>Finally, the Colorado Public-Private Resiliency Workshop Summary (https://tinyurl.com/ycyj4kul) provides an overview of a recent workshop co-hosted by the Colorado Resiliency and Recovery Office and AECOM. At the workshop, representatives from the private sector, federal, state, and local government came together in partnership to translate risk awareness into resiliency action. Twenty-four public and private sector organizations participated and provided critical insight and concrete recommendations to advance resiliency in Colorado. The report will provide a roadmap for ongoing coordination, collaboration, and innovation between the public and private sectors.</p>
About the program	<p>CDBG-DR spend includes:</p> <ul style="list-style-type: none"> ▪ a Recover Colorado Business Grant & Loan program which assists small business and non-profits (including special districts). ▪ Tourism Marketing Grant Program. ▪ Technical Assistance for Small Business Program. ▪ Small Business Workforce and Development Program. ▪ Agriculture Business Grant Program: based on documented damages. ▪ Ditch Program assists private and non-profit ditch companies, as well as watershed coalitions, to implement repairs and resilience measures as a result of disasters in 2012-2013. <p>http://www.watercolorado.com/resources/ditches.shtml</p>
About the program	<p>Rural Response Recovery and Resiliency Program (4R) 4R is a separate program to CRO, yet they work together</p> <p>4R is a statewide coordinated effort through DOLA, Office of Economic Development and International Trade (OEDIT) and Colorado Department of Labor and Employment (CDLE) to support economic diversification in rural communities. The pilot project focused on eight counties and DOLA hired a staff person to coordinate 4R in 2017 with a focus on extraction impacted communities working toward:</p> <ul style="list-style-type: none"> ▪ Creating a coordinated response approach for rural economic stabilization for impacted communities based on the Western Slope to help communities recover and diversify their economies; ▪ Creating a focal point in state government to align state and federal agencies to fund and support local and regional community and economic development priorities; <p>Align funding with job retraining programs so that we are creating jobs in industries that match the job training.</p> <p>4R is a 1-person program, based out of Grand Junction.</p> <p>The Western Slope has various coal mines and coal power plants. 2013-15 saw slowdowns and shutdowns of power plants and coal mines, with more closure happening in the future. Several communities wondered what to do next. The 4R program grew out of that. State agencies were urged to get out of silos and communicate better to avoid looking to help these communities in a disparate fashion. The state is looking at how to take statewide programs to communities experiencing distress. In the 2018 legislative session the state enacted the REACT Act [Rural Economic Assistance for Colorado Towns]. This legislation concentrates economic assistance for rural communities experiencing significant economic events that lead to substantial job loss in those communities, and, in connection therewith, authorizing the Department of Local Affairs to coordinate non-monetary assistance to assist rural communities with job creation or retention.</p> <p>Trish Thibodo leads the 4R collaboration to targeted rural communities. 4R works with communities providing targeted capacity building, strategic coordination, technical assistance and funding for</p>

	<p>economic diversification efforts. 4R maintain a regular presence in those communities. Depending on community needs and issues, 4R response is crafted for specific community needs and goals.</p> <p>Several 4R communities have received EDA funding for business and job creation. These include:</p> <ul style="list-style-type: none"> ▪ Gunnison County Innovation, Creativity and Entrepreneurship Lab (ICELab) at Western Colorado University https://www.western.edu/academics/undergraduate/school-business/innovation-creativity-entrepreneurship-ice. ▪ Delta County Entrepreneurship Growth Agriculture and Energy (ENGAGE – www.engagedeltacounty.org) ▪ Montrose County - Advance West End with a focus on small business development, tourism/outdoor recreation and value-added agriculture. <p>There is significant state effort to build broadband capacity in rural Colorado.</p> <p>The Office of Economic Development has a Blueprint 2.0 initiative to give technical assistance to help economic diversification in rural communities. https://choosecolorado.com/programs-initiatives/colorado-blueprint</p>
Useful links	<p>https://www.colorado.gov/pacific/dola/economic-recovery</p> <p>https://www.eda.gov/files/about/disaster-recovery/EDA_CO-Economic-Resilience-Planning_Oct2014.pdf</p> <p>https://www.colorado.gov/pacific/dola/node/101531</p> <p>https://choosecolorado.com/oedit-launches-2018-blueprint-2-0-initiatives/</p>

Connecticut

Lead body	Department of Housing (DOH)
Status	Government agency
Interviewed	NO
Website	https://www.ct.gov/doh
IEDC contact(s)	Rebecca French Rebecca.French@ct.gov
Key person	<p>Rebecca French, Director of Resilience</p> <p>Dr. French is an appointed official for the State of Connecticut, Department of Housing as the Director of Resilience overseeing \$64 million in US HUD disaster resilience grants for the department that are implementing resilience projects in the state's largest city, Bridgeport, CT as well as a regional resilience plan for southwest Connecticut.</p>
Senior staff background(s)	<p>Dr. Rebecca French is the Director of Resilience for the Connecticut Department of Housing overseeing the National Disaster Resilience and Rebuild by Design for the Connecticut Department of Housing. In this role she oversees the \$64.3M grant awarded to the State of Connecticut through the US HUD National Disaster Resilience Competition as well as the Rebuild by Design pilot project in Bridgeport, CT. Dr. French serves on the Long-Term Recovery Committee and the State Agencies Fostering Resilience Council. Previously she was the Director of Community Engagement for the Connecticut Institute for Resilience and Climate Adaptation (CIRCA), a partnership between the University of Connecticut and the Connecticut Department of Energy and Environmental Protection. She translated science and engineering to help communities, state and local government, private industry, and academic partners implement solutions to adapt to a changing climate and extreme weather while strengthening resilience through economic development, policies and social cohesion.</p> <p>Prior to her positions in Connecticut, she was an AAAS Science & Technology Policy Fellow with the U.S. EPA Office of Research and Development and an American Geophysical Union Congressional Science Fellow in the United States Senate. Dr. French is an alumni fellow of the Center for the Environmental Implications of Nanotechnology (CEINT). Her research on the characterization of</p>

	engineered and naturally-occurring nanomaterials helped build the scientific basis for policy decisions regarding nanotechnology. She is the recipient of two NSF Interdisciplinary Graduate Education and Research Traineeships (NSF IGERT). She holds an M.S from Cornell University in soil chemistry and a Ph.D. from Virginia Tech in geosciences. She received her B.A. from Oberlin College in chemistry and environmental studies. She is a native of northeast Connecticut.
Start date	April 2018
Disasters seen in the State	Hurricane Sandy
About the organization	<p>1] SAFR COUNCIL State Agencies Fostering Resilience was established by executive order 50 after Hurricane Sandy. It is a 12-member body made up of representatives from state agencies including ECD, CIRCA etc., Yale Design Lab, Connecticut Conference of Municipalities. The Council meets monthly and discusses such issues as consistency between agencies on resilience, better allocation of resources, institutionalizing resilience, updating state building codes, hazard mitigation plans, and robust coastal area management processes. It is tasked with making sure resilience is in all these programs. By Executive Order the Chair is meant to be from the Office of Policy and Management although David Kooris currently fills the role since the previous post-holder left.</p> <p>2] REGIONAL PLANNING PROCESS Connecticut is the only state with no county government. Two counties most hit by Sandy were Fairfield and New Haven. The state is in a big planning process now, talking about chronic stresses that hampered responding to acute shocks, transportation infrastructure, energy infrastructure, etc. – i.e. issues that go beyond 1 locality. They are also looking to make sure the state can respond quickly and appropriately with the proper capacity when federal money becomes available.</p> <p>3] LOCAL PROCESS National Disaster Resilience Rebuild by Design http://www.rebuildbydesign.org/about The Rebuild by Design Competition resulted in \$10m for Bridgeport/CT. National Disaster Resilience resulted in another \$54M+ for the Bridgeport project, regional planning, and SAFR Council. There was also about \$150M in CDBG-DR funds allocated as of right to the state post sandy for rebuilding.</p> <p>The state's green infrastructure and shoreline efforts will collectively fund many projects. They have a state funded micro-grid program with about 12 locations funded.</p> <p>The flooded public housing area in Bridgeport was hard hit by Sandy. There had been 5 days of power loss which had hit the residents who lacked the resources to easily restock their fridges.</p> <p>Various strategies were cited including:</p> <ul style="list-style-type: none"> - Natural Edge - in one community the state selected and targeted a retreat to create a buffer along the coast. Frederick Law Olmsted park was buffered. They are looking to evolve that park and replicate it elsewhere on the coast. - Resilient corridors - dry egress ensures reaching isolated neighborhoods and critical facilities with elevated roadways, power stations, water pollution control, drinking water, hospitals, evacuation centers etc. A good example is historic neighborhood in Seattle - many of the streets are bridges that connect to the second stories due to sewage and floods etc. The private sector connected second stories to their roads. - Acute instance of flooding - river or coastal storm surge. The state is looking at targeted berms or levies. They are not trying to wall off ocean or rivers - just where critical mass of critical infrastructure also corresponds to carbon mitigation - walkable transit-orientated etc. Flood walls are being incorporated into new buildings, not huge stand-alone walls. This is a big focus of the SAFR Council. You can no more retreat from downtown Portland than from Lower Manhattan.

	<ul style="list-style-type: none"> - Dealing with chronic issues. Fortification exacerbates a bathtub effect. Looking at the full spectrum from pumping stations to green infrastructure. Infiltration parks also provide for recreation and greenspace. - In energy, micro-grids build resilience in energy creation and delivery. They are believed to reduce operational costs of buildings and reduce carbon impact. - Adaptive buildings. New buildings are more elevated and so make for defensible spaces that meet needs in crises. <p>They are using the planning process as a template for prioritizing infrastructure and this flows up to the state level.</p> <p>This organization has been less involved in business continuity</p> <p>They note that a business might be located just outside of a floodplain yet still see chronic flooding. The installation of single back-flow preventors on combined sewer outfalls can make all the difference to them losing operations or not.</p> <p>There is recognition that businesses may not be affected directly by storms, but the infrastructure that impacts their supply chains, etc. can bring them down. For this reason, a systems approach is necessary and secondary impacts (multiplier effects) of disasters on businesses must be taken into consideration.</p> <p>The building code needed less change on commercial buildings than residential – the former already had quite aggressive wind standards.</p> <p>There is more interest in onsite renewable energy generation – e.g. micro-grids.</p> <p>Connecticut has one of the first green banks in the country and has a robust Industrial Property Assessed Clean Energy (C-PACE) program that helps commercial buildings do retrofit that has been linked to a great deal of renewable generation https://www.cpace.com. Incorporated in this has been a mix of business - manufacturing of all sizes, business parks, incubator space.</p>
Useful links	<p>Connecticut Institute for Resilience & Climate Adaptation (CIRCA) https://circa.uconn.edu</p> <p>The mission of the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) is to increase the resilience and sustainability of vulnerable communities along Connecticut’s coast and inland waterways to the growing impacts of climate change on the natural, built, and human environment.</p>
Other interesting non-local information	<p>“Severe storms in the United States cause 110 deaths per year in flood-related accidents and an average of \$3.8 billion annually in property damage. In addition to floods, droughts, pollution of water resources and coastal areas, ocean currents and severe weather (ice/snow/hail storms, hurricanes, etc.) are the most costly and deadly natural disasters” – from CIRCA website.</p>

Delaware

Lead body	The Resilient Community Partnership
Status	State body - based out of state department of natural resources and environmental control
Interviewed	YES
Website	http://www.dnrec.delaware.gov/coastal/Pages/ResilientCommunityPartnership.aspx
IEDC contact(s)	Kelly Valencik kelly.valencik@state.de.us
Key person	Kelly Valencik
Senior staff background(s)	Kelly has a degree in urban affairs and public policy with concentration on water resources management. Her role is planner in the office.
About the program	<p>Federal-state partnership which uses NOAA money to do some of their work.</p> <p>The Resilience Community Partnership program is like a quasi-grant program that holds funds and spends on behalf of grantees, so they do not have to use their resources. The purpose is to help communities become more resilient to coastal and climate hazards.</p> <p>Delaware is dealing with sea-level rise due to climate change and flooding issues because it is so low-lying. The state is already facing flooding issues without sea-level rise, so they are looking at ways of mitigating impacts from coastal storms, tropical storms, hurricanes and even winter Nor-easters.</p> <p>The Resilient Communities Partnership is working on planning exercises with:</p> <p>1] small town of Slaughter Beach. Worked with the 250 residents and helped them to do vulnerability assessments of their community with lot of public engagement. They assessed what needs to be done to accommodate 1 foot of sea rise. Community participants helped develop adaptation options starting at the homeowner level all the way to what the community can do for itself. They reached out to some of the (few) businesses to participate but not many did so.</p> <p>2] City of New Castle on the Delaware River. Founded by the Dutch in 1600s who put in dykes to provide additional farmland areas. The dykes evolved into providing protection from the river but are not keeping pace with sea rise. There is no funding to build them up, so they don't protect the entire city either. They did a vulnerability assessment for the city which includes a historic downtown that they want to preserve. Recommendations included: do economic studies of what adaptation practice would provide the most value for the cost – i.e. is it raising the dyke, putting in additional wetland area that could potentially hold flood waters, is it extending dykes around the entire city, raising roads, raising structures, flood walls etc. and what is the return on the investment. What money are you saving to business and homeowners - i.e. lower flood insurance. what is the disaster damage that could be abated, what is affordable and what will preserve the community that has been there for 400 years and wants to be there for the future?</p> <p>The city is hoping to get funding to help them do real economic studies, modelling etc. on what happens if there is flooding. One of things they are looking for is the FEMA Pre-disaster mitigation program. They have heard that there is a program called advanced assistance which lets you do some planning work before applying for an implementation project. This would be managed by Delaware emergency management (DEMA) that will co-apply with the city.</p> <p>This organization can do planning reports but can't help with earth-moving projects.</p> <p>-----</p> <p>The personnel of this organization (Kelly) also leads the coastal training program that provides training and workshops to professionals making decisions on coastal resources.</p>

	<p>Kelly also leads a new group of practitioners that are helping communities become more resilient and sustainable, called the Delaware Resilient and Sustainable Communities League (RASCL). They meet quarterly to learn from each other and collaborate in helping communities as they move along the continuum of resiliency.</p> <p>The organization also</p> <ul style="list-style-type: none"> ▪ host quarterly coffee hours where there is an open forum where any community leaders, contractors etc. can come and learn about things that they can do regarding resiliency. They have had some local businesses come - like solar companies, etc. ▪ has worked with some businesses to plan but it hasn't been their primary job to do outreach to businesses. <p>Kelly is part of the National Estuarine Research Reserve System, or NERRS, a partnership between NOAA and coastal states to study and protect vital coastal and estuarine resources. Some of the other reserves have done business engagement - e.g. Wells Reserve in Maine has done planning with businesses and works with a local chamber of commerce to help businesses to be more resilient.</p> <p>The Partnership brings in the State Department of Natural Resources and Environmental Control partners when they need them. Their whole Department has been working on climate change and energy efficiency. Slaughter Beach got input from that office on planning for high sea days and making contingency plans, e.g. if the power is out where will residents go [e.g. local fire departments that have space and generators for air conditioning etc.]? They are helping to educate the community by showing them the calendar with all high sea days on it now and how to compare with to what it might look like in 50 to 100 years.</p> <p>The vulnerability assessments involve running flooding scenarios at high level. This uses LIDAR (surveying method that measures distance to a target by illuminating the target with pulsed laser light and measuring the reflected pulses with a sensor) of the topography of land and ground elevations. Then can overlay that with a bathtub model of flooding so can flood any level they want on the map. The state has decided to plan for 1.5 meters of rise, and they can also look at 0.5m and 1m. They can show this to the community – i.e. things most vulnerable to you: school, fire departments, police departments. key access/exit route into town. They are asking communities whether they prefer to raise these items or find alternative ways out?</p> <p>When the Slaughter Beach road floods the Department of Transportation has put in place road monitoring to see when the roads get wet. They were able to put in sensors on the road with a flashing light sign at the beginning of the road, so people don't have to drive all way down and then have to turn back. This is connected to 'Del.app' [Delaware app] that you can access on your phone so you can check flooding scenes without even leaving your house. They might use this for other communities in the state in the future.</p> <p>The coastal program office is a 1.5-person team. Because Delaware is so small, they can bring lot of other partners to the table when they need them - e.g. for public workshops. They also have a lot of direct contact with politicians, the Delaware general assembly and state representatives in Congress.</p>
About the program	<p>Another initiative, the Delaware Resiliency Program, was created in the aftermath of Hurricane Sandy through a supplemental grant from the U.S. Small Business Administration. The grant allowed the SBDC to develop an outreach and education program that has become an integral part of SBDC services. This resulting Delaware Resiliency Program is guided by a statewide Advisory Board comprised of emergency management professionals, academics and educators, small business and tourism professionals, utility companies, IT companies and others. The SBDC is a unit of the University of Delaware's Office of Economic Innovation & Partnerships and provides business advisory services for free in all three counties in Delaware through funding from the SBA, Delaware Economic Development Office, the University of Delaware and private sector organizations.</p> <p>Dr. David Weir dsweir@udel.edu</p>

	Business Resiliency Initiative http://delawaresbdc.org/special-programs/business-resiliency-initiative
Useful links	<p>Ed Lewandowski, Sustainable Coastal Communities, Delaware Sea Grant edlew@udel.edu</p> <p>The office is funded by NOAA as well, which did a report in 2018 on coastal Delaware resilience. It looks at projected impacts of sea rise and climate change on Delaware coastal tourism and possible impacts for local businesses and helping tourism sector start planning for some of those impacts.</p> <p>https://www.deseagrant.org/coastal-hazards/</p> <p>https://static1.squarespace.com/static/5a9eec779772aecca58eb94/t/5b1595a688251b408d36230a/1529932748267/Coastal+Delaware+Resiliency+Report.pdf</p> <p>Pete Wiley, Economist, NOAA for Coastal Management peter.wiley@NOAA.gov</p>

Florida

Lead body	Florida Department of Economic Opportunity oversees the State's CDBG-DR grant Resiliency Florida
Status	Resiliency Florida is an N.G.O. /PPP
Interviewed	NO – Resiliency Florida declined
Website	http://resiliencyflorida.org/about-us/
IEDC contact(s)	None
Key person	<p>Kristin Jacobs, Executive Director kristin@resiliencyflorida.org</p> <p>Executive Director – Cissy Proctor. Florida Department of Economic Opportunity cissy.proctor@deo.myflorida.com has CDBG-DR funds</p>
Senior staff background(s)	<p>Kristin Jacobs is also a Democratic politician who has served as a member of the Florida House of Representatives since 2014. She represents the 96th District, which includes Coconut Creek, Margate, Coral Springs and Parkland in northeastern Broward. In 2005, when Hurricane Wilma made landfall in Broward, Mayor Jacobs led the county through its aftermath and helped residents get back on their feet.</p> <p>In 2009, she was the lead official in the development of the four-county Southeast Florida Regional Climate Change Compact, creating a nonpartisan forum for the political leadership of 5.5 million residents to speak with one voice to Federal and State government about the unique needs of their region. This effort has propelled the collective advancement of regional and Broward-specific climate resiliency initiatives, now established as a national and international model. Building on that model, in 2013 she forged a second compact expanding upon common interests with Miami-Dade, Broward and Palm Beach counties. The Compacts communicate to the world that the region understands their risks very well and are making investments to secure future prosperity.</p> <p>Jacobs's environmental work has continued to play out on the national stage. In 2008, she was called to testify before the U.S. House of Representatives on challenges to the Clean Water Act. In 2010, Jacobs was invited to participate in a media event with several Congressional members in Washington, D.C. to encourage Congress to pass the America's Commitment to Clean Water Act to protect American waters. In 2011, Jacobs was selected to serve as Chair of the White House National Ocean Council's Governance Coordinating Committee, which advises President Barack Obama on local government perspectives on ocean policy. In 2013, she was chosen to join President Obama at Georgetown University as he unveiled the nation's first Climate Action Plan, and the same year President Obama appointed her to the Local and Tribal Leaders Task Force on Climate Preparedness and Resilience. In 2014, Jacobs continued to speak out nationally, as she was the only elected official in the United States asked to speak at the White House unveiling of its third update of the National Climate Assessment, which featured her work in Southeast Florida. Also, in 2014, the U.S. Senate twice invited Jacobs to testify in Senate hearings on climate change policy.</p>
Disasters seen	Hurricane Michael. Hurricane Irma. Hurricane Wilma.

<p>About the organization (State)</p>	<p>In terms of the CDBG-DR spend, \$60m provides funding for eligible business owners who are seeking reimbursement for the cost of replacing equipment and inventory damaged by Hurricane Irma. Business Assistance to new Floridians from Puerto Rico (\$6m) provides business plan guidance, accounting services, licensing information and other resources to support assistance in assimilating to the business climate in the State of Florida. There is also \$20m for training - to support the long-term recovery, primarily in housing construction</p>
<p>About the organization (Resiliency Florida)</p>	<p>NO EXPLICIT ECONOMIC DIMENSION TO RESILIENCY FLORIDA</p> <p>“As Floridians learned with Hurricane Irma, we are vulnerable on many fronts. The zenith issue which must be at the forefront of discussion, is the pressing need to repair or replace Florida’s infrastructure, much of which has met and exceeded its design life. There is also the need to prepare and ensure future infrastructure projects are built to withstand the coming impacts of sea level rise, extreme heat, flooding and drought. Accounting for these climate impacts in future infrastructure investment will better protect people and property, strengthen the economy and save taxpayer dollars in the form of avoided disaster costs. Resiliency Florida is a non-profit organization made up of public and private partners dedicated to promoting the development of state and regional strategies and action plans to adapt to extreme weather and sea level rise, and to advocating for increased investment by the state and federal government in critical infrastructure and habitat throughout Florida to mitigate impacts and develop adaptation responses. The mission of Resiliency Florida is to act as a conduit for developing local government and private sector partnerships to secure funding and regulatory and legislative support for resiliency and adaptation strategies at the state and federal levels. Through a diverse membership including cities, counties and the private sector, Resiliency Florida promotes the exchange of ideas and resources to help our communities become more prepared and resilient to face sea level rise, extreme weather, flooding and other broader challenges stemming from climate change. Our focus is the collaborative development of tools, projects and funding to implement these strategies. The strength of the organization is a results-oriented approach to facing these challenges”.</p> <p>When dealing with such a broad issue and important issue, we have chosen to focus on key areas that can have the most impact and result in the biggest change.</p> <ul style="list-style-type: none"> ▪ Risk Assessments: The concept of risk assessment is not new to local government. ▪ Building Codes. Starting with the 2010 edition, the Florida Building Code (FBC) includes flood provisions that are consistent with the NFIP requirements for buildings and structures. Many Florida communities enforce some “higher standards” than those required by the FBC. ▪ The National Flood Protection Insurance Program (NFIP) allows property owners in participating communities to buy insurance to protect against flood losses. Information detailing how to obtain flood insurance can be found at www.floodsmart.org, the official site of the NFIP. Cities and Counties are encouraged to participate in the National Flood Insurance Program’s Community Rating System (CRS). ▪ Financing. Specific financing instruments could be designed to create diversified, scaled pools for investment. The instruments could each be tailored to a targeted class of measures that share a similar risk-reward profile. The instruments might take the form of portfolio-based loans, catastrophe bonds, re-insurance, securitization, or other structured finance instruments. In this way, much larger private capital flows could be sourced for adaptation and other kinds of disaster risk reduction. <p>Both chambers of the State House convened committees to hear testimony from public officials and private individual regarding the aftermath of Hurricane Irma, and developed legislative proposals aimed at addressing the state’s emergency preparation and response capacity. Significant funding was allocated to hardest hit areas. Legislature approved and funded the Florida Resilient Coastline Initiative. The \$2.6 million allocated for this new program will be administered by DEP and will be for grants to assist local governments with storm resiliency, sea level rise planning, coastal resilience projects.</p>
<p>Useful links</p>	<p>Almost daily coverage around sea-level is tough for Economic Development personnel. https://www.rollingstone.com/politics/politics-news/miami-how-rising-sea-levels-endanger-south-florida-200956/</p>

	https://www.newyorker.com/magazine/2015/12/21/the-siege-of-miami https://www.newyorker.com/news/news-desk/miami-faces-an-underwater-future https://www.newyorker.com/culture/photo-booth/premonitions-of-a-florida-ravaged-by-climate-change http://www.floridajobs.org/docs/default-source/2015-community-development/community-revitalization/dr/stateofflactionplanfordr.pdf
Other interesting non-local information	National - State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/resilience/taskforce

Hawaii

Lead body	Hawaii Emergency Management Agency (HI-EMA)
Status	State agency - one of the six divisions of the State Department of Defense.
Interviewed	NO
Website	http://dod.hawaii.gov/hiema
IEDC contact(s)	None
Key person	Major General Arthur "Joe" Logan, Adjutant General, Hawai'i - serves as the Director, Hawai'i Emergency Management Agency
Senior staff background(s)	Bachelor of Arts Degree in Justice Administration and Management from Hawai'i Pacific University. He is a graduate of the United States Army Command and General Staff College and received a Master of Strategic Studies degree from the United States Army War College.
Start date	January 2015
Disasters seen in the State	Multiple hurricanes, tsunamis, volcanic activity, localized water pollution
About the organization	<p>HI-EMA serves as the coordinating agency between the four county emergency management agencies (Hawai'i County Civil Defense, Maui County Emergency Management Agency (MEMA), City and County of Honolulu Department of Emergency Management, and Kaua'i Emergency Management Agency) and as State Warning Point.</p> <p>In accordance with the National Incident Management System (NIMS), all disaster response starts at the county level. Hawaii EMA responds to county requests for state assistance and supplements county emergency management efforts. When a disaster response effort exceeds the capabilities of a county, Hawaii EMA may recommend a State Emergency Proclamation from the Governor.</p> <p>Emergency response is only one of the functions of Hawaii EMA. The five core capabilities that guide Hawaii EMA are Prevention, Protection, Mitigation, Response, and Recovery. The branches in the Hawaii EMA organization address these capabilities. These branches are Preparedness, Operations, Telecommunications, Logistics, and Finance/Administration.</p>

Idaho

Lead body	Center for Resilient Communities
Status	University Center
Interviewed	YES
Website	https://www.uidaho.edu/caa/galleries-centers-and-labs/crc/about
IEDC contact(s)	Dr. Andy Kliskey akliskey@uidaho.edu
Key person	As above
Senior staff background(s)	<p>The current focus is on the understanding of community response, resilience, and adaptation to environmental change. This is informed by geographical, ecological, landscape, anthropological and systems theories including complex systems and resilience frameworks using a combination of quantitative and qualitative approaches. Human adaptation to environmental change through resilient design at landscape scales. Intersections of Food, Energy and Water Systems (INFEWS) Department of Homeland Security's Center of Excellence, the Arctic Domain Awareness Center, involves developing social-technological methods to monitor and respond to critical environmental changes.</p> <p>Lilian Alessa is on the Science, Technology and Education Advisory Committee for the National Ecological Observing Network (NEON).</p>
Start date	2014
Disasters seen in the State	Fires and flooding
About the organization	<p>Idaho Rural Partnerships is an Economic Development program funded by Idaho Housing, transport and commerce departments: typically, practitioners visit communities to do SWOT-type activities. CRC has analyzed the 20 years of these community reviews work and an academic article summarize this https://www.tandfonline.com/doi/full/10.1080/15575330.2017.1393438</p> <p>CRC did lot in Alaska on water - working with communities and mapping social and human capital that community could identify that they have or need to work on. There is a need for champions and visionaries - not necessarily formal community leaders. CRC helped develop tools to help communities self-diagnose.</p> <p>Engineers see resilience as about design loads. Psychologists see it as about individual and mental health. Ecologists will focus on a system (even a social one) and how it bounces back from a shock.</p> <p>They are receiving an NSF grant to look at southern Idaho, working with dairy farmers, municipal engineers, managers from a canal irrigation company, retired power company worker etc. They have structured workshops to build near-future scenarios on what the landscape will look like over the next 20 years and some possible solutions to problematic changes foreseen. They are largely using what stakeholders say to direct data gathered, co-production of knowledge.</p> <p>They are also using community-based observation by hunters, fishermen, farmers, ranchers, people with a good read of the landscape. Their local knowledge can give context to a lot of sensor-gathered data on the landscape.</p>
Other interesting non-local information	<p>The CRC team referred to an article on a West Virginia coal-mining disaster. The article was in the Community Development Journal - Schwartz-Barcott, T. P. (2008). After the disaster: Re-creating community and well-being at buffalo creek since the notorious coal mining disaster of 1972. Amherst, New York: Cambria Press.</p> <p>The article identified patterns in financial, built, social, political, and cultural capitals, and how they are systematically linked in Idaho communities provide a foundation for building community resilience. By recognizing and situating these interacting community capitals, capacity of communities to adapt to change can be enhanced, and consequently community resilience is boosted (Berkes & Ross, 2013; Buikstra et al., 2010; Magis, 2010). These capitals are resources that can be strategically invested by a community to adapt to change. Response of a rural community to</p>

	<p>social or ecological change can be characterized as leading typically to demise or resilience (Wilkinson, 1991); however, a third possibility exists, that of social re-creation where relatively new elements of community and wellbeing are created to replace those elements that have been damaged or destroyed. This third possibility is highlighted by the Buffalo Creek mining disaster of 1972 where Schwartz-Barcott conclude “that it is more appropriate to say that community and wellbeing have been re-created along Buffalo Creek rather than to claim that the community has recovered, been rebuilt, or been resilient” (Schwartz-Barcott, 2008, p. 396). Community resilience is considered to have been maintained if original form and function of the community persists – social-ecological system typologies provide tools for assessing form, function, and community resilience, for example, in mountain communities (Altaweel, Virapongse, Griffith, Alessa, & Kliskey, 2015). Community capitals provide resources that can be marshaled to either support maintenance of that form and function – enhancing resilience – or those resources could contribute to re-creation of new elements of community and wellbeing (Flora & Flora, 2013; Magis, 2010).</p>
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Illinois

Lead body	Illinois' Department of Natural Resources
Status	State Department
Interviewed	NO
Website	https://www.dnr.illinois.gov/WaterResources/Pages/OWRStaff_WobigLoren.aspx
Key person	Loren Wobig, Office of Water Resources Director
Senior staff background(s)	<p>Loren Wobig has been working for the State of Illinois for over 30 years as a licensed Professional Engineer in Illinois, Certified Floodplain Manager, Civil Engineer, area Permit Engineer, Project Engineer, Project Manager, and Division Manager. Loren has served as Chair of the Central Illinois Section of the American Society of Civil Engineers (ASCE), Chair of the Illinois Association for Floodplain and Stormwater Management (IASFM). Loren has overseen floodplain regulation, flood hazard mitigation, NFIP coordination, dam safety and Lake Michigan regulation and water allocation programs in Illinois.</p>
Start date	2015
About the program	<p>Illinois Resilience Academy</p> <p>In July 2015, The Rockefeller Foundation wrapped up their second round of Resilience Academies for the National Disaster Resilience Competition (NDRC) in Denver and Chicago with all 40 remaining jurisdictions in attendance. The Academies walk teams through a series of facilitated exercises and presentations intended to build their capacity to design projects that address systemic shocks and stresses, deliver multiple benefits, and ultimately achieve the resilience dividend. Following the Academies, jurisdictions have until October 27th to complete their project design and submit it to the Department of Housing and Urban Development (HUD), to be eligible to win a portion of a \$1 billion pool of federal funding.</p> <p>In August 2015, two jurisdictions—the State of Illinois and the State of Connecticut – hosted their very own Resilience Academies using the curriculum and exercises developed by The Rockefeller Foundation and their managing partner—HR&A Advisors. The State of Illinois brought together seven municipalities to participate, including a day of presentations on resilience and risk, community engagement, cost-benefit analysis, and philanthropic engagement. Like the structure of the Foundation's academies, each municipality participated in a critique to receive feedback on their project ideas. Recognizing that “getting back to normal isn't good enough anymore,” Loren Wobig, from Illinois' Department of Natural Resources, encouraged the teams to think broadly about how they could build resilience in their communities and begin think innovatively about the challenges they seek to address.</p> <p>https://www.dnr.illinois.gov/WaterResources/Documents/2%29%20State%20of%20Illinois.pdf</p>

Indiana

Lead body	Indiana Business Emergency Operations Center
Status	non-profit Public-Private Partnership
Interviewed	NO
Website	https://spark.adobe.com/page/TIkEt/
IEDC contact(s)	outreach@beoalliancein.org
About the program	Community resiliency in the face of disaster. The Alliance, a 501 (c) 3 non-profit organization, provides the program management of the BEOC. Through the Alliance contributions from private organizations fund the ongoing daily operations, resources, and outreach efforts conducted on behalf of the BEOC. The Alliance provides regular continuity training, workshops and seminars open to local businesses in addition to the ongoing outreach and BEOC Partner training, logistics, and operations.

Kentucky

Lead body	Division of Emergency Management – Commonwealth of Kentucky
Status	State body
Interviewed	NO
Website	https://kyem.ky.gov/Who%20We%20Are/Pages/Director.aspx
Key person	Michael Dossett, Director of the Division of Emergency Management
Senior staff background(s)	<p>Dossett began a professional career in law enforcement in 1975, then joining the Louisville Division of Police in Louisville, Kentucky. He served with the Department for 29 years, retiring in 2004 as an Assistant Chief of Police. Following retirement, he served as the Deputy Commissioner of the Kentucky Department of Juvenile Justice from 2004 to 2008. Mr. Dossett has related experience in the fields of homeland security and crisis management, having previously served as the coordinator for the Office of Homeland Security for the Louisville Metro Police Department. Michael Dossett began his career with the Department of Military Affairs in August 2009 as a KYEM Regional Response Manager. He was promoted in March 2011 to Logistics Chief and held that position within the division until his retirement in July 2013.</p> <p>During his tenure at KYEM Mr. Dossett also served as the Public – Private Sector Program Coordinator and developed a nationally recognized best-practice model for the integration of private sector partnerships and alliances in disaster response. During this period, he led the process of integrating the Private Sector Virtual Business EOC concept as an integral part of response operations. Mr. Dossett was also selected as the first recipient of the National InfraGard Award in 2015 for Public-Private Sector Innovation. Director Dossett serves as the Chair of the Kentucky Emergency Response Commission. He has also previously served as the Chairman of the Kentucky Community Crisis Response Board of Directors and has been a member of the KCCR Team since 2008. Mr. Dossett presently serves as the Chairman of the National Emergency Management Association ASTHO-GHSAC Joint Policy Work Group, also serving on the EMAC Committee and the Financial Subcommittee for NEMA. In addition, Director Dossett serves as the Secretary-Treasurer of the Board of Directors for the Central U.S. Earthquake Consortium.</p> <p>Director Dossett holds FEMA certifications for All-Hazards Incident Commander, Logistics Chief, Master Exercise Practitioner and Type III Multi Agency IMT Commander. He is a certified police instructor for the Kentucky Law Enforcement Council and holds instructor certifications for the Incident Command System and Exercise and Evaluation programs. He attended the University of Louisville and the Southern Police Institute.</p>
Start date	2014

Louisiana

Lead body	Disaster Recovery Unit within the Division of Administration's Office of Community Development
Status	State body
Interviewed	NO
Website	http://rebuild.louisiana.gov an initiative of the Disaster Recovery Unit within the Division of Administration's Office of Community Development and the Governor's Office of Homeland Security
IEDC contact(s)	None
Key person	Pat Forbes, Executive Director patrick.forbes@la.gov
Senior staff background(s)	Pat Forbes has been the Executive Director of the state Office of Community Development since July 2011. In his executive capacity, he oversees the Community Development Block Grant and Local Government Assistance programs, as well as the housing, economic development and infrastructure programs that utilize federal disaster CDBG (CDBG-DR) funds for recovery from hurricanes Katrina, Rita, Gustav, Ike and Isaac. Forbes has held several positions in the Office of Community Development's Disaster Recovery Unit. He previously worked as a member of the staff of the Louisiana Recovery Authority, where he developed recovery programs for the state's infrastructure recovery programs, as well as providing outreach and technical assistance to the affected local governments. Prior to Hurricane Katrina, Forbes served as an engineer and technical assistant in the Governor's Office of Coastal Activities. Before his state service, he worked as a consulting environmental engineer, owned and operated his own company and served in numerous capacities at Georgia Pacific's Port Hudson paper mill. Forbes holds both a bachelor's degree in mechanical engineering and a master's degree in business administration from Louisiana State University in Baton Rouge.
Disasters seen in the State	Hurricanes Katrina, Rita, Gustav and Ike
About the program	<p>The website Rebuild.Louisiana.gov includes data for the following programs:</p> <p>Economic Development</p> <p>Project-Based Recovery Opportunity Program (PROP) - Targets mid-size businesses that are located or intend to locate in an area suffering from the long-term effects of Hurricanes Katrina and/or Rita.</p> <p>Economic Development and Growth Infrastructure Program - General economic development programs for areas affected during hurricanes Gustav and Ike.</p> <p>Economic Revitalization Program - General economic revitalization programs for areas affected during hurricanes Gustav and Ike.</p> <p>Louisiana Critical Farm Infrastructure Grant Program - Grant provided towards aiding the improvement of infrastructure related to agriculture like storage areas affected during hurricanes Gustav and Ike.</p>
About the program	<p>CDBG-DR money is overseen by the State Office of Community Development - Disaster Recovery Unit.</p> <p><u>Small Business Technical Assistance Program</u>. Either separate technical assistance providers or the entities implementing the loan and grant program will provide business technical assistance services as part of the loan underwriting and loan servicing processes. Technical assistance activities will be detailed in the program policies and procedures but may include development of business plans; financial management guidance; long-term recovery and sustainability plans; and specialized training.</p> <p><u>Small Business Loan and Grant Program</u>: The state will enter into sub-recipient agreements with local community development organizations (nonprofit organizations, community development financial institutions, local credit unions, etc.) to implement and administer a lending program for disaster-impacted small businesses for non-construction related expenses. In the event the state is unable to identify local community development organizations that can serve the entire impacted area, the state may issue awards directly to small businesses that meet the program criteria.</p>

	<u>Small Business Bridge Loan Program</u>
Useful links	<p>Article about Katrina from 2006 http://www.pnas.org/content/103/40/14653</p> <p>New Orleans sees resilience as business opportunity. Post-Katrina investment has created lot of engineering and other expertise. The Greater New Orleans Chamber hosts 'Rescon' annually https://resconnola.com</p> <p>State of Louisiana Proposed Master Action Plan for the Utilization of Community Development Block Grant Funds in Response to The Great Floods Of 2016 https://www.doa.la.gov/OCDDRU/Action%20Plan%20Amendments/Great_Floods_2016/Floods%20Master%20Action%20Plan_clean_06Jan17.pdf</p>

Maryland

Lead body	Maryland EMA (MEMA)
Status	State agency
Interviewed?	Yes
IEDC contact	<p>Chas Eby, Chief Strategy Officer at Maryland Emergency Management Agency Chas.eby@maryland.gov</p> <p>Jorge Castillo too jorge.castillo@maryland.gov</p>
Key person	Chas Eby
Disasters seen in the State	Baltimore riots, Annapolis and Ellicott City floods
About the organization	<p>The Maryland Emergency Management Agency is a state of Maryland agency organized within the Maryland Military Department. While MEMA is normally under the authority of the adjutant general, during emergencies the governor may assume direct authority over the agency and the executive director of MEMA reports directly to the governor.</p> <p>MEMA is the lead coordinating body for disaster prevention, response, protection, mitigation and recovery, but asks state agencies to be state coordinating function for various areas.</p> <p><u>Brand Position Statement:</u> MEMA is a national leader in Emergency Management that provides Maryland residents, organizations, and emergency management partners with expert information, programmatic activities, and leadership in the delivery of financial, technical and physical resources "To shape a resilient Maryland where communities thrive." We do this by being Maryland's designated source of official risk reduction and consequence management information</p> <p><u>Vision:</u> To shape a resilient Maryland where communities thrive.</p> <p><u>Mission:</u> To proactively reduce disaster risks and reliably manage consequences through collaborative work with Maryland's communities and partners.</p> <p>MEMA expertise is preparedness, disaster, continuity – they are not really business development experts. They can't advise on business or business resilience plans. By the same token, Commerce doesn't vet incoming hurricane information and what it means.</p> <p>The Maryland Department of Commerce is the state coordinating function for economic response and recovery. It is the team that works before, during and after economic disasters so they work closely together.</p> <p>MEMA handles:</p>

	<p>1] <u>risk reduction</u>: policies, projects and programs in Emergency Management and other state agencies. They strive to decrease risk and do groundwork before disasters.</p> <p>2] <u>hazard mitigation</u>: hazard mitigation assistance program is based in Emergency Management - FEMA-funded. MEMA is pass through for the money and subject-matter expert to cultivate good projects to be enacted locally - e.g. construction, structural projects, multi-jurisdictional, stream restoration, green-space etc. good mitigation project benefits community day to day. slope stabilization, stream restoration, reduction of nuisance flooding on a regular basis - e.g. less need for insurance, businesses not flooded on commerce street in Annapolis. MEMA doesn't have engineers on their team.</p> <p>They help update local hazard mitigation plans [26 local Emergency Management directors – all the counties, Baltimore, Annapolis and Ocean City] that are needed to get funding. MEMA provides data for these on previous disasters. A team of mitigation specialists at MEMA meets with local jurisdictions to complete these plans. They ask for 1-page of interests from communities - project ideas to fill biggest gaps - that MEMA will cultivate into a full project that hazard mitigation can fund.</p> <p>3] <u>community outreach</u>: This area works to ensure the public is prepared – i.e. that they have information available. They also coordinate with the private sector and N.G.O.'s ahead of disasters. MEMA's PSIP program involves over 400 businesses and corporations. Their main goal is to ensure that they have strong continuity programs, preparedness info, up-to-date information on events that could potentially affect their operations, and training and exercise opportunities for disaster preparation and post-disaster recovery. MEMA acts as technical advisors. During and after disasters the main goal is not to ask what private sector can do to help MEMA but what can government do to help the private sector – i.e. to minimize interruption. So, for example, the State does not ask for large retailers for water pallets - but how to keep stores open so people can shop, work, etc. They see this as very different to some other states' private sector programs. PSIP incorporates the full range from biggest businesses in Maryland to small businesses that lack a full-time risk manager or security consultant, etc. Some big businesses may have 10 staff dealing with risk - they need vetted government information and a number to call in state government.</p> <p>They inform business about the smallest of events - about flash floods, active assailant, etc. They don't advise business on how to respond but just give out information. An example is when they worked closely with businesses in Baltimore during the 2015 unrest. They had a business assistance center running 24/7 and an online forum for business risk analysts to talk to each other. They were able to ask each other about business closures, closing early, what they were seeing 3 blocks down.</p> <p>4] <u>Recovery</u>: long-term recovery is also the responsibility for state agencies - so, again, Maryland Department of Commerce leads. For the floods in Ellicott City, Maryland in 2015 and 2018, MEMA was the lead state agency for the recovery. They learned that:</p> <ul style="list-style-type: none"> ▪ they need a state-level recovery support leadership group but also one that convenes immediately after a disaster, so they have a standing group of state experts from many state agencies that meet regularly and specifically after an incident get on a call whilst a problem is still occurring. They identify programs in state government that can help. This is crucial to rapid restoration. ▪ the community should drive recovery. Ellicott City had a community advisory group (residents) to advise and support what local government decides to do; a government group; volunteer and relief-type group. They identified needs and gaps and charge state agencies with solving/responding. ▪ there is a need to get creative with grants and programs. MDDHCD has used this strategy to help Ellicott City and other state floods in 2018 – identifying housing and rental assistance type programs that, with tinkering, could be used to support residents. They also have projects on the eastern shore including stabilization projects.
Useful links	<p>https://mdhistoricaltrust.wordpress.com/2015/11/25/the-maryland-resiliency-partnership-state-agencies-working-together-for-a-more-resilient-maryland</p> <p>http://www.resiliencypartnership.com</p>

	https://MEMA.maryland.gov/Pages/wholecommunitysummit.aspx https://MEMA.maryland.gov/Pages/business.aspx https://www.domesticpreparedness.com/resilience/marylands-approach-for-raising-the-resilience-index/ https://MEMA.maryland.gov/community/Pages/PSIPWelcome.aspx https://www.bizmonthly.com/state-howard-county-involve-private-sector-emergency-management/
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Massachusetts

Lead body	Division of Capital Asset Management and Maintenance
Status	State body
Website	https://www.mass.gov/service-details/resilience-program
Interviewed	No - declined
IEDC contact	No
Key person	Sally Miller, Sr. Energy and Sustainability Planner, Energy and Sustainability Program
Senior staff background(s)	unclear
Useful links	<p><u>Statewide Initiatives</u> Statewide Resilience Master Plan (SRMP) MA Global Warming Solutions Act (2008) Executive Order 569 – Establishing an Integrated Climate Change Strategy for the Commonwealth (2016) Massachusetts State Hazard Mitigation and Climate Adaptation Plan (expected 2018)</p> <p><u>Resilience Working Group</u> Sally Miller, Sr. Energy and Sustainability Planner, Energy and Sustainability Program Ellen Whittemore, Sr. Project Manager, Office Planning, Design, and Construction</p> <p><u>Additional Resources for Resilience Working Group</u> Open file for Resilience Resources and Tools https://www.mass.gov/service-details/resilience-resources-and-tools Open file for Resilience Partners Open file for Statewide Resilience Master Plan (SRMP) Open file for Massachusetts Climate Change Adaptation Report</p> <p>http://resilientma.org MA Climate Clearinghouse. This website, and the Municipal Vulnerability Preparedness (MVP) program it supports, are cornerstones of our administration's efforts to further reduce greenhouse gas emissions, safeguard residents, municipalities and businesses from the impacts of climate change, and build a more resilient Commonwealth. As first announced at our 2017 Municipal Climate Change Summit, we have produced the resilient MA Climate Clearinghouse to ensure continued access to information and provide communities with the best science and data on expected climate changes, information on community resiliency, and links to important grant programs and technical assistance. The site also catalogs specific vulnerabilities, risks and strategies concerning agriculture, forestry, local government, education, energy, recreation, and transportation. The climate projections included on the website are specific to Massachusetts and were produced by the Northeast Climate Adaptation Science Center at UMass-Amherst. We've also included an interactive map so that users can understand how climate change will affect their specific location and the resources they manage.</p>

Michigan

Lead body	Land Information Access Association (LIAA), a nonprofit community service and planning organization headquartered in Traverse City, Michigan
Status	NGO/PPP
Interviewed	NO
Website	http://www.resilientmichigan.org/about.asp
IEDC contact	None
Key person	Harry Burkholder, Executive Director of LIAA http://www.liaa.org/harry.asp
About the program	Resilient Michigan. Planning for Resilient Communities is a community engagement and technical services program developed by LIAA with numerous statewide partners. The program is helping citizens, local leaders and public officials plan communities that are more resilient to global challenges such as climate variability, extreme weather events and economic challenges). With this grant funding and direct assistance from our project partners, LIAA provides a full range of professional planning and technical support services to participating communities. These services include public education and participation processes, data gathering and analyses, evaluation of future scenarios, vulnerability analyses, visioning and goal setting, task identification, and formal master plan development.
Useful links	http://www.resilientmichigan.org/downloads/michigan_resiliency_handbook_web.pdf

Mississippi

Lead body	Mississippi Development Authority (MDA) - Disaster Recovery Division
Status	State body
Interviewed	NO – several efforts were made, to several different people at the MDA, to secure an interview
Website	http://www.msdisasterrecovery.com/
IEDC contact	None
Key person	Glenn L. McCullough, Jr. Executive Director, Mississippi Development Authority gmccullough@mississippi.org
About the program	A great deal of information is available on the website.

Montana

Lead body	Montana Department of Commerce - Montana Ready Communities Initiative (MRCI)
Status	State body
Interviewed	NO
Website	http://comdev.mt.gov/Programs/MontanaReadyCommunities
IEDC contact(s)	None
Key person	Jennifer Olson Administrator, Community Development Division JeOlson@mt.gov
Senior staff background(s)	Bachelor of Arts in Political Science from Montana State University and is a certified National Development Council Housing Development Finance Professional. Her work began by serving communities and impoverished families with non-profit and public service. She has continued to engage and serve families and communities through her 16-year involvement and oversight of federal and state programs. Jennifer is driven by the successful collaboration with communities and the unique opportunity to live in this great state while assisting all Montana communities with their goals. Jennifer sees the Community Development Division as a valued partner for every community to help achieve successes for Montana communities, helping through activities related to planning, economic development, infrastructure, community facilities, school facilities, housing, and downtown development supporting communities, businesses and organizations.
Disasters seen in the State	The Montana flooding of 2011 was unique in its breadth, both spatially and temporally. The flooding for 2011 was primed with summer and autumn 2010 precipitation, which increased soil moisture content. Through a series of events, flooding eventually hit all corners of the state at some time during winter, spring or summer.
About the program	Economic dimension not explicit.

Program to help individuals, communities, and businesses to survive, adapt and grow in the face of challenges and barriers. MRCI focuses on a proactive, holistic, and collective approach at the state-level to natural disasters, economic shocks, and other adverse events. This approach ensures that the State of Montana plans for long-term resilience and aligns projects and priorities across state agencies. In addition, MRCI will collaborate with a wide range of partners to leverage resources and deliver measurable results that create an adaptable and vibrant future for all Montanans.

The term resilience has been used in many different contexts, but for the purposes of this project resilience is defined as, “the capacity of individuals, communities and systems to survive, adapt and grow amidst stressors, shocks and other challenges.” Resilient communities are adaptable to changing conditions and can thrive in adverse situations.

Additional factors that contribute to community resilience include:

- Learning from past events and integrating lessons learned
- Being inclusive by including all segments of the population
- Having durable community services and systems that can function in all conditions
- Diverse economies, biodiversity and population

Shocks and Stressors

Natural hazards such as floods and wildfires pose a significant threat to Montana communities, but they are not the only risks to consider. Community resilience can be improved by addressing both shocks and stressors. Shocks refer to high-impact, short-term events that may significantly affect basic services, public safety or the environment. Common shocks include natural disasters such as floods, wildfires, or earthquakes, but may also include industry/business closures, cyber-attacks, or mass shootings. Stressors are on-going environmental, social, or economic issues that weaken the fabric of a community and can amplify the effects of shocks and disasters. Community stressors may include high rates of poverty, unemployment, climate change, aging populations, or environmental degradation. (source: website listed above)

“MRCI will begin by creating Montana’s Resiliency Framework. The Framework is an integrated and interdisciplinary strategy to ensure that long-term planning, projects, and priorities address chronic stressors such as poverty and climate change while building resilience to acute shocks such as floods or wildfires. Numerous states have developed similar strategies that have garnered national recognition and tangible results. The State of Montana will build upon their success and tailor the Framework to the State of Montana’s unique assets, resources, and communities. Colorado’s Resiliency Framework and Vermont’s Roadmap to Resilience are both helpful examples of this type of approach”.

The State of Montana currently creates, reviews, and updates a comprehensive Multi-Hazard Mitigation Plan and Statewide Hazard Assessment along with a Continuity of Operations Plan (COOP). MRCI will not duplicate these response and recovery efforts, instead, it will plan for long-term resilience to natural disasters and strengthen the capacity of individuals, communities, and the state to survive, adapt, and grow in the face of adverse events by building off these important resources. Ultimately, MRCI will lessen the probability of devastating effects from adverse events while integrating resiliency into the fabric of everyday life.

Nevada

Lead body	Nevada Homeland Security Commission and Nevada Division of Emergency Management
Status	State bodies
Interviewed	NO
Website	http://dem.nv.gov/Home/DEM_Home
IEDC contact(s)	None
Key person	Caleb S. Cage: Chief of the Division of Emergency Management and Homeland Security Advisor http://dem.nv.gov/about/Chief
Senior staff background(s)	Graduate of the United States Military Academy, West Point, where, upon graduation in 2002, he was commissioned as a Field Artillery officer and was assigned to the 1st Infantry Division in Bamberg, Germany. Caleb's military career spanned five years and various positions, including Fire Direction Officer, Executive Officer, and Battery Commander. He also served a second yearlong tour in Iraq in 2006 as a Corps Information Operations battle captain in the Corps Joint Operations Center in Baghdad. Upon separating from the Army, Cage began his civilian career as a Senior Policy Advisor to the Lieutenant Governor, where he developed and managed several successful outreach initiatives aimed at serving Nevada's veterans. In 2010, he was appointed to serve as Executive Director of the Nevada Office of Veterans Services (NOVS), a cabinet-level agency responsible for serving veterans through two state veteran cemeteries, a comprehensive veterans service officer program, and 180-bed long term care skilled nursing facility. In addition to these efforts, Cage also established Nevada's Green Zone Initiative, an effort to improve outcomes for veterans through policy development, service provider coordination, and outreach. Because of the success of his work in these areas, Cage was asked to move into the position of Director of Military and Veterans Policy, a new position in the Office of Governor Brian Sandoval in August of 2013.
Start date	July 2015
Disasters seen in the State	Nevada experienced unprecedented emergencies and disasters during calendar year 2017
About the program	Nothing economy-specific Nevada's Statewide Resiliency Strategy: In 2018 the Governor of Nevada issued executive order 2018-4 "Implementation of Nevada's Statewide Resiliency Strategy" - to be carried out by the Nevada Homeland Security Commission and Nevada Division of Emergency Management These incidents resulted in disruption and tragedy throughout Nevada, however, they also displayed Nevada's commitment to recovery and building a stronger Nevada based on lessons learned from these incidents.
Useful links	There is a NEVADA Emergency Preparedness Association http://www.nepaonline.org although the website would suggest that the association has not been especially active in recent years. Yuri Graves is listed as its President. yuri.graves@unlv.edu / President@nepaonline.org

New Jersey

Organization/Program	Governor's Office of Recovery and Rebuilding
Lead body	Governor's Office – State of New Jersey
IEDC contact	None
Key person	Exec. Director is Daniel J. Kelly
Senior staff background(s)	<ul style="list-style-type: none"> ▪ State of New Jersey Office of the Attorney General ▪ Director, Superstorm Sandy Compliance Unit ▪ Deputy Director, Superstorm Sandy Compliance Unit ▪ Court of Common Pleas, Montgomery County, Pennsylvania - Law Clerk ▪ Prudential Real Estate Investors - Financial Analyst and Asset Manager
Website	https://nj.gov/gorr - especially https://nj.gov/gorr/business
Interviewed	No - declined
Rationale	<ul style="list-style-type: none"> ▪ response to Superstorm Sandy ▪ State aims to help Sandy-impacted homeowners, renters, businesses and communities recover and rebuild. ▪ State has committed to building back better and stronger by pursuing resilient infrastructure projects and mitigation opportunities to prevent future damage and utilizing construction techniques and materials that will better withstand future weather events.
Economic activity	<p>Community Development Block Grant (CDBG) Programs</p> <p>Stronger NJ Business Grant Program (CDBG-DR) Eligible small businesses and non-profits that sustained physical damage may apply for grants of up to \$50,000. These grants can be used for rehabilitation, new construction, equipment, inventory, mitigation, refinancing, and working capital among other uses. The working capital and other uses may be structured as forgivable loans.</p> <p>Stronger NJ Business Loan Program (CDBG-DR) Program loans of up to \$5 million are assisting small businesses and non-profits that suffered physical damage, as well as spurring economic revitalization by providing funding for expansion and new businesses in storm-impacted areas.</p> <p>Stronger NJ Neighborhood and Community Revitalization Program (CDBG-DR) This program provides funding to help communities with public facility improvements such as streetscapes, lighting, and sidewalks; business assistance initiatives such as micro-loans for storm-related damage and loan guarantees for loan loss reserves; and façade and code-related improvements.</p> <p>Private Disaster Relief Resources</p> <p>Main Street Disaster Relief Program The Main Street Disaster Relief Program can make available through the New Jersey Economic Development Authority guarantees of up to \$500,000 for commercial lines of credit to businesses that need access to cash to improve their damaged property while awaiting insurance proceeds. Additional information about the Main Street Disaster Relief Program is available at the below link.</p> <p>Union County Economic Development Corporation (UCEDC) Assistance UCEDC, a statewide economic development corporation, is offering working capital loans up to \$25,000 at only 2% for five years to meet the needs of small businesses affected by Superstorm Sandy. Additional information is available at the below link.</p> <p>REBUILD New Jersey Program Offered by New Jersey Community Capital (NJCC), the REBUILD New Jersey Program is available to provide low-interest loans to New Jersey businesses that are recovering from Superstorm Sandy.</p>

	<p>These loans range from \$10,000 - \$65,000 and may be used to pay for building repairs, equipment and inventory purchases, rent or mortgage payments, salary expenses and utility costs.</p> <p>The Intersect Fund Disaster Relief Loans The Intersect Fund is a New Jersey non-profit that offers business coaching and loans. The Sandy-Relief program provides loans of up to \$15,000 at five percent interest to owners whose businesses the storm affected.</p> <p>Cooperative Business Assistance Corporation (CBAC) EDA has provided financing to CBAC for the organization to advance to small businesses recovering from Superstorm Sandy. CBAC is a non-profit organization providing market or below market interest rate business loans and technical assistance to small businesses located in or moving into the Southern New Jersey region.</p> <p>Other Disaster Relief Resources</p> <p>Department of Labor and Workforce Development Economic Recovery Initiatives To assist businesses and workers following Superstorm Sandy, the New Jersey Department of Labor and Workforce Development launched three economic recovery initiatives, including: Recovery4Jersey, Skills4Jersey and Opportunity4Jersey.</p> <p>New Jersey's Clean Energy Program Incentives Residents, businesses, towns and schools may be eligible for enhanced rebates for purchasing qualifying energy-efficient equipment and appliances.</p> <p>Federal Disaster Assistance for Businesses Sandy-affected businesses seeking assistance from FEMA, the Small Business Administration, the Farm Service Agency and other federal agencies can find information on relief programs that were made available at the below link.</p>
New Mexico	
Lead body	The New Mexico Resiliency Alliance This is not a body that deals with natural or man-made disasters
Interviewed	NO
Website	https://www.nmresiliencyalliance.org/who-we-are

New York

Lead body	Governor's Office of Storm Recovery (GOSR)
Status	Governor initiative
Interviewed	YES
Website	http://www.stormrecovery.ny.gov
IEDC contact(s)	Jane K. Brogan Jane.Brogan@stormrecovery.ny.gov
Key person	Jane K. Brogan, Chief Policy & Research Officer
Senior staff background(s)	<p>Since fall 2017, the office has been led by the executive team.</p> <p>The Chief Policy & Research Officer worked in Disaster Recovery for over 11 years – starting in the agency rebuilding the World Trade Center site after 9/11.</p> <p>A lot of staff came from environmental science and urban planning or have MPAs.</p> <p>The General counsel worked in New York City for 10 years.</p> <p>The Chief Financial Officer was in New York City and New York state for 25 years.</p> <p>Housing staff are all from the housing world in New York state or housing organizations – mostly on the affordable housing side.</p>
Start date	Post-Sandy
Disasters seen in the State	Hurricane Sandy
About the program	<p>After Hurricane Sandy the state got a federal grant for DR. NYC received about \$4.2bn and New York state got \$4.5bn. They are still working on recovery from Hurricane Irene and Lee [year prior to Sandy] as well.</p> <p>The Office is focusing on long island and upstate New York primarily. 4 main recovery areas:</p> <p>1] housing: which includes single-family, rental, multi-family;</p> <p>2] Economic Development: including grants to small business for working capital, inventory, equipment, future construction which will make small business more resilient;</p> <p>3] infrastructure: match component to FEMA money as well as large-scale construction projects. pre-proofing for critical facilities, sewage treatment, and installation of new sewers;</p> <p>4] community reconstruction: 124 communities across state have undertaken a planning process for a couple of years to produce a plan that the community thinks it needs to become more resilient and be better prepared for future disasters. NYC is a planning area but also contains 30 such areas. The plans include public services like workforce development or preparedness training through to infrastructure projects. They have done the planning process and so are implementing projects in those communities – for which funding exists.</p> <p>The state is factoring in sea-level rise with everything they do. HUD funding requires that, in the flood plain, will have to elevate to ABFE-plus 1 whereas New York state's building code has strengthened ABFE-plus 2 (See https://www.dec.ny.gov/lands/40576.html and https://www.hudexchange.info/resources/documents/FFRMS-FAQs.pdf).</p> <p>The main Economic Development work is grants for working capital to small businesses able to continue. They provided \$10k up-front and said firms must come back to provide back-up documentation needed. The \$10k grants were provided to help small businesses continue to stay open and get back up and running soon after the disaster so they can continue or wait for future federal funding which may take longer to be provided to the small businesses.</p> <p>They also wanted to help businesses become more resilient against future storms, and a lot of the applicants don't own their buildings.</p>

	<p>In New York state post-Sandy, they are dealing with lots of small boat rentals and marinas and fisheries out on Long Island that were impacted.</p> <p>Future construction work is to help small businesses by providing hardening structures, elevating mechanicals, and rebuilding of facilities where half a property was in floodplain and needed to be moved out of it.</p> <p>Water is very much the focus. Upstate New York gets very flooded because of riverine flooding. Long Island and New York City is more impacted from heavy storms and storm surges like hurricanes.</p> <p>At the end of 2018, GOSR had approximately 200 staff. At the maximum they were 250-275. This encompasses all 4 programs, compliance, monitoring, legal, systems, policy, and research. They also use consultants.</p> <p>One of the projects in the Community Reconstruction program involves outfitting community centers in New York City to be shelters as well as provide training to be green builders, resiliency experts, etc. There are also other Community Reconstruction projects in communities outside of NYC that involve outfitting buildings to become community shelters after an extreme weather event. In addition to the community centers, there are also other Community Reconstruction projects being implemented in NYC. GOSR co-ordinates with NYC government on these - through recovery and resilience, parks dept and agencies that they work closely with.</p> <p>There is a lot of focus around neighborhoods where public housing authorities are located. Some workforce development programs are located there.</p> <p>They are buying out SFH's with repetitive flooding, demolishing old homes and covenanting the land. Buy-out is harder with small businesses because of federal funding requirements and the small businesses often down own their property and so would be forced to find other premises.</p> <p>For recent weather events in New York State that haven't received federal funding, some business recovery programs have been able to utilize GOSR's policies and procedures. These programs are run by other State agencies including Empire State Development.</p> <p>GOSR is 100% funded by HUD grant but ends in 2022 - so thinking about transition from that point is taking place. When running disaster recovery programs, there should be an office or department that can focus on that work since other staff are running existing programs. It is likely that there will be some office - much smaller and probably a department in an existing agency to handle post-HUD grant requirements and resiliency in the future after the funding ends.</p> <p>Through the housing program they help Public Housing Authority (PHA) residents to get certified in construction, green building and resiliency as well as the operations and maintenance once built.</p>
Useful links	http://coastalresilience.org/new-york-governor-signs-community-risk-and-resiliency-act/

North Carolina

Lead body	Office of the Secretary of the North Carolina Department of Commerce
Interviewed	No
IEDC contact	None
Key person	Susan Fleetwood, Executive Director of Economic Development sfleetwood@nccommerce.com
Senior staff background(s)	<p>Susan Fleetwood serves as Executive Director of Economic Development in the Office of the Secretary of the North Carolina Department of Commerce. In this role, she provides strategic leadership on complex economic development projects and issues; leads the Department's efforts in defining processes for working with the Economic Development Partnership of North Carolina; helps to develop competitive proposals for the Department's active economic development projects; and serves as liaison to the Governor's Office to prepare for his active engagement with prospective and existing companies.</p> <p>With more than 18 years of experience in economic development, she has served in various, increasingly responsible capacities. Prior to her current role she served as Director of Business & Industry Development and provided leadership for 25 economic development professionals working to recruit new domestic and international companies to the state and helping existing companies grow and expand.</p> <p>She also served as Director of Strategic Projects in the Business & Industry Division and served as a senior project advisor on major economic development projects; oversaw the development of high-impact content for marketing and collateral materials prepared for clients and consultants; managed the selection and implementation of the Department's client relationship management system; and led a redesign of the state's buildings and sites database.</p> <p>She also worked as an International Development Representative and worked directly with several companies throughout their site selection process, worked as an International Trade Specialist with the Department's International Trade Division, and as International Trade Coordinator and Marketing and Development Coordinator with the City of Birmingham, AL Office of Economic Development.</p> <p>Fleetwood is a graduate of Wake Forest University with a Bachelor of Arts degree in Politics, and NC State University with a master's degree in Public Administration. She is also a graduate of the Economic Development Institute and a member of the North Carolina Economic Developers Association.</p>
Disasters experienced	Hurricane Matthew – 2016
Program	There is an effort to educate impacted businesses in all areas of the state that \$11.3 million is available for small businesses through the Community Development Block Grant – Disaster Recovery program (CDBG-DR). The funds are administered by the North Carolina Department of Commerce's Rural Economic Development Division.
Website	State of North Carolina CDBG-DR Action Plan https://files.nc.gov/rebuildnc/documents/matthew/hurricane_matthew_nc_CDBG_dr_actionpaln_final.pdf

Oklahoma

Organization/Program	Disaster Resilience Network Business Council
Lead body	Disaster Resilience Network
Status	PPP
IEDC contact	None
Key person	Sara Kelly-Combs drndirector@gmail.com
Website	https://www.disasterresiliencenetwork.org/business-council-info
Interviewed	NO
Rationale	The Disaster Resilience Network Business Council is both a public and private partnership designed to educate businesses and nonprofits about the need for emergency and continuity planning.
Economic Activity	They offer networking opportunities for those interested in business emergency and continuity planning and assist in promoting the critical role of businesses and nonprofits in a community's disaster resiliency. This council helps small businesses plan to survive fire, flood, wind, power loss, or other troubles that can sink even the most determined entrepreneurs. They strive to help businesses and nonprofit social service agencies strengthen their protection and planning before disaster strikes, whether in the form of natural disasters or even everyday emergencies such as a power failure.
Other	<p>The State has also produced an Economic Resilience Strategy in August 2014 https://www.eda.gov/files/about/disaster-recovery/Oklahoma_Economic_Resilience_Strategy_Report_FINAL_print.pdf It is unclear as to whether this has been implemented.</p> <p>Oklahoma Department of Commerce/Oklahoma Office of Emergency Management deby.snodgrass@okcommerce.gov and michelann.ooten@oem.ok.gov</p>

Oregon

Lead body	State Resilience Office
Status	State office reports to the governor (emergency professionals report to adjutant general)
Interviewed	YES
IEDC contact	Mike Harryman - State Resilience Officer Mike.K.HARRYMAN@oregon.gov
Key person	As above
Senior staff background(s)	<p>Mr. Harryman has worked 10 years in public health. Director for state public health division - respected for his work in responding to disasters and he helped design a network across the nation working with Community Development Corporations (CDCs)'s, Health and Social Services (HSS), Association of State and Territorial Health Officers. Mr. Harryman has a master's degree in emergency management. Prior to his appointment, Harryman served as the Director of Emergency Operations for the Oregon Health Authority's Public Health Division: https://public.health.oregon.gov/Pages/Home.aspx since 2012. As Director, Harryman played a pivotal role as Oregon's Incident Manager for Oregon's 2014 Ebola preparedness and response efforts and was integral in leading response teams following the Umpqua Community College shooting. Harryman is a veteran of the U.S. Army and Oregon Army National Guard and received his master's degree in Emergency and Disaster Management from the American Military University. The post-holder did not need to be an expert in climate change as the state already had someone working on that.</p> <p>All 36 counties in Oregon have an emergency manager - most with no military background. Some have law enforcement, while others have experience in health.</p>
Start date	Created by state statute in 2015, ORS 401.913
Disasters seen in the State	Fire and flood in 2012/3, Wildland Fires 2017/18 [Cascadia 9.0 – predicted]

<p>About the program</p>	<p>Governor-appointed, State Senate confirmation. The SRO post is the only position that must go through state senate as it is considered a policy advisor. The state has a seismic commission that Mr. Harryman is the policy advisor for, which wrote the Oregon Resilience Plan. A state house representative wanted the state to look at Cascadia Subduction Zone (CSZ). In 2014 a task force recommended a State resilience plan – the first recommendation of which was a resilience office.</p> <p>The first resilience office is housed in the governor's office. Today the office is staffed by Harryman and a part-time assistant. The office is funded at the level of \$650,000 on a biennial basis.</p> <p>Oregon's plan is more about mitigation, considering that an earthquake could occur in next 50 years (ORP). There have been 41 ruptures in the last 10,000 years. They have a rainy-day fund - \$1.2bn [from general funds] there for cuts AND major president or governor-declaration.</p> <p>The resilience plan identified seismic rehabilitation grant dollars. They use a state bonding authority: ~\$400m allocated for the seismic retrofitting of schools, emergency facilities [hospitals, 911 centers, police and fire stations, hospitals by 2022 and schools by 2032.</p> <p>There are no oil refineries in the state, so fuel comes in by marine or pipeline. Mike works with the state climate officer [who is also the energy policy advisor], with the nonprofits, , tribes, city/county and OPB to get the word out on preparedness.</p> <p>Governor Kate Brown release her Resiliency 2025 Vision in October 2018 to continue to make investments.</p> <p>Earthquake activities takes 60% of his time but the SRO sees himself as all-hazard resilience officer. There is also some work on wildfires, drought, climate change. cybersecurity, manmade disasters.</p> <p>The office is currently getting all state agency continuity plans up to date which is a 3-year project. Next year they will work on disaster recovery and cybersecurity. They are working with the 50-year resiliency plan (ORP) with a 5-year review to be posted online.</p> <p>Water regulations also just changed to require water masterplans to use seismic-proofed capital investment. They would like to incorporate this for wastewater as well.</p> <p>There is also a state hazard mitigation officer that works with, but does not report to, Harryman.</p> <p>They have had a 4-day <i>Cascadia Rising</i> exercise with government officials and a small number of private sector representatives (from Verizon and AT&T) where they imagined what would happen if there was a major earthquake. A state agency is assigned for each of the 18 ESFs. Also involved are: 20 of 36 counties, all 9 tribes, 27 state agencies and Federal officials (many of these latter came from the southern U.S. and wrongly assumed roads and power would be working). 2022 will be next statewide exercise which will be with Washington and FEMA region 10.</p> <p>They are talking, through business associations, with the private sector on business continuity, what best practice do big companies bring.</p> <p>They are talking with lawyers about what information can be online. They are using the Federal government's circular – 11 things that organizations at government level should focus on – succession planning etc., vital records.</p> <p>If there was a 9.0 earthquake it could last 3-6 minutes.</p> <p>The key is to be able to put roads back together – this should be easier if these have been built to code. Roads would need to be put back together. Roads will shatter, bridges and overpasses will fall and the coastal highway 101 will be broken in many places. Key will be to get fuel, water, and mercy supplies. Transport of supplies will be over-shore or by air for the first 6 weeks so there will need to be an upgrade of airports to bring in commodities.</p>
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General information	<p>No west coast state has an SRO although all have an Office of Emergency Management and Homeland Security. There is usually a state mitigation officer.</p> <p>100 resilient cities members (San Francisco, L.A., Vancouver, and Seattle) do of course have resilience officers although not all focus on natural hazards. The city CROs might be more about climate change. alternate energy sources etc.</p>
Useful links	<p>https://www.oregon.gov/oem/Documents/Oregon_Resilience_Plan_Final.pdfhttps://www.washington.edu/news/2017/10/23/50-simulations-of-the-really-big-one-show-how-a-9-0-cascadia-earthquake-could-play-outhttps://www.oregon.gov/gov/policy/orr/Pages/businessworkforce.aspxhttps://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=1122fhttps://www.oregon.gov/gov/policy/Documents/resiliency-policy-agenda.pdf</p>

Puerto Rico

Lead body	<p>Government of Puerto Rico - Department of Housing</p> <p>ReImagina Puerto Rico (RePR)</p>
Status	<p>RePR is a non-profit that was established in November 2017 as an independent and inclusive entity headed by Puerto Ricans. With the support of The Rockefeller Foundation, Open Society Foundation, and Ford Foundation</p>
Interviewed	YES
Website	www.reimaginepuertorico.org/en
IEDC contact(s)	<p>Cristina Fawaz - Research and Policy Analyst cfawaz@reimaginepuertorico.org</p> <p>Alicia Diaz - Research & Policy Analyst adiaz@reimaginepuertorico.org</p>
Key person	Malu Blasquez – Executive Director - malu.blasquez@reimaginepuertorico.org
Senior staff background(s)	<p>Alicia: lawyer - housing. volunteered in psychology</p> <p>Cristina: design, education, volunteer</p> <p>Malu - industrial engineering</p> <p>Juan - chemical engineer, strategy management expert.</p>
Disasters seen in the State	Hurricanes Maria and Irma (both in September 2017)
About the program	<p>CDBG-DR money will fund:</p> <ul style="list-style-type: none"> ▪ Grants of up to \$50,000 for eligible businesses. ▪ Construction and commercial revolving loan program that will provide up to \$1 million per loan to eligible businesses (total pot is \$35 million). ▪ Grants of up to \$2,500,000 for small business incubators and accelerators (total pot is \$10,000,000).
About the program	<p>RePR was created in November 2017.</p> <p>This was a participatory process of working groups, focus groups with communities and children through the participatory photography program. Working groups were made up of experts and technicians from island and internationally with partners such as AECOM and 100 Resilient Cities project. There are 6 themes to their plan: Energy; Housing; Economic Development; Physical Infrastructure, Health, Education & Social Services; and Natural Infrastructure. They also did a General Report that gives an overview an all other topics</p> <p>The working groups met 3 times and there were meetings with community focus groups twice. For the community focus groups, they divided the island into 6 regions. With the participatory photography program, they got parents and children talking on how they saw resilience. They also began meeting with agencies to see what is being done from the government side and began developing recommendations. RePR overall report was published on June 20, 2018. There have been ongoing conversations and, since March, RePR is now taking on a role of clearing house for the island - telling prospective external investors/donors which projects needing funding, etc.</p>

	<p>RePR is a nonprofit separate from the government. They wanted independence because of all that the government already had on its plate, but they share their information with the government. They feel that being independent and not being linked to government can help in creating more trust.</p> <p>The resiliency effort started with 10 people in January 2018. The core team is now 4 and they also work with consultants.</p> <p>Reaching out to the Puerto Rican diaspora in the mainland U.S. has been important. RePR contacted several diaspora organizations in Florida and, when they met with them in Orlando, told them what was going on post-hurricane and how they could help. They also met with groups in Connecticut and Massachusetts to coordinate diaspora interests. The Boston Foundation had some members who created 'MA United for PR', raised \$ 2m and funded over 20 different local businesses and organizations.</p> <p>They are keen to promote local jobs as there has been a lot of outside hiring. Their plans are focusing on hiring, training and capacity building for local economy. Federal funding is available for this through the Workforce Innovation and Opportunity Act but is not being taken up – some \$2m having to be returned currently. At time of writing, early 2019 RePR is creating a digital directory of resources for the construction industry of Puerto Rico. RePR goal is to have a portal where local companies and professional individuals can publicize their capabilities to carry out works related to the reconstruction of Puerto Rico. This way, local companies and individuals working in the construction field in Puerto Rico are given visibility to explore business opportunities, contracting and/or joint ventures.</p>
Useful links	<p>http://www.resilientpuertorico.org/wp-content/uploads/2018/10/RePR_EconomicDevelopment_ENG_WEB_09212018.pdf</p> <p>http://www.CDBG-DR.pr.gov/wp-content/uploads/2018/06/A_Action-Plan_Final_v2-w-Disclaimers.pdf</p> <p>https://www.inc.com/leigh-buchanan/puerto-rico-hurricane-maria-anniversary-2018-inc5000.html</p> <p>http://www.p3.pr.gov/assets/pr-DRaft-recovery-plan-for-comment-july-9-2018.pdf</p>

Rhode Island

Lead bodies	<p>Rhode Island Alliance for Business Resilience (RIABR) Rhode Island Infrastructure Bank Chief Resilience Officer for the State</p> <p>RIABR's Director is an employee of the RI Emergency Management Agency (RIEMA) which has a central role in resiliency across all phases of emergency management and works closely with all state agencies in their areas of expertise. The RI Department of Administration and several not-for-profits also focus on community resilience.</p>
Status	RIABR is an informal organization – with no legal form.
IEDC contact(s)	<p>Stuart Freiman - Rhode Island Alliance for Business Resilience stuart.freiman@ema.ri.gov Shaun O'Rourke - Chief Resilience Officer (CRO) sorourke@riib.org</p>
Key people	As above
Staff background	<p>The CRO's previous roles include Director of Sustainable Design at Boston Architectural College, Green Infrastructure Program Director at the Trust for Public Land, Landscape and Ecological Designer with AECOM and Urban Forest Station Researcher with the USDA. He has a master's degree in landscape architecture.</p> <p>The RIABR head, Stuart Freiman, is a Project Manager for the Rhode Island Emergency Management Agency (RIEMA), where he leads emergency management projects related to technology as well as the business community. Earlier in his career he worked for 20 years in the</p>

	technology industry employed at both mainstream and start-up companies on both coasts. He is a graduate of Rensselaer Polytechnic Institute (B.S. Eng.) and New Hampshire College (MBA).
Disasters seen in the State	Hurricane Irene
About the organization	<p>Shaun O'Rourke is a full-time employee at Rhode Island infrastructure bank – his state role overlaps considerably with his bank role, so it is an inventive way to resource staff capacity. He reports to the CEO of the infrastructure bank but also has a thick dotted line to governor's office as well and meets with them regularly. The State capitol and bank are both located in Providence.</p> <p>The Bank has primarily administered a revolving loan fund that uses EPA money to support clean water and drinking water. Most funds are EPA - capitalization grants. They get matching grants from the state in order to be able to bring in the capitalization dollars as well as some other brownfield money. The Bank mission expanded about 4 years ago under the current State government - mostly on how to assist municipal governments to upgrade infrastructure [energy efficiency, storm-water, resilience, road and bridge etc.]. This provided an opportunity to think more about resilience and storm-water as critical infrastructure and/or as an economic development driver.</p> <p>The Governor also wanted better coordination between state agencies on climate change. They looked at state-owned assets and policies and asked, 'what can the state do to better prepare for climate change given that Rhode Island is already seeing impacts on the ground?' The Governor is looking for tangible ways to advance resilience and preparedness of state. Many of the actions are more umbrella/high-level actions. The CRO role is to lead implementation of the strategy.</p> <p>The Resilience Office has some interaction with Rhode Island Commerce Corporation - another quasi-public agency.</p> <p>Four years ago, the Governor established the Executive Climate Change Coordination Council. It was comprised of 11 agencies and quasi agencies that advise government on all energy and environment and transport issues. They meet every 2-3 months in a very public meeting. This is a steering committee for lot of agency related climate change work across the state. It is seen as a great place for collaboration and sharing. It is run by the Director of the Department of Environmental Management. The CRO participates in the meetings and has a standing agenda item to provide an update on climate adaptation activities. There is a resilience coordinator for each of the 11 agencies on the executive climate change council so the CRO works closely with those point people. Each agency is assigned actions by the council.</p> <p>The state also:</p> <ul style="list-style-type: none"> ▪ just kicked off a small business resilience project trying to target 4 or 5 different hotspots; ▪ discusses different types of climate vulnerabilities; ▪ develops checklists for how small business can better prepare for natural disasters. <p>The state is looking at sea rise, warming air, warming water, storm frequently and intensity, changing bio-diversity and inland flooding. The focus of its strategy is state-owned assets [i.e. things that can more easily be controlled by the state] from coast to upland, urban to rural. The effort is all about natural hazards - not disease, cybersecurity etc.</p> <p>State-owned assets include dams, piers, some waste-water treat facilities, parks ports that are particularly vulnerable to climate change, and schools. School facilities can serve as shelters in a post-disaster recovery situation. They are also trying to ensure there's additional fuel storage capacity at each waste-water facility – i.e. in the event of power outages. They have done a study which looked at climate change impacts of the 19 wastewater facilities and are now exploring how to accelerate work that has been identified in that study.</p> <p>There has been a lot of strategy work on resilience, but all too often it stops at the delivery phase. "Resilient Rhody" looked at 54 pre-existing plans done by agencies and nonprofits in last 4 years – with a view to collating the key aspects. For example, one important strategy is that any time DOT</p>

	<p>makes a capital improvement [e.g. a new bridge near a river mouth] they need to ask whether it can withstand sea-level rise and storm surge projections 50 years into the future.</p> <p>The CRO talks to Rhode Island Alliance for Business Resilience (RIABR) often and has presented to it. RIABR is very much about business continuity and better collaboration between Emergency Management agencies and bigger businesses around the state. The CRO will work with RIEMA to ensure that they have the right data but is not working with big businesses like RIABR.</p>
About the program	<p>Rhode Island Alliance for Business Resilience (RIABR)</p> <p>The Rhode Island Alliance for Business Resilience (the Alliance) is a self-governed public-private partnership focused on improving the resilience of Rhode Island businesses and local communities. – Membership consists of companies with 50 or more employees, chambers of commerce and trade organizations. Member companies are represented by expert personnel in their business resilience and continuity functions. They are calling the effort a public-private partnership (PPP) but it has no legal form yet.</p> <p>The state also created a seat in State Emergency Operations Center (SEOC) for business and industry known as Emergency Support Function 18 or ESF18 and is included in the state Comprehensive Emergency Management Plan (CEMP). Examples of key decisions might be about evacuating thousands of workers or keeping them at home in the event of an emergency.</p> <p>The Alliance comprises 34 member organizations and is governed by a steering committee which has recently appointed a Chair and Vice Chair. Member networking & education occur during the quarterly meetings, for example, one of the larger member organizations HQ's in RI recently delivered a presentation about its experience during Hurricane Florence [and discuss how they handled it. At every meeting they also do a short exercise known as the "Pop-up Tabletop Exercise."</p> <p>There is a short form for companies to apply [50 employees or over] whereas to try and get the resiliency message out to smaller businesses the Alliance work through chambers and trade bodies.</p> <p>At the outset they have primarily focused on weather events but are working to integrate an all-hazards approach which could include man-made events such as a cybersecurity breach, Active Shooter situation and many other types of issues.</p> <p>The Director of the Alliance is on contract to Rhode Island Emergency Management Agency (RIEMA) which donates his time to the Alliance. All involved are volunteers and there are no member fees in the Alliance. Over time the Alliance will consider new funding models to assure the organizations independence, growth and sustainability.</p>
About the program	<p>Distribution of Community Development Block Grants (CDBG) function sits within the Rhode Island Department of Administration – Office of Housing and Community Development http://ohcd.ri.gov/community-development/CDBG and is not a function of economic development or emergency management.</p>
Useful links	<p>Recent report on the State resiliency strategy called Resilient Rhody: http://bit.ly/2N0U0Ue</p> <p>http://climatechange.ri.gov/documents/resilientrhody18.pdf https://www.ecori.org/climate-change/2017/9/17/rhode-island-increase-climate-change-planning-with-first-chief-resiliency-officer http://climatechange.ri.gov/state-actions/building-resilience.php http://climatechange.ri.gov/resiliency https://FEMA.connectsolutions.com/nbeocatlantic recently established info. dashboard.</p>

South Carolina

Lead body	Disaster Recovery Office, SC Department of Commerce
Status	State department
Interviewed	NO
Website	https://www.scdr.sc.gov/#programs
IEDC contact	None
Key person	Jeffrey R. Sanderson [Program Director]
Senior staff background(s)	Retired Army Colonel http://www.southcarolinapublicradio.org/post/long-slog-towards-recovery-sc-disaster-recovery-office-strives-efficiency
Start date	post-2015
Disasters seen in the State	Matthew (2016)
About the program	HUD [CDBG-DR] used for repairing and refurbishing affected homes. "programs designed to help homeowners, tenants, landlords, developers and local governments."
Useful links	CDBG-DR Action Plan https://files.nc.gov/rebuildnc/documents/matthew/hurricane_matthew_nc_CDBG_dr_actionplan_fin_al.pdf

Texas

Lead body	Texas General Land Office (State body)
Interviewed	NO
Website	http://www.glo.texas.gov/recovery/about/about-cdr/index.html http://www.texasrebuilds.org is "the main resource for the management and implementation of the Community Development and Revitalization program".
IEDC contact(s)	None
Key person	Maureen Mahoney maureen.mahoney@glo.texas.gov
Disasters seen in the State	Harvey (2017) Since 2011, the GLO has been the lead agency for administering over \$9 billion in HUD Community Development Block Grant Disaster Recovery (CDBG-DR) funds on behalf of the state of Texas. More than \$9 billion have been allocated for recovery following Hurricanes Ike, Dolly, and Rita, the 2011 wildfires, the 2015 and 2016 floods, and Hurricane Harvey. Since 1980, according to NOAA, the United States has experienced 203 significant weather-related disasters where damages exceeded \$1 billion. Over forty percent of those disasters have occurred in Texas. In 2015 and 2016 alone, Texas experienced six federal disaster declarations that spread across 160 of the state's 254 counties. These disasters impacted more than 76 percent of the state's population, or nearly 21 million people - a total population greater than that of 48 states.
About the organization	The Texas General Land Office (GLO), through its Community Development and Revitalization Program (GLO - CDR), works to rebuild Texas communities by putting Texans back in their homes, restoring critical infrastructure and mitigating future damage through resilient community planning. Since 2011, the GLO has been the lead agency for administering over \$9 billion in HUD Community Development Block Grant Disaster Recovery (CDBG-DR) funds on behalf of the state of Texas. The Harvey CDBG-DR money has included interim assistance up to \$250,000 to small businesses in exchange for job creation or retention
About the program	Community Development and Revitalization Program
Useful links	http://www.texasrebuilds.org/Documents/CDR_Book.pdf

	http://texasrebuilds.org/Documents/TX%20Harvey%20Action%20Plan%2057%20mil%20-%20Final%203-6-18.pdf
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U.S. Virgin Islands

Lead body	Virgin Island Housing Finance Authority
Interviewed	NO
Disasters seen in the State	Hurricanes Maria (2017) and Irma (2017)
About the program	<p>The economic aspect of CDBG-DR spend has consisted of \$23m for Ports and Airports Enhancements, including harbor dredging to allow for larger cruise ships. Tourism Industry Support Program (\$5,000,000), which will require a waiver by HUD, for marketing to communicate that the USVI is open for business</p> <p>\$5m program to train LMI residents to fill the construction and other jobs coming from recovery</p>
Useful links	CDBG-DR Action Plan https://www.vihfa.gov/sites/default/files/reports/USVI%20CDBG-DR%20Action%20Plan%20Approved%2010July2018.pdf

Utah

Lead body	<p>Envision Utah engages people to create and sustain communities that are beautiful, prosperous, healthy, and neighborly for current and future residents. It is a nonprofit, nonpartisan community partnership that includes both the public and private sectors. Those who are part of Envision Utah share two things in common: a love for the state of Utah and a desire to maintain a high quality of life for decades to come.</p> <p>Every sitting governor has been an honorary co-chair of Envision Utah, including Mike Leavitt, Olene Walker, Jon Huntsman Jr., and Gary Herbert. Larry H. Miller and Spencer F. Eccles have served as private sector honorary co-chairs.</p>
Status	Nonprofit
Interviewed	NO
Website	https://yourutahyourfuture.org/about-your-utah-your-future/envision-utah-about#envision-utah-founders

Vermont

Lead body	<p>Department of Housing and Community Development (DHCD)</p> <p>DHCD is arguably the lead coordinating long-term economic recovery – but other agencies and departments from Human Services (housing), to Natural Resources (river management, planning and adaption, mitigation policy), to Transportation, and Emergency Management have more staff and the play a larger role in the state’s resilience efforts.</p>
IEDC contact(s)	Chris Cochran Community Director of Planning & Revitalization in Department of Housing and Community Development (DHCD) Chris.Cochran@vermont.gov
Key person	As above
Interviewed	Yes
Disasters seen in the State	<p>Vermont’s long-term economic development strategy is to support reinvestment and growth in and around Vermont’s historic centers – many of which are near rivers or lakes and vulnerable to damage from floods. In most Vermont communities, it’s not practical or possible to relocate buildings and infrastructure to locations outside higher risk areas. Consequently, when Tropical Storm Irene hit Vermont in 2012, severe flooding was widespread in historic centers with a few small towns completely cut off from transportation access.</p> <p>Vermont’s flood challenges are linked to its mountainous terrain – specifically, flood waters that gain energy and gather debris as it runs downhill. Known as fluvial erosion, the risk from this hazard was not mapped by FEMA’s flood maps (that model inundation flooding, like how water fills a bath tub). The fluvial erosion from Tropical Storm Irene caused significant damage to communities, infrastructure, and transportation networks.</p> <p>Climate change models predict Vermont will become warmer and wetter. While flooding is the greatest risk to Vermont’s economy, invasive species like the emerald ash-borer is a growing concern. This insect kills ash trees which are a significant component of the state’s forest cover. Loss of this species increases risk from fire and damage from debris and impacts the state’s forest product industry. Climate change is also a concern to the state’s maple syrup producers https://www.npr.org/sections/thesalt/2018/02/12/584528440/climate-change-could-mean-less-maple-syrup-for-your-pancakes.</p> <p>EPA is working with the state to improve Lake Champlain's water quality. These efforts boost the state’s resilience - e.g. culvert projects that will reduce erosion and sedimentation in the river, reducing run-off from fields and dirt roads that will bring sediment or phosphorous into the water system.</p>
General	<p>The state has invested in statewide LIDAR maps to better map high risk areas, they have passed laws to protect river corridors from development and increased planning and education related to flooding and the mitigation of risks. They have boosted funding for projects that reduce identified vulnerabilities and the cost of flooding and fluvial erosion to its businesses and economy. The state legislature is considering tax incentives to offset costs to flood-proof buildings at risk. FEMA recently approved the state’s Hazard Mitigation Plan that identifies and prioritizes key climate adaption strategies. As a part of the Plan development process, FEMA supported: a) the Agency of Natural Resource Rivers Program has developed a Statewide River Corridor Map (i.e., indicating fluvial erosion hazards) for all streams and rivers with drainage areas greater than 2 square miles bit.ly/floodatlas; and b) the Agency of Transportation has developed an interactive mapping protocol to identify critical road segments and crossings vulnerable to inundation and erosion hazards. https://vtrans.vermont.gov/planning/transportation-resilience</p>
About the program	<p>The Resilient Vermont Network</p> <p>In 2013, the Institute for Sustainable Communities released Vermont’s Roadmap to Resilience. The report offers 23 recommendations for advancing the community, economic and environmental resilience of the state. The recommendations were developed through an 18-month stakeholder engagement process.</p>

	<p>Launched in 2015, the Network initially focused on communication, coordination, and advancing tangible, collaborative initiatives that create a more resilient Vermont. The Resilient Vermont network "continues" and it is well-liked by academics in the state. It couldn't get additional funds however and is today housed at Norwich University. https://www.norwich.edu/cgrs https://resilientvt.org/the-network</p>
<p>About the program</p>	<p>Vermont Economic Resiliency Initiative (VERI) was modeled after a successful project in Bennington that reduced flood damage resulting from Tropical Storm Irene.</p> <p>Vermont Economic Resiliency Initiative engaged communities and asked them to think differently about their risk to help ensure the next event is less costly. With support from a US EDA grant, 5 different types of local economies were selected - farming, tourism, major employment centers, etc. - to work on resilience.</p> <p>The project was led by the Agency of Commerce and Community Development, working with the Agencies of Natural Resources and Transportation, Regional Planning Commissions, and consulting river scientists. The report was prepared by the Vermont Agency of Commerce and Community Development in partnership with the Two Rivers-Ottawaquechee Regional Commission using Federal funds under an award from the Economic Development Administration. VERI outlines steps to help communities plan for flooding and remain open for business after disaster.</p> <p>VERI's findings, recommendations, and guidance for communities was published in 2015, https://outside.Vermont.gov/agency/ACCD/bylaws/NDRC/VERI_Report_Final_150930_web.pdf</p> <p>https://vem.Vermont.gov/sites/demhs/files/Business-Recovery-Guide.pdf http://accd.Vermont.gov/community-development/flood/veri https://accd.Vermont.gov/community-development/flood/veri/toolkit</p>
<p>About the program</p>	<p>Vermont Downtown Action Team (V-DAT)</p> <p>Eight historic downtowns in Vermont, turned massive 2011 flooding into opportunities to improve their physical design, hone their marketing messages, and strengthen partnerships to achieve greater economic resilience and build back stronger than before the flood. State leadership and federal disaster funding empowered these eight communities to go beyond flood recovery and take steps to improve public safety and strengthen their economy while enhancing their ability to bounce back quickly from future floods. While the immediate response focused on a restoration of services, many communities lacked a plan to restore flood damaged businesses and market the downtown as "open for business."</p> <p>In response to the 2011 floods, the Vermont Department of Housing and Community Development used Federal Disaster Recovery (CDBG-DR) funds to assemble the Vermont Downtown Action Team (V-DAT). V-DAT brought together an interdisciplinary team of marketing, urban design, and planning experts that used the Main Street Four Point Approach to develop and implement community tailored economic recovery plans for eight of the hardest hit communities.</p> <p>The Vermont Downtown Action Team was recognized as the 2014 Project of the Year by the Vermont Planners Association and featured in the <i>Main Street America</i> newsletter.</p> <p>https://accd.Vermont.gov/community-development/flood/downtown-action-team</p>
<p>About the program</p>	<p>High Meadows Fund (HMF) is a philanthropic fund housed in Vermont Community Foundation. It created an initiative for building resilience at watershed level. For the last 4 years HMF has overseen 10 watershed resilience projects – this required at least 3 communities within a watershed or sub-watershed to work together to increase their resilience to what we know is coming in terms of storm events. Work ranges from upgrading culverts to changing their zoning to prevent building in floodplain or flood-prone areas. The success of the first projects has led to a second round of projects now being underway. HMF also funds other resilience efforts.</p> <p>http://www.highmeadowsfund.org</p>

Useful links/contacts	<u>State</u> Vermont Emergency Management - Lauren.Oates@Vermont.gov
	Vermont Rivers Program - Mike.Kline@Vermont.gov
	Vermont Agency of Transportation - Joe.Segale@vermont.gov
	<u>National</u> Gavin Smith -- Research Professor, Director of the Department of Homeland Security Coastal Resilience Center of Excellence gavin_smith@unc.edu
	Holly Leicht, former HUD Regional Administrator and now Executive Vice President, Real Estate Development & Planning @ Empire State Development Holly.Leicht@esd.ny.gov She did work on Sandy and wrote a paper about what needs to change. http://communityp.com/wp-content/uploads/2017/07/IMPROVING-DISASTER-RECOVERY-PAPER-FINAL.pdf
Credit rating agency Moody's has started asking local governments to articulate what they are doing for flood risk https://www.businessinsider.com/moodys-credit-ratings-could-Drop-without-preparation-for-climate-change-2017-11	

Virginia

Lead body	Governor's Office and Cabinet Secretariats of Natural Resources, Commerce and Trade and Public Safety and Homeland Security
Website	https://www.naturalresources.virginia.gov/about http://www.dhcd.virginia.gov/index.php/virginias-resiliency-plan.html
Status	State Government
Interviewed	YES; VDHCD staff
IEDC contact(s)	Pam Kestner Deputy Director of Housing pamela.kestner@dhcd.virginia.gov and Traci Munyan traci.munyan@dhcd.virginia.gov
Key person/people	Matthew Strickler, Secretary of Natural Resources, is the Chief Resiliency Officer for Virginia; Deputy Secretary Joshua Saks is the main point of contact in the Secretary's Office for resiliency efforts and Ann Philips is the Special Assistant to the Governor for Coastal Adaptation and Protection
About the organization	Resiliency efforts fall under many of the Governor's Cabinet Secretaries
About the organization	In the current administration, Matthew Strickler, Secretary of Natural Resources, is the Chief Resiliency Officer for Virginia, and Deputy Secretary Joshua Saks is the main point of contact in the Secretary's office for resiliency efforts. Ann Philips is the Special Assistant to the Governor for Coastal Adaptation and Protection : https://www.naturalresources.virginia.gov/about . Since the 2018 research interviews for this report Virginia's Governor has signed an Executive Order which calls for designating Virginia's secretary of natural resources as the chief resilience officer of the Commonwealth https://eonline.com/articles/2018/11/07/virginias-governor-signs-resilience-order.aspx <u>Executive Order 24:</u> https://www.governor.virginia.gov/media/governorviriniagov/executive-actions/ED-24-Increasing-Virginias-Resilience-To-Sea-Level-Rise-And-Natural-Hazards.pdf In addition to this Executive Order, The Governor has established a Climate Change and Resiliency Update Commission. Membership consists of appointments by the Governor and chaired by the Secretaries of Natural Resources and Public Safety and Homeland Security. The Commission is charged with assessing the recommendations from the 2008 Climate Change Action Plan. Specifically, the Commission will:

- Determine which recommendations from the original report were implemented;
- Update and prioritize the recommendations; and,
- Identify sources of funding to support the implementation of the recommendations.

<https://www.naturalresources.virginia.gov/initiatives/climate-change--resiliency/>

State Agency Efforts:

The Virginia Department of Housing and Community Development administers Virginia's the National Disaster Resiliency Grant, which was awarded by HUD in 2016. Virginia received a \$120m DR Grant through the NDR Competition and has funded two subgrants. The first subrecipient is the City of Norfolk and the grant consists of an infrastructure project in the Ohio Creek Watershed. Road, stormwater and living shoreline improvements will be made in this residential neighborhood that floods frequently, has a coastal surge threat, and vehicular transportation and connectivity challenges. To be awarded the NDRC Grant, the Commonwealth of Virginia had to identify and demonstrate to HUD that other Resiliency efforts were being performed around the State. The following were those efforts excepted by HUD as supporting leverage for the grant: Leverage Documentation.

State: Pam Kestner Deputy Director of Housing pamela.kestner@dhcd.virginia.gov and Traci Munyan Resiliency Program Manager traci.munyan@dhcd.virginia.gov

Christine Morris is the Chief Resiliency Officer with the City of Norfolk. Norfolk is one of the Rockefeller Foundation's 100 Resilient Cities and remains a very active participant in the Resilient Cities network - see: <http://www.100resilientcities.org/cities/norfolk>. Christine Morris is managing the Ohio Creek Watershed project and other resiliency efforts in Norfolk, Va.

The other subrecipient consists of \$5m grant that is for economic resilience through the RISE. RISE, a new nonprofit, is trying to find Economic Development opportunities through resiliency. RISE's vision is to position Hampton Roads as the global leader in addressing the impacts of sea level rise, recurrent flooding, and extreme weather events by developing strategies, policies, and products that allow the region to continue to grow. RISE was incorporated in June 2016 and filed for 501(c) 3 Status in January 2017. In January 2019, RISE announced seven finalists of the Coastal Community Resilience Challenge. The Challenge sought innovative solutions around major resilience issues that can be demonstrated in the Hampton Roads region of Southeastern Virginia, can be built into sustainable businesses, and are scalable to other communities. Challenge judges selected the seven finalists from a very competitive pool of 51 innovative solutions around five Challenge topics: water management, data analytics, buildings protection, critical systems functionality, and disconnected communities. RISE collaborated with MIT Solve to attract submissions and judges from around the world.

RISE: <https://riseresilience.org/mission/>

Director paulrobinson@riseresilience.org

Jeffery Brown, MCP, Director of State Building Codes Office, is the Department of Housing and Community Development point person related to resiliency efforts as in the Virginia Division of Building and Fire Regulation. Resiliency tracking during the code development cycle will begin taking code change proposals on February 18, 2019. Virginia has implemented a feature in their state building code development software that requires a resiliency impact statement to be included with any proposed code change to ensure that consideration is given to the positive or negative impact each proposed change might have on resiliency. This documentation will also allow Virginia to evaluate the net change in resiliency achieved each time the state building code is updated.

The Department of Conservation and Recreation (DCR) is the coordinator for all flood protection programs and activities in the Commonwealth, including the National Flood Insurance Program and the Virginia Flood Risk Information System, and works to ensure that dams are properly and safely designed, built, operated, and maintained. DCR serves as the lead state agency for the Virginia Silver Jackets, an inter-agency team dedicated to addressing flood risk. DCR also manages the

	<p>Dam Safety, Flood Prevention and Protection Assistance Fund, which provides funding to local governments and private dam owners to implement dam safety and flood-related projects. http://www.dcr.virginia.gov/dam-safety-and-floodplains/</p> <p>The Virginia Department of Emergency Management (VDEM) assists local governments in updating comprehensive hazard mitigation plans through coordination with Virginia's 21 Planning District Commissions. VDEM has all hazards regional planners staffed in each of their seven regions, which is often where mitigation projects begin to take shape. VDEM also supports local governments and state agencies through notifying them of grant opportunities to reduce the long-term risk to life and property through three grant hazard mitigation assistance programs: Pre-Disaster Mitigation, Flood Mitigation Assistance, and Hazard Mitigation Grant Program (post-disaster). http://www.vaemergency.gov/emergency-management-community/grants/unified-hazard-mitigation-assistance-hma-grant-program-2015/</p> <p><u>Virginia Sea Grant & GO Virginia</u> This planning grant will identify the key gaps in the Virginia economic development ecosystem surrounding water technologies and coastal resiliency. The outcome of the project will provide an operational framework for a multi-regional water management economy. GO Virginia funds will be utilized to host a workshop with resiliency experts from Louisiana, and two planning meetings with key industry, government, higher education, and philanthropic organizations from existing resiliency efforts in Virginia. VASG, the Middle Peninsula Planning District Commission, and the Middle Peninsula Alliance will provide the match for this enhanced capacity building grant.</p> <p>Virginia Sea Grant's GO Virginia planning grant contains three components and objectives:</p> <ol style="list-style-type: none"> 1. Fact-finding on the Louisiana Water Management Economy and Water Campus. A panel with representatives from Louisiana was held at the Virginia Coastal Policy Center's annual conference on November 2, 2018. A link to the panel discussion: https://youtu.be/5g6m2RFQ_vM. 2. Inventory of Virginia's coastal resiliency capacity in workforce development, R&D, innovation and commercialization, funding and capital, and economic development/entrepreneurship and business development assistance. This is the objective of our February 21, 2019 meeting. 3. Draft Action Plan that includes an organizational network framework and tools for communication, coordination and potential collaboration across this inventory, and identification of partnership opportunities and key gaps in the network. TBD date in late spring/early summer 2019.
<p>About the organization</p>	<p><u>Commonwealth Center for Recurrent Flooding Resiliency</u></p> <p>Following years of leadership, collaboration, and demonstrated expertise in a wide array of resilience and water-related disciplines, and recognizing that flooding affects the entire Commonwealth, Old Dominion University, the College of William & Mary, and the Virginia Institute of Marine Science have established the Commonwealth Center for Recurrent Flooding Resiliency.</p> <p>A few links to give you some idea of the organization's efforts:</p> <p>https://www.vims.edu/ccrm/ http://adaptva.org/</p> <p><u>Legislative efforts:</u></p> <p><u>The Joint Subcommittee on Coastal Flooding</u> (Formerly the Joint Subcommittee to recommend short-term and long-term strategies minimizing the impact of recurrent flooding and coastal storms) is an ongoing Subcommittee which meets monthly.</p> <ul style="list-style-type: none"> ▪ HJ 84 (2016) / SJ 58 (2016) ▪ HJ 16 (2014) / SJ 3 (2014) ▪ See Members and Staff ▪ Executive Summary (2014) ▪ Executive Summary (2014-2015)

Lead body	Resilient Virginia
Website	https://resilientvirginia.org
Status	Nonprofit
Interviewed	YES
IEDC contact(s)	Resilient Virginia: Annette Osso osso@resilientvirginia.org
Key person/people	Annette Osso
About the organization	<p>Resilient Virginia organized a Rural Resiliency Forum on October 23rd 1-day https://resilientvirginia.org/buildings/rural-resiliency-forum-set-for-october-23</p> <p>RV is also planning a 2019 statewide conference on resiliency – with the aim of having one every other year.</p> <p>RV is a 20-year-old effort formed by someone at the Virginia Housing Development Authority - green affordable housing focus but worked with lot of sectors. USGBC had no chapters at that stage. DoE funding ended and flooding in Hampton Roads has been key issue so resilience became the organization's focus.</p> <p>There is no complete resiliency policy framework for the state. Resilient Virginia wants to work on state framework and local government resiliency planning.</p>

Washington

Lead body	State Emergency Management agency
IEDC contact	<p>Tristan Allan - State of Washington Private Sector and Infrastructure Program Manager (Emergency Management Division of the State Military Department) Tristan.Allen@mil.wa.gov</p> <p>The EM Division is 50-60 people.</p>
Key person	As above
Interviewed	Yes
Disasters seen in the State	<p>Big concern in the Pacific Northwest is the Cascadia Subduction Zone (CSZ) 9.0 earthquake and accompanying Tsunami.</p> <p>Oregon and Washington started resilience processes in 2011/2.</p> <p>2012 resilience Washington state report - concrete recommendations on what state should do on seismic resiliency [one of the recommendations is economic]</p> <p>http://www.dnr.wa.gov/Publications/ger_ic114_resilient_washington_state.pdf</p>
About the organization	<p>Tristan works in the state Emergency Management agency and is steering the government office to address resilience. His key work includes:</p> <p>1] <u>private sector outreach to small/medium and large businesses</u>. The latter are more likely to have business continuity plans, so the focus is more on establishing information sharing procedures and coordinating access/re-entry and resource prioritization during response. With small businesses they are focused on encouraging more of them to adopt business continuity plans. Tristan delivers, on average, 2 workshops per month, partnering with chambers, Economic Development Organizations, local government etc. to access the business community. He teaches the Open for Business-EZ curriculum made by the Insurance Institute for Business and Home Safety https://disastersafety.org - it is business continuity 101. They also have licenses to distribute the Disaster Resistant Business Toolkit (https://www.drbtoolkit.org), a business continuity planning software suite.</p> <p>2] <u>critical infrastructure</u> he works with include transportation, communications, water, waste-water and energy, both public utilities and investor-owned utilities. He has quarterly subcabinet meetings with representatives of those sectors and designs programs to address the gaps and/or which focus</p>

	<p>on analyzing infrastructure dependencies and interdependencies to make informed restoration priorities and avoid potential cascading effects from the failure of key facilities/assets.</p> <p>The state business re-entry program allows businesses to register for credentials on a website which is acceptable to all counties. This helps businesses to get back into effected areas after a disaster. One of the 2 biggest issues with regards to Emergency Management - from corporations – is being un-necessarily blocked from property after disaster and good information.</p> <p>The other big issue is good information. Now corporate sponsors can log right into the operations center software and reentry program.</p> <p>They are also working with big counties on creating a supply-chain resilience program with grocery stores, pharma companies and fuel distributors. FEMA try and fly in MREs, water etc. but recent study shows most areas of US have enough food in regional grocery distribution centers to supply population for weeks. So, the real issue is how best to get Safeway, Costco and Kroger etc. up and running.</p> <p>Mitigation efforts are continuously supporting local governments to try and address floods and wildfires. The focus with fires is suppression yet logging practices and buildings have created a situation where the forest is thicker than it once was and has fuel on the ground. An option is not to fight but get back to a healthy forest and community that can withstand the effects.</p> <p>The Resilient Washington Subcabinet was convened in January of 2017 to help the state better prepare for natural disasters, including earthquakes, tsunamis, wildfires, drought, storms and flooding. https://www.mil.wa.gov/emergency-management-division/resilient-washington-subcabinet</p>
<p>Other interesting non-local information</p>	<p>Tristan outlined how states organize Emergency Management in 3 ways:</p> <ol style="list-style-type: none"> 1] Washington is a military department - combination of Emergency Management and National Guard (the latter's head is a 2-star general and holds a cabinet position with the governor). 2] Government office of EM - New York and California, for example, do this. 3] Departments of Safety – Homeland Security divisions or the state police.

West Virginia

Lead body	The Office of Economic Resiliency Senate Committee on Government Organization took the bill creating the State Resiliency Office and moved the office from the Department of Military Affairs and Public Safety to Commerce. May 2018 shifted to The Office of Community Advancement and Development, A Division of The West Virginia Development Office (An Agency of The West Virginia Department of Commerce).
Status	Government Agency
Interviewed	Yes
Website	https://wvcad.org/resiliency
IEDC contact(s)	Amy S Pauley
Key person	WVNG Adjutant General James Hoyer
Senior staff background(s)	POC – Amy S Pauley – BS from Oregon State University in Geography emphasizing City Planning. Worked in QA for a Pacific Northwest National Lab. Primary author on the 2018 WV Hazard Mitigation Plan.
Start date	General Hoyer assumed leadership in May 2018
Disasters seen in the State	Devastating flooding in June 2016 Yearly flooding and landslides throughout the state
About the organization	<p>This initiative rose from both the response to an immediate need due to the devastating flooding in June 2016, as well as long term strategic planning need for the state. Its overall purpose is to better prepare communities for extreme events (i.e. floods, storms, severe downturn in economic sectors) through innovative resilience projects. In the immediate future, it will focus on the intermediate and long-term recovery needs in the impacted communities in southern West Virginia after the devastating floods, including plan development and community engagement.</p> <p>The State Resiliency Office will act as a hub, coordinating interagency collaboration, communication and planning. It will bring together federal, state, local and private sector partners to further economic objectives while improving resilience. The unit will be the center of resiliency activity for the state, coordinating and supporting efforts and programs.</p> <p>The SRO will research, apply for and assist communities in finding funds and resources to assist not only with long term sustainable recovery efforts but also long-term community and statewide resiliency efforts. The work of the unit will not only improve community preparedness, but also community competence and social capacity. Because economic resilience is not something that just occurs after a flood strikes, this unit will be permanently charged with the ongoing process of community development that increases our capacity to avoid, mitigate, and recover from the impactful events that hit our state. Its mission will be to assist West Virginia with reducing future economic exposure to hazards while increasing short term revenues and gains.</p>

APPENDIX 1: LIST OF INTERVIEWEES

Those people listed in the following table very kindly gave time for telephone interviews that formed the basis for this report.

State	Name	Position	Organization
California	Monika Stoeffl	Executive Director	California Resiliency Alliance
Colorado	Rob Pressly	Resiliency Program Manager	Colorado Resiliency Office
Colorado	Trish Thibodo	Program Manager	4R (Rural Response, Recovery and Resiliency) and REDI (Rural Economic Development Initiative) at Colorado Department of Local Affairs
Connecticut	David Kooris	Deputy Commissioner	Connecticut Department of Economic and Community Development
Delaware	Kelly Valencik	Coastal Training Program Coordinator	Delaware National Estuarine Research Reserve
Idaho	Dr Andrew (Anaru) Kliskey	Co-director and Professor	Center for Resilient Communities, University of Idaho
Maryland	Jorge Eduardo Castillo	Branch Manager, Communications & Outreach	Maryland Emergency Management Agency
Maryland	Chas Eby	Chief Strategy Officer	Maryland Emergency Management Agency
National	Beth Gibbons	Executive Director	American Society of Adaptation Professionals
National	Steve Adams	Director of Urban Resilience (U.S.)	Institute for Sustainable Communities
New York	Jane K. Brogan	Chief Policy & Research Officer	Governor of New York State's Office of Storm Recovery
Oregon	Mike Harryman	State Resilience Officer	Office of Oregon Governor Kate Brown
Puerto Rico	Cristina A. Fawaz López	Research and Policy Analyst	Resilient Puerto Rico Advisory Commission
Puerto Rico	Alicia Diaz	Research and Policy Analyst	Resilient Puerto Rico Advisory Commission
Rhode Island	Stuart Freiman	Project Manager,	RI Alliance for Business Resilience at Rhode Island Emergency Management Agency
Rhode Island	Shaun O'Rourke	Chief Resilience Officer	State of Rhode Island
Vermont	Chris Cochran	Director	Community Planning and Revitalization section, State of Vermont Department of Housing and Community Development
Vermont	Bill Roper	Founder and President	Slow Communities
Virginia	Traci D. Munyan	Resiliency Program Manager	Division of Housing, Virginia Department of Housing and Community Development
Virginia	Pamela Kestner	Deputy Director of Housing	Division of Housing, Virginia Department of Housing and Community Development
Virginia	Annette Osso	Managing Director	Resilient Virginia
Washington	Tristan Allan	Private Sector and Infrastructure Program Manager	Emergency Management Division of the State Military Department
West Virginia	Amy S Pauley	Resiliency Specialist	West Virginia Office of Economic Resiliency

Other assistance included:

- Iain Hyde, former Director of the Colorado Resiliency Office
- Katie Lund, Project Coordinator at the University of Connecticut's Connecticut Institute for Resilience and Climate Adaptation
- Dr. Rebecca French, Director of Resilience, Department of Housing, State of Connecticut

APPENDIX 2: FURTHER READING AND LINKS

Global Resilience Summit - Dec 4-6, 2018

<https://resconnola.com>

A City Rebuilds: The Recovery of Canterbury Story

<http://www.eqrecoverylearning.org/assets/downloads/A-City-Rebuilds-The-Recover-Canterbury-Story.pdf>

Los Angeles Resilient by Design

<https://www.lamayor.org/resilience-design-building-stronger-los-angeles>

Beyond Katrina: Lessons in creating resilient communities

<https://www.zurichna.com/en/knowledge/articles/2015/08/beyond-katrina-lessons-creating-resilient-communities>

State of Iowa Long-Term Economic Recovery Strategy

http://publications.iowa.gov/10058/1/EDA_Report_High-Res.pdf

Restoring Regional Economies in the Wake of Disaster

<https://www.nado.org/wp-content/uploads/2011/03/Restoring-Regional-Economies.pdf>

An Improved Federal Response to Post-Disaster Economic Recovery

<https://www.nado.org/wp-content/uploads/2011/08/pdisasterrpt.pdf>

Galveston, TX Economic Recovery and Rebuilding Report

<http://restoreyoureconomy.org/wp-content/uploads/2011/01/Galveston-Economic-Recovery-reportJan09.pdf>

Georgetown Climate Center reports

<https://www.georgetownclimate.org/reports/20-good-ideas-for-promoting-climate-resilience.html>

<http://www.georgetownclimate.org/reports/lessons-in-regional-resilience.html>

<https://bit.ly/2zYXcfs> rebuild by design

Helping small business build climate resilience

<https://www.c2es.org/event/helping-small-businesses-build-climate-resilience>

The Arctic Water Resource Vulnerability Index: An Integrated Assessment Tool for Community Resilience and Vulnerability with Respect to Freshwater

https://www.uidaho.edu/-/media/Uidaho-Responsive/Files/CAA/galleries-centers-and-labs/CRC/AWRVI_article.pdf

TED Talk on wildfires

https://www.ted.com/talks/paul_hessburg_why_wildfires_have_gotten_worse_and_what_we_can_do_about_it

Crisis Event Response and Recovery Access

[https://www.DepartmentofHomelandSecurity\(DHS\).gov/publication/crisis-event-response-and-recovery-access](https://www.DepartmentofHomelandSecurity(DHS).gov/publication/crisis-event-response-and-recovery-access)

Post-disaster infrastructure recovery: Prediction of recovery rate using historical data

<https://www.sciencedirect.com/science/article/pii/S0951832017303307>

Analysis of Economic Resiliency of Communities Affected by Natural Disasters

<https://www.sciencedirect.co/science/article/pii/S2212567114010235>

Certificate of Graduate Studies in Community Resilience and Planning

<https://www.uvm.edu/cals/cdae/certificate-graduate-studies-community-resilience-and-planning>

American Society of Adaptation Professionals (ASAP) <https://adaptationprofessionals.org>

Lessons from Hurricane Response and Recovery in 2017 <https://www.heritage.org/sites/default/files/2018-04/SR-201.pdf>