



Long-Term Community Resilience Exercise Resource Guide

Designing Whole Community Exercises to Prepare for the
Effects of a Changing Climate

November 2021



FEMA

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Foreword

The impacts of climate change are being felt today in communities across the country and increasingly test our resilience. More frequent and more intense extreme weather, driven by climate change, can cause loss of life, damage buildings and infrastructure and have devastating consequences for a community's economic, social and environmental well-being.

Impacts within and across the nation are not distributed equally. People who are already vulnerable, including lower-income and other underserved communities, are less able to prepare for and cope with extreme weather and climate-related events but experience greater impacts. And more and more people are at risk due to population patterns within the U.S. and globally.

In the face of these challenges, exercises provide a forum for participants across the whole community to discuss and better understand climate change and plan for, adapt to and mitigate their risks and hazards. Exercise scenarios, modeling and simulations tangibly represent how climate change will increase the need for resources while diminishing capabilities. Exercises are an effective way to incorporate understanding and lessons learned into plans, preparedness actions and mitigation and recovery strategies.

This Long-Term Community Resilience Exercise Resource Guide (hereafter, the "Guide") enables exercises that bring together diverse stakeholders to develop a common understanding of community risk; assess current and planned programs related to community resilience; and identify critical issues, outcomes and factors relevant to future community planning.

Any jurisdiction, organization, network or regional coalition can use this Guide to continually improve its collective resilience, and the resilience of the community and nation, in the face of real and rising climate change vulnerabilities, threats and impacts.

Successful climate adaptation planning and exercising requires building and using broad networks, unified coordination and committed ingenuity to address new climate conditions. The National Exercise Division (NED) offers this resource to aid communities in using exercises to support the significant and ongoing work ahead. This 2021 version of the Guide builds upon the 2018 edition. This Guide is a living document and as such, it will be updated periodically.

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1. Introduction



1.1. Guide Overview

This Guide offers reliable methodologies, strategies, information and resources for designing and conducting discussion-based exercises focused on climate adaptation and resilience planning. Exercises offer communities a low-risk and cost-effective way to increase preparedness for all threats and hazards, including the potential long-term impacts of climate change. Specifically, exercises offer a structured approach to:

- Identify resource requirements, capability gaps, strengths, areas for improvement and potential best practices;
- Provide a common framework of understanding; and
- Provide a good starting point for developing or making major changes to existing plans, policies or procedures.

To give a community everything it needs to prepare for and execute an exercise, this Guide provides three categories of information:

1. **Guidance and basic principles** to inform community exercises, including climate adaptation, hazard mitigation planning and building community resilience as they relate to current threats, hazards, future conditions and risks.
2. **Tools and templates** for building exercises that include climate considerations and hazard mitigation practices.
3. **Resources** identifying climate-related programs, funding and training across all levels of government, nonprofit organizations, private sector entities and the academic community.

Table 1 defines some basic terminology that this Guide uses:

Table 1: Terms and Definitions

Term	Definition
Adaptation	Adjustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects. ¹
Climate Adaptation	Actions taken at the individual, local, regional and national levels to reduce risks from today's changed climate conditions and to prepare for impacts from additional changes projected for the future. ²

¹ [U.S. Global Change Research Program Glossary](#)

² [U.S. Global Change Research Program Glossary](#)

Term	Definition
Climate Change	Changes in average weather conditions that persist over multiple decades or longer. Climate change encompasses both increases and decreases in temperature, as well as shifts in precipitation, changing risk of certain types of severe weather events and changes to other features of the climate system. ³
Climate Resilience	The ability to anticipate, prepare for and adapt to changing conditions and withstand, respond to and recover rapidly from climate-related disruptions, challenges and risks through adaptability, innovation and preparedness. ⁴
Core Capabilities	Distinct critical elements necessary to achieve the National Preparedness Goal. ⁵
Environmental Justice	“The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” ⁶
Equity	The consistent and systematic fair, just and impartial treatment of all individuals. ⁷
Hazard Mitigation	Any action taken to reduce or eliminate the long-term risk to human life and property from hazards. The term is sometimes used in a stricter sense to mean cost-effective measures to reduce the potential for damage to a facility or facilities from a disaster or incident. ⁸
Mitigation	Capabilities necessary to reduce loss of life and property by lessening the impact of disasters. Mitigation capabilities include, but are not limited to, community-wide risk reduction projects; efforts to improve the resilience of critical infrastructure and key resource lifelines; risk reduction for specific vulnerabilities from natural hazards or acts of terrorism; and initiatives to reduce future risks after a disaster has occurred. ⁹
Resilience	The ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies. ¹⁰

³ [U.S. Global Change Research Program Glossary](#)

⁴ [Department of Homeland Security \(DHS\) Climate Resilience Directive, 2016](#)

⁵ [National Preparedness Goal, 2015](#)

⁶ [DHS Environmental Justice Strategy, quoting the U.S. EPA](#)

⁷ [FEMA Equity Enterprise Steering Group](#)

⁸ [FEMA Emergency Management Institute Glossary](#)

⁹ [Presidential Policy Directive-8 \(PPD-8\): National Preparedness](#)

¹⁰ [Presidential Policy Directive-8 \(PPD-8\): National Preparedness](#)

Term	Definition
Sustainability	Efforts to create and maintain conditions under which humans and nature can exist in productive harmony that permit fulfilling the social, economic and other requirements of present and future generations. ¹¹

This Guide shares dynamic sources of information that will remain current as climate risks, and associated strategies, research, technology and legal frameworks continue to evolve. The National Exercise Division (NED) may update this Guide as needed to remain consistent with the National Exercise Program, the [Homeland Security Exercise and Evaluation Program \(HSEEP\)](#)¹² and other national preparedness principles and activities.

1.2. Evolution of the Guide

The Guide was initiated in 2014 from a partnership led by the White House National Security Council Staff and NED between the White House Council on Environmental Quality, Office of Science and Technology Policy and other federal departments and agencies. They conducted the National Exercise Program Climate Adaptation, Preparedness and Resilience Exercise Series in five jurisdictions across the nation, including the National Capital Region; Houston, Texas; Fort Collins, Colorado; Anchorage, Alaska; and Hampton Roads, Virginia. The series:

1. Facilitated structured discussion on the present and future effects of climate change; and
2. Identified collaborative and sustainable approaches to climate resilience.

Following the 2014 series, NED transformed the initiative to be more holistic, scalable and sustainable. The revised Climate Adaptation, Preparedness, and Resilience Exercise Training offered leaders and stakeholders a multi-day learning event to build hazard mitigation exercises of their own. The training included:

1. A three-day base curriculum with modules on basic climate science concepts, preparedness planning and exercise planning and design tools;
2. Interactive group activities for participants to network and practice building exercises; and
3. An early version of the Guide, which summarized curriculum concepts, extensive links to external resources and templates for exercise design.

A Climate Adaptation, Preparedness, and Resilience Exercise Training Pilot was conducted in Miami, Florida, and an abridged version of the exercise was conducted at the Safe and Secure Counties Symposium for the National Association of Counties in Colorado Springs, Colorado, in 2015. In 2016,

¹¹ [The National Environmental Policy Act of 1969](#)

¹² <https://www.fema.gov/emergency-managers/national-preparedness/exercises/hseep>

a full Climate Adaptation, Preparedness, and Resilience Exercise Training was conducted in Salt Lake City, Utah. The 2018 Guide reflected the outcomes of these pilot exercises and trainings.

This 2021 Guide builds on the foundation developed between 2014–2018 and is updated to include recent considerations relating to planning and conducting exercises for climate adaptation. As climate planning evolves and matures, this Guide will be periodically updated to include these changes.

This Guide does not focus on the causes of climate change, nor does it provide recommendations on actions to slow or reverse climate change. The Guide is a tool that helps communities identify impacts of current and predicted climate change and identify investments in critical preparedness and adaptation measures to undertake now that will result in long-term vulnerability reduction.

1.3. Guide Organization and Use

This Guide is divided into six sections:

- This section, Chapter 1, Introduction, provides an overview of the Guide.
- Chapter 2, Climate Adaptation and the Role of Exercises, defines climate adaptation and how exercises can improve climate adaptation planning.
- Chapter 3, Exercise Design Foundations, steps through the HSEEP methodology to design, develop and conduct long-term hazard mitigation exercises focused on a changing climate.
- Chapter 4, Exercise Considerations, reviews important risk assessment, planning and capability building factors, including publicly available tools and resources, so that your climate-focused exercise is comprehensive and sets your community up for long-term success.
- Chapter 5, Improvement Planning, presents concepts to update and integrate needed changes that exercises have identified.
- Chapter 6, Resources, offers external links to expand and further understanding of climate science, adaptation, preparedness, resilience, and exercises.

2. Climate Adaptation and the Role of Exercises



2.1. What Is Climate Adaptation?

Climate adaptation refers to necessary changes in existing processes, practices and structures, across economic, social and ecological systems, to moderate the potential damages or realize the benefit from opportunities associated with climate change. Simply put, climate adaptation is the ability to anticipate future climate impacts and plan accordingly.

Across the United States, many regions and sectors are already experiencing the direct effects of climate change. For these communities, more severe and potential cascading impacts from climate events not previously identified, like extreme storms made worse by sea level rise, longer-lasting and more extreme heat waves or increased numbers of wildfires and floods, are an immediate threat rather than a far-off possibility. Because these events are expected to increase over time, communities throughout the United States face the challenge not only of reducing greenhouse gas emissions, but also of adapting to current and future climate change to help mitigate climate risks. Communities require adaptation solutions and action plans to respond to the impacts of climate change that are already happening, as well as prepare for future impacts.

Fact: Rising Cost of Natural Disasters

The National Oceanic and Atmospheric Administration (NOAA) [National Centers for Environmental Information](#) found that since 1980, there have been 78 billion-dollar flood and tropical storm events in the U.S. These events account for over \$1.1 trillion and over 61% of the total costs of all disasters during that time. NOAA also discovered that, since 2010, billion-dollar floods and tropical storms have increased in frequency by 50% from the previous decade. The toll in economic costs and lives lost increased by similar percentages. Finally, 63% of the billion-dollar disasters since 2010 occurred within the last five years, with 70% of the costs sustained in the just the last three years.

As the frequency, duration and severity of natural disasters change and the threat of overlapping (compound) disasters increases, focusing on long-term hazard mitigation, community resilience and climate adaptation becomes increasingly important, particularly for vulnerable communities with limited capacity to prepare for and cope with extreme weather and climate-related threats. Aligning and integrating these efforts with ongoing planning processes, such as for hazard mitigation, community and economic development and pre-disaster recovery, maximize their strategic value, sustainability and potential funding resources.

Adaptation takes place at many levels—national and regional, as well as state, local, tribal and territorial (SLTT)—as governments, businesses, communities and individuals respond to today's altered climate conditions and prepare for future change based on the specific climate impacts relevant to their geography and vulnerability. Public and private sector decision makers have traditionally made plans assuming that the current and future climate in their locations will resemble that of the recent past. This assumption is no longer reliably true.

Climate risk management includes some attributes and tactics that are familiar to most businesses and SLTT governments, since these organizations already commonly manage or design for a variety of weather-related risks, including coastal and inland storms, heat waves, water availability threats, droughts and floods. However, successful climate adaptation also requires using information on current and future climate, rather than past climate, which can prove difficult without experience with climate change datasets and concepts.

While yielding benefits, adaptation also presents challenges. These include difficulties obtaining the necessary funds; insufficient information and relevant expertise; jurisdictional mismatches among those responsible for taking adaptation actions and those who benefit from those actions; conflicting interests among relevant parties; and pressures on agencies and professionals that serve the public to act cautiously (e.g., by following long-established procedures and experience).

Definition: Common Attributes of Effective Adaptation¹³

Factors that shape or contribute to public-sector organizations successfully adopting and implementing adaptation include:

- Plans written by a professional staff and approved by elected officials;
- Community engagement, including participating in developing plans; forming action teams or regional collaborations across jurisdictions, sectors and scales; and identifying public and private sector leaders who champion and support the process;
- Adaptation actions that address multiple community goals, not just climate change;
- Well-structured implementation, including identifying parties responsible for each step, explicit timelines, explicit and measurable goals and explicit provisions and timelines for monitoring and updating the plan; and
- Adequate funding for adaptation actions and sustained community outreach and deliberation.

2.2. How Do Exercises Support Climate Adaptation Planning?

Preparedness exercises focused on climate adaptation can provide a path to increasing community resilience and support adaptation planning for long-term climate risk. Climate adaptation exercises use different scenarios and modeling to look at time horizons of 20, 30 and 50 years, the cascading impacts of predicted climate change and the increasing frequency and severity of disasters.

Scenario-based exercises can help participants imagine the unfamiliar future climate change poses. Using different time horizons and levels of climate risk, exercises provide a method for

¹³ <https://nca2018.globalchange.gov/chapter/28/#fn:47>

participants to visualize a future that is outside their direct experience and evaluate options for constructive action to adapt to climate changes already occurring and those to come. (Hill and Martinez-Diaz, 2019)¹⁴

In exercises, model-based scenarios can demonstrate future conditions if nothing is done to lessen the impact of the climate change or how the impacts change based on different approaches. Many existing formal and informal networks (government, nongovernmental organizations and academic, faith-based and private sector entities) currently engaged in developing and implementing climate adaptation plans can be leveraged to develop exercises that support this planning. These exercises can help communities understand and reduce current and future climate risks by helping to develop and validate climate-focused plans.

2.3. Planning Takes the Whole Community

The effects of natural and manmade disasters have become more frequent, far-reaching and widespread, impacting all levels of our society and government. This reality makes climate adaptation planning a shared responsibility involving everyone, not just the government. A whole community approach engages the private and nonprofit sectors, including businesses, academic organizations, faith-based and disability organizations, social and racial justice organizers and the general public, in conjunction with the participation of SLTT and federal governmental partners.

Individuals and institutions make different decisions on how to plan for and respond to threats and hazards. In addition, historical conflicts and inequities often have created mistrust between communities and government. Successfully developing and implementing climate adaptation strategies among communities requires understanding who trusted messengers are and working to establish trust. This effort is critical, as both disaster and long-term climate risks are exacerbated by pre-existing societal inequities that undercut adaptive capacity.

Definition: Whole Community

Whole Community is an integrated approach for emergency management that provides:

- Shared understanding of community needs and capabilities.
- Greater empowerment and integration of resources from across the community.
- Stronger social infrastructure and relationships to facilitate more effective prevention, protection, mitigation, response and recovery activities.
- Increased individual and collective preparedness.

¹⁴ <https://oxford.universitypressscholarship.com/view/10.1093/oso/9780190909345.001.0001/oso-9780190909345>

- Greater resilience at both the community and national levels.

3. Exercise Design Foundations



3.1. Using Exercises to Support Climate Adaptation Planning

Exercises play a vital role in preparedness. A well-designed exercise:

- Provides a low-risk environment to provide a common framework of understanding; foster meaningful interaction and communication across jurisdictions/organizations; assess and validate plans, policies, procedures and capabilities; and identify strengths and areas for improvement;
- Brings together and strengthens the whole community to prevent, protect against, mitigate, respond to and recover from all hazards;
- Provides safe, no-fault environments to socialize new concepts and facilitate stakeholder and community support and buy-in; and
- Helps the whole community address the priorities established by a jurisdiction's/organization's leaders and evaluate progress towards meeting preparedness goals.

Exercises help build and enhance community resilience to short- (acute) and long-term (chronic) effects of a changing climate. Using the National Preparedness System as the basis for planning community action, exercises provide opportunities for deliberate discussions about:

- Creating, reviewing, integrating, and deconflicting plans across the whole community;
- Identifying the most relevant SLTT or regional climate threats and their potential consequences;
- Determining gaps, capability levels and resources available to implement climate adaptation strategies;
- Envisioning the specific features of a resilient community, and
- Setting up systems of responsibility and accountability for reaching those goals.

Definition: Exercise

An **exercise** is an event or activity, delivered through discussion or action, to develop, assess or validate plans, policies, procedures and capabilities that jurisdictions/organizations can use to achieve planned objectives. More detailed information on how to develop and conduct exercises is available through the HSEEP.¹⁵ The NED has developed [HSEEP training videos](#) (a series of short videos to educate stakeholders on developing and conducting exercises).

¹⁵ <https://www.fema.gov/emergency-managers/national-preparedness/exercises/hseep>

3.2. How to Create Climate Adaptation Exercises

A range of options is available when designing exercises focused on climate adaptation and hazard mitigation. Planners can incorporate climate adaptation and hazard mitigation into an existing exercise or initiate a standalone exercise that dedicates discussion to climate adaptation. Chapter 4, Exercise Considerations, in this guide provides resources to help build specific exercise elements, such as objectives and scenarios, into exercises to address climate adaptation.

3.2.1. INCORPORATE CLIMATE RISKS INTO AN EXISTING EXERCISE

Incorporating hazard mitigation, climate preparedness and adaptation and resilience objectives and discussion questions into an existing exercise raises awareness of the effects of current and future climate risks on existing hazards within the community. Examples include:

- Incorporate a hazard-mitigation-based climate module (using future conditions such as higher temperatures, sea level change, more intense rainfall, drought, heat, or compound events) into a natural disaster exercise to identify hazard mitigation strategies and investment opportunities.
- Incorporate a hazard-mitigation-based climate module into a critical infrastructure/infrastructure systems exercise to identify hazard mitigation strategies and/or investment opportunities.
- Include discussion questions such as, “What actions, investments, or decisions can you make now to mitigate the effects of this scenario in 15, 30 or 50 years?” or “What changes might be possible to reduce the impacts for your grandchildren or great-grandchildren?”
- Incorporate climate adaptation discussion questions into a public health exercise to examine how climate projections affect capabilities and/or compound existing public health, medical and social services equity.

3.2.2. CREATE A NEW EXERCISE

A standalone climate-focused discussion-based exercise helps consider community capabilities for complex planning efforts or mitigating specific community hazards (e.g., hazards most exacerbated or affected by a changing climate). For exercise planners, this option enables distinctly climate-focused exercises, as opposed to building within more traditional response and recovery exercises. Modeling can bring additional realism to the exercise conduct.

Climate impacts are not limited to jurisdictional boundaries, so looking at risks from a regional perspective provides an opportunity to consider regional climate impacts (physical, natural, social and cultural) based on future conditions. Coordinating exercises with other communities enables:

- Sharing resources;
- Building adaptive capacity and partnerships;
- Collaborating on hazard mitigation discussions;
- Identifying and aligning priorities; and
- Coordinating regional investment opportunities.

3.3. Discussion-Based Exercises

Discussion-based exercises are ideal for introducing new climate-related concepts, plans and programs to prompt community members to consider actions they can take now to mitigate the future effects of a changing climate. Such exercises can be used in the early stages of integrating climate adaptation and revisited iteratively as plans mature and climate science changes. Table 2 identifies four types of discussion-based exercises (seminars, workshops, tabletops and games) that most commonly apply to climate themes. Each type’s distinct purpose should be carefully considered when developing the exercise purpose statement, scope and objectives.

Table 2: Discussion-Based Exercise Types and Features

Type	Description	Features
Seminar	An optimal starting point to raise awareness of climate preparedness, adaptation and resilience.	<ul style="list-style-type: none"> ▪ Introduces participants to the best available science, authorities, strategies, plans, policies, procedures, protocols, resources, concepts and ideas ▪ Helps entities develop or make major changes to existing plans or procedures ▪ Helps assess interagency operations capabilities
Workshop	An effective format to engage the community to develop a resilience plan or to incorporate climate considerations into existing community-based plans.	<ul style="list-style-type: none"> ▪ Includes broad attendance from stakeholders to increase interaction and discussion ▪ Provides a forum to achieve resilient outcomes such as integrating community planning, developing long-range risk reduction strategies and identifying investment options ▪ Focuses on building a product such as an action plan to guide future planning efforts or mitigation and adaptation actions that are incorporated into community-based plans
Tabletop Exercise	Ideal to help the community validate the capabilities in its community resilience plan or identify existing plans that incorporate climate considerations.	<ul style="list-style-type: none"> ▪ Generates discussion of various issues regarding a hypothetical, simulated disaster or gradual change in the climate using short- and long-range scenarios ▪ Enhances awareness, validates capabilities, rehearses concepts and assesses the systems needed to guide the prevention of, protection from, mitigation of, response to and recovery from a defined event ▪ Encourages in-depth discussions to collaboratively examine areas of concern and propose solutions

Type	Description	Features
Game	An engaging iterative exercise environment that actively conveys climate risks and decision-making requirements, based on existing plans within a community.	<ul style="list-style-type: none"> ▪ Open, decision-based format that incorporates “what if” questions in a hypothetical situation ▪ Explores consequences of decisions and actions to reduce risk and identifies critical decision points ▪ Validates plans and procedures or evaluates resource requirements ▪ Can use modeling to visualize (near/mid/long) term climate adaptation effects of varying decisions ▪ Helps develop climate adaptation actions and plans by examining gaps and second- and third-order consequences of decisions.

A successful approach may blend multiple types of exercises. For instance, an exercise can begin with a seminar that provides information about climate science and projected future climate conditions and community impacts. This will level-set knowledge among participants, who then move into a workshop to develop strategies to align climate goals among community coalitions or identify public/private investment opportunities to implement climate adaptation initiatives.

Facilitators or presenters usually lead these exercises, keeping participants on track to achieve exercise objectives. Regardless of the type of discussion-based exercises, exercises help communities examine [Core Capabilities](#) and, ultimately, initiate or accelerate community preparedness and resilience.

3.4. Exercise Purpose, Scope and Objectives

The first and most critical step for successful exercise design is crafting a strong exercise purpose, scope and objectives. These foundational elements are identified by leadership or others with decision making authority or obtained by reviewing policies, plans and procedures.

3.4.1. EXERCISE PURPOSE

Exercise purpose statements clearly identify a specific anticipated or desired outcome or goal of the exercise in a single sentence. This statement is broad – it encompasses everything that the exercise should accomplish and describes outcomes or output (as opposed to exercise objectives, which are narrow and point to specific areas for examination during the exercise; see section 3.4.3 below).

Example: Exercise Purpose Statement

This exercise provides a forum for stakeholders in Central City to identify and refine climate adaptation, preparedness and resilience requirements and initiatives in collaboration with critical whole community stakeholders, supporting strategic long-term planning priorities of the

Central City Sea Level Rise Preparedness and Resilience Intergovernmental Planning Pilot Project initiated in June 2021.

3.4.2. EXERCISE SCOPE

An exercise scope is a short statement that identifies the exercise type, participants, duration and location. This statement enables planners to develop exercise objectives that can reasonably be accomplished during the exercise. Section 4.4 of this Guide provides you with considerations for developing your exercise planning team and exercise participants.

Example: Exercise Scope Statement

The workshop is a one-day event, to be held at the Convention Center, comprised of two parts: morning panel sessions based on current scientific projections and climate preparedness and resilience efforts and an afternoon scenario-driven tabletop exercise. Participants include partners from the local planning office, economic development, and emergency management organizations.

3.4.3. EXERCISE OBJECTIVES

Exercise objectives are statements of the distinct outcomes an organization wishes to achieve during an exercise. They provide details on exercise priorities from exercise planning stakeholders. These statements are fundamental to a successful exercise and all other exercise design components should thoughtfully consider them.

Exercise objectives are often organized by and align to FEMA's Core Capabilities, discussed in Chapter 4 of this Guide. The Core Capabilities inform resource allocation and can be instrumental in integrating climate adaptation aspects into overall climate resilience efforts.

Risk assessments and plans can help develop exercise objectives by identifying gaps in capabilities. An objective can be developed to discuss components of planning or the specific identified gap.

Example: Climate-Focused Exercise Objectives






- Examine intergovernmental coordination of climate adaptation, preparedness and resilience assessment, community planning, and vulnerability reduction initiatives to manage and adapt to risk and vulnerabilities associated with a changing climate.
- Identify collaborative and sustainable whole community approaches to advance SLTT climate adaptation, preparedness and resilience programs and policies.
- Examine climate adaptation, preparedness and resilience investment gaps and opportunities between SLTT, federal, private sector or critical infrastructure partners.

- Examine relevant effects of climate change and hazard mitigation strategies for populations of disproportionate impact (vulnerable communities and populations).

The following strategies are helpful when discussing and determining exercise-specific objectives for exercises that focus on risks related to a changing climate:

- Examine potential economic impacts from climate-change-based threats and hazards.
- Examine methods to integrate climate science, data, information and requirements into current and future planning to manage and mitigate climate risks.
- Identify collaborative, flexible and sustainable whole community approaches.
- Advance and sustain community-based climate preparedness and resilience programs, policies and strategies.
- Examine investment opportunities and the development of coalitions between SLTT, federal and nongovernment/private-sector partners to support climate adaptation and preparedness.
- Follow specific, measurable, achievable, relevant and time-bound (SMART) guidelines (Table 3).

Table 3: SMART Guidelines for Exercise Objectives

Criterion		Definition
Specific		Objectives should address the five Ws – who, what, when, where, and why. The objectives specifies what needs to be done with a timeline for completion.
Measurable		Objectives should include numeric or descriptive measures that define quantity, quality, cost, etc. Their focus should be on observable actions and outcomes.
Achievable		Objectives should be within the control, influence and resources of exercise play and participant actions.
Relevant		Objectives should be instrumental to the mission of the organization and link to its goals or strategic intent.
Time-Bound		Objectives should incorporate a specified and reasonable timeframe.

3.4.4. EXERCISE EVALUATION AND IMPROVEMENT PLANNING

Formal exercise evaluation is critical to confirm an exercise achieved its stated purpose and objectives, as well as to identify strengths and areas for improvement.

Evaluation planning begins during the initial planning phases of the exercise. Identifying clear evaluation requirements early in the planning process will confirm that the design, development and conduct of the exercise support an effective evaluation.

Exercise evaluation parameters help guide the development of the exercise scenario, discussion questions or event timeline, and evaluation documentation. Once the exercise objectives are aligned to capabilities, the exercise planning team identifies the linked capability targets and critical tasks.

Below are considerations for integrating exercise evaluation:

- Planning for evaluators to record key discussion points;
- Observing the exercise and collecting data;
- Analyzing collected data to identify policy, capability delivery and sustainability strengths and areas for improvement; and
- Reporting exercise discussion strengths and areas for improvement.

An after-action report/improvement plan (AAR/IP) captures outcomes of exercise evaluation, summarizing key discussion points and identifying strengths and areas for improvement. For example, the report might include:

- Recommendations on integrating climate preparedness and resilience innovations into current and future planning to manage and adapt to climate risks and vulnerabilities;
- Suggestions on maintaining collaborative partnerships and building new coalitions across the whole community;
- Areas where additional information and research are needed; and
- The effects of climate change on the community's policies and strategies.

The report helps organizations revise or modify current climate adaptation and hazard mitigation plans and strategies. The evaluation process provides valuable information to guide real-world decisions, coordinate activities among stakeholders, inform community members not present at the exercise, allocate resources and build future exercises. The critical value of exercise evaluation is how meaningfully it informs hazard mitigation and other community planning efforts.

3.4.5. EXERCISE SCENARIO

A scenario is a model or outline of the simulated sequence of events that drives participants discussions to achieve the exercise objectives. After developing the scope and objectives, exercise planners should select and develop the scenario to enable participants to assess objectives and capabilities geared toward the climate issue impacts that the jurisdiction will likely encounter (see Table 4). The scenario can be a written narrative or depicted by an event timeline.

Table 4: Scenario Details and Considerations

Scenario Detail	Considerations
Hazard(s)	Results of vulnerability assessments, past events and current or future hazards specific to your region
Affected Entity or Entities	Jurisdiction, facility, or systems affected
Timeframe	Projected time period(s) in the future
Consequence	Effects on human health, economic activity, built environment, mission/function execution, and behavior
Objectives and Associated Core Capabilities	Exercise goal, what participants should consider, and topics of discussion

For climate-related exercises, the scenario can consider multiple time horizons that reflect changing conditions over time (e.g., 20 and 50 years in the future) and different emission scenarios (e.g., a two-degree and a four-degree Celsius temperature increase). The scenarios should reflect climate risks that might threaten the health and safety of residents, affect businesses, impact the local economy, disrupt communications, negatively affect the environment or cause critical water, energy, health or transportation infrastructure systems to fail. It is also important to address environmental justice and equity in climate-related exercises so that adaptation efforts are sustainable and consider impacts for all populations, including low-income and underrepresented communities.

Research on relevant climate hazards and risk assessments should inform scenario development. Models and simulations can realistically replicate future conditions and bring fidelity to exercise scenarios. Information from the National Climate Assessments (NCAs), the U.S. Climate Resilience Toolkit and other resources listed in Chapter 6 of this Guide can build scenario elements based on threats in specific geographical areas. Examples of climate-focused scenarios can be found in past situation and participant manuals on the [Long-Term Community Resilience Exercise Resource Guide Prep Toolkit](#) page.

3.5. Discussion Themes

Discussion themes are prompts used during discussion-based exercises that can help develop exercise questions. Themes are critical to obtaining deliberate, full engagement of participants. Aligned with exercise-specific objectives (and associated with Core Capabilities) and organized thematically, discussion questions help exercise facilitators or moderators drive participant conversation to meet the objectives of the exercise, as well as to engage participant expertise.

Climate adaptation and climate resilience concepts are ideal for discussion-based exercises. A climate adaptation and/or climate resilience theme can help participants, stakeholders, and communities better understand these complex concepts while simultaneously facilitating cooperation and coordination. The following sample themes align with discussion themes that have worked well in past climate adaptation and hazard mitigation exercises.

3.5.1. ENVIRONMENTAL

- Key climate risks that will affect the community's environment in the near, mid- and long terms.
- Effects these risks have on various sectors and community constructs and systems (e.g., public health, food supply, fishing industry, community traditions)
- Key environmental opportunities to enhance adaptive capacity and build resilience
- Coalitions and efforts between partners that support resilience planning related to the community's environmental vulnerabilities
- Obstacles facing organizations that affect resilience or adaptation planning support to the whole community

3.5.2. SOCIAL AND CULTURAL

- Key climate-related social and cultural challenges facing the community in the near, mid- and long terms (e.g., public health, housing, employment, food supply, community traditions)
- Adaptation opportunities for community resilience building
- Key investments that preserve a traditional way of life (e.g., infrastructure, education, and housing)
- Existing coalitions that support resilience planning related to social and cultural issues
- Consideration of culturally historic assets

3.5.3. ECONOMIC

- Key economic challenges related to climate threats, hazards and risks and planning for resilience facing the community in the near, mid- and long terms (e.g., infrastructure, industry, energy, housing, public health, and security)
- Key economic areas in the community threatened by climate-related risks and hazards in the near, mid- and long terms (e.g., housing, household income, education, infrastructure, industry, energy production and transmission, public health and safety)
- Potential cost savings (i.e., avoided costs) in the future by addressing mid- and long-term climate risk in the near term
- Potential economic opportunities created from investing in approaches to prevent and adapt to climate risk in the near, mid- and long terms and the strategies to seize these opportunities
- Anticipated major climate-related economic investments for the community in the near, mid- and long terms (e.g., infrastructure, industry, energy, housing, public health, security)

- Existing and new coalitions among SLTT, federal and nongovernment and private sector partners to support economic resilience planning
- Challenges or obstacles that affect joint community adaptation planning to reduce the economic impacts of a changing climate
- Implementation strategies to remove economic obstacles to improve adaptation

3.5.4. SECURITY

- Security assets most vulnerable to climate-related threats, hazards and risk in the near, mid- and long terms (e.g., military facilities, energy infrastructure, supply lines)
- Critical investments to safeguard community security in the near, mid- or long terms
- Existing and new coalitions among SLTT, federal and nongovernment and private sector partners to support resilience planning related to security issues
- Community shortfalls, challenges and obstacles that affect joint security and resilience planning support to SLTT, federal and nongovernment and private sector partners
- Critical investments and planning for continuity of operations and continuity of government in the near, mid- and long terms
- Strategies to remove obstacles to successful implementation

3.5.5. EQUITY

- Specific environmental justice issues (e.g., fair treatment and meaningful involvement of all people with respect to developing environmental laws, regulations, and policies) related to building community resilience
- Factors that impact the ability of an individual or household to respond to a particular impact from climate change
- Historical factors, such as redlining, or differences in property values that influence exposure to events such as wildfires, sea level rise or other climate-linked events
- The role household income plays in disasters
- The role systemic racism might play in disaster response or climate change adaptation or hazard mitigation planning
- How disabilities may impact an individual's or household's ability to mitigate their climate footprint, adapt to climate change or respond to a disaster

- Socioeconomic disparities that may create uneven exposures and sensitivities to growing climate risks and limit adaptation options for some members of a community
- Risks and/or climate-related stressors that communities may face in the future that effect equity
- Gradual changes in the climate and extreme weather events exacerbate the risks to equity

3.5.6. ENVIRONMENTAL JUSTICE

- Specific environmental justice issues (e.g., fair treatment and meaningful involvement of all people with respect to developing environmental laws, regulations, and policies) related to building community resilience
- Obstacles to advancing integration of climate resilience, sustainable practices, environmental justice and equity before, during and after disasters
- Equalizing climate-change-related equity and environmental justice outcomes where structural inequities exist in underserved and historically marginalized communities
- Equity considerations related to hazard mitigation planning and incentives and resource allocation to address environmental justice issues exacerbated by climate change

3.6. Documentation

Developing exercise documentation ahead of the conduct to support participant discussions will improve the success of an exercise. The exercise planning team can develop the following exercise documents; templates and examples of these are on [FEMA's Prep Toolkit](#).

- **Situation Manual (SitMan):** A document that provides background information. It is the primary reference material for exercise participants (the core document for discussion-based exercises).
- **Facilitator Guide:** A document that outlines instructions and key issues that the facilitator raises and uses to move participants through exercise play.
- **Presentation:** A multimedia display that provides background information for participants and orients them during exercise conduct.
- **Exercise Evaluation Guide (EEG):** A document that captures information specifically related to the evaluation requirements developed by the exercise planning team. The EEG provides evaluators with a standardized tool to guide data collection and capture performance results. Since each jurisdiction/organization has unique targets and critical tasks, EEGs are developed specific to their plans, policies, procedures and protocols.

4. Exercise Considerations



4.1. Planning Your Climate Exercise

Designing a climate exercise involves assessing climate-related threats, hazards and risks; new and updated community plans; emergency management and climate-related capabilities; and improvements implemented from previously identified shortfalls or gaps. These elements help define specific preparedness priorities to incorporate the needed preparedness elements into your exercise design. This section explores these elements and how they inform a climate adaptation exercise.

4.2. Identifying and Assessing Risks

A fitting opportunity to integrate climate resilience is through the routine risk assessment. Developing and maintaining an understanding of risks facing your jurisdiction and how this information can build and sustain preparedness are essential components of mitigating the effects of climate change before it takes place. In addition, understanding what buildings, archaeological sites and districts are historic and at risk due to climate change provides a more comprehensive view of risk at the local level. Risk varies across the nation; for example, a municipal risk assessment reflects a subset of the threats and hazards contained in a state or federal risk assessment.

Figure 1 shows a few examples of observed trends and future conditions that the NCA identifies. Evidence of a changing climate appears differently in every region, with visible effects in every state. Chapter 6 provides additional resources to identify and assess your risk.

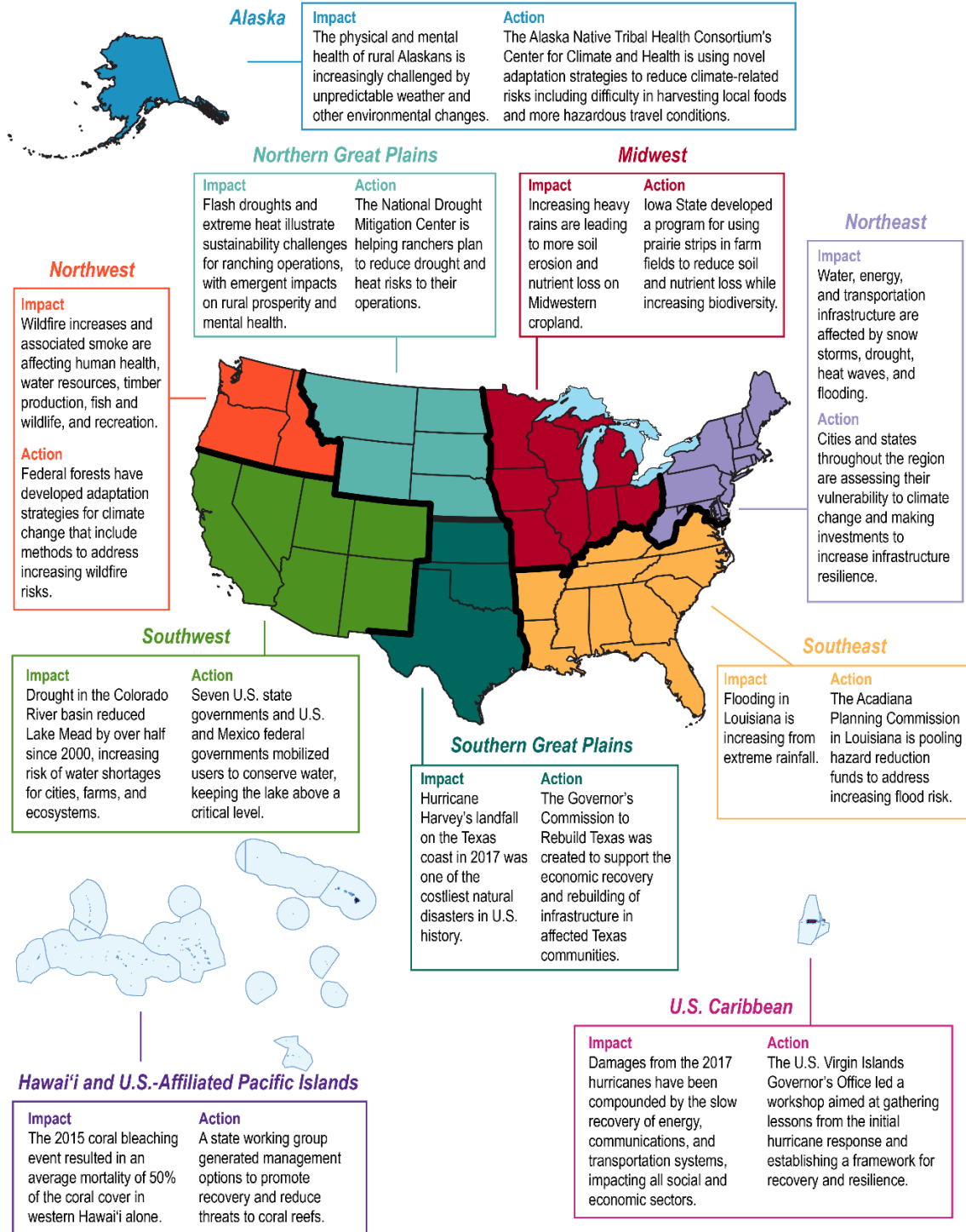


Figure 1: Americans Respond to the Impacts of Climate Change¹⁶

¹⁶ [National Climate Assessment](#)

Existing methods of risk assessment lay the foundation for identifying regional climate-related risks. Start identifying community-specific climate projections and subsequent hazards by exploring existing resources, such as the NCA and the U.S. Climate Resilience Toolkit. Many resources were developed for and are available to non-climate experts and the public that present current climate science findings quickly and easily for any geographic location as well as projections for the next century and beyond. A baseline awareness of climate predictions informs conversations about overall community hazard identification through approaches like the Threat and Hazard Identification and Risk Assessment (THIRA).

Link to Exercises

- Risk assessment results inform the development of exercise objectives and scenarios unique to your community. Exercises help assess existing capacity and capability against risks.

4.2.1. THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT (THIRA)

The [THIRA](#) is a well-established risk assessment process that helps communities understand their risks and what they need to do to address them by posing the following questions:

- What threats and hazards can affect our community?
- If they occurred, what impacts would those threats and hazards have on our community?
- Based on those impacts, what capabilities should our community have?

This approach (Figure 2) helps communities use known threats and hazards to identify capability targets and resource requirements necessary to address anticipated and unanticipated risks.

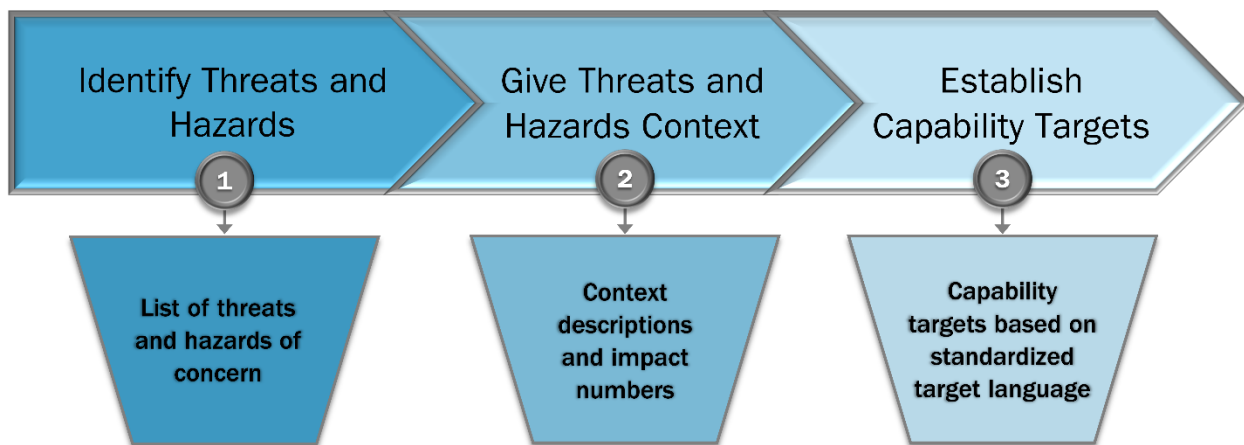


Figure 2: THIRA Steps

The THIRA process builds on existing SLTT hazard identification and risk assessments by providing flexibility to account for community-specific factors and incorporates the whole community planning process. Communities should leverage the [FEMA Core Capabilities](#) to organize their capability targets in the THIRA process.

Link to Exercises

- Capability targets developed through the THIRA process can structure and organize exercise evaluation criteria.

4.2.2. NATIONAL CLIMATE ASSESSMENT

The [NCA](#) summarizes the impacts of a changing climate in the United States, now and in the future. It collects, integrates and assesses observations and research from around the country to better inform public and private decision making at all levels. The report includes analyses of impacts on seven sectors (human health, water, energy, transportation, agriculture, forests and ecosystems) and the interactions among those sectors at the national level. This report also assesses key climate impacts on all U.S. regions, as well as the country's coastal areas, oceans and marine resources. Figure 1 shows examples of climate threats that the NCA identifies in each region.

The NCA is mandated by the Global Change Research Act, which requires that every four years, the [U.S. Global Change Research Program \(USGCRP\)](#) prepare and submit to the President and Congress an assessment of the latest science, effects, trends and projections of global change in the United States. The assessment draws from a large body of scientific peer-reviewed research, technical reports and other publicly available sources. The report is extensively reviewed by the public and experts, including a panel of the National Academy of Sciences, the thirteen federal agencies of the USGCRP and the Federal Committee on Environment, Natural Resources and Sustainability.

Existing risk assessment methods lay the foundation for identifying regional climate-related risks. Begin identifying community-specific climate projections and subsequent hazards by exploring the NCA and the U.S. Climate Resilience Toolkit. These resources were developed for and are available to non-climate experts and the public to understand current climate science findings quickly and easily for any geographic location as well as projections for the next century and beyond.

4.2.3. U.S. CLIMATE RESILIENCE TOOLKIT

The [U.S. Climate Resilience Toolkit \(CRT\)](#) provides interested citizens, communities, businesses, resource managers, planners and policy leaders at all levels of government with scientific tools, information and expertise to help manage climate-related risks and opportunities. The CRT offers:

- A catalog of free [tools](#) to access and analyze climate data, generate visualizations, explore climate projections, estimate hazards and engage stakeholders in resilience-building efforts;

- Topic narratives and [success stories of climate resilience planning](#);
- Pointers to free, federally developed training courses to build skills for using climate tools and data;
- The ability to search the entire federal government’s climate science domain and filter the results;
- A [five-step process](#) to initiate, plan and implement projects to become more resilient to climate-related hazards;
- Maps highlighting the locations of centers where federal and state agencies provide regional climate information; and
- [The Climate Explorer](#), a tool that provides climate projections for future decades out to 2100 for every county in the United States.

4.2.4. NATIONAL RISK INDEX (NRI)

FEMA’s [National Risk Index](#) is an easy-to-use, online mapping tool that identifies communities most at risk across 18 natural hazards. This application visualizes natural hazard risk metrics and includes data about expected annual losses, social vulnerabilities and community resilience. The NRI’s interactive web maps are at the county and census tract level and made available via geographic information system (GIS) services for custom analyses. With this data, you can discover a holistic view of community risk to natural hazards.

4.3. Using Community Plans

Community plans are foundational to exercises and can both support their development and validate them. Exercises provide a forum to assess individual plans or the integration of multiple community plans to align and deconflict plan strategies, actions and assumptions. Exercises can help communities identify opportunities to include climate adaptation strategies in existing plans and develop standalone adaptation plans.

Link to Exercises

- Community plans help confirm that current assumptions are still necessary and valid when designing an exercise. AAR/IPs of recent emergency operations and exercises in your community also help validate these assumptions.
- After an exercise, memorialize insights and lessons learned in new or existing plans via IPs.

4.3.1. HAZARD MITIGATION PLANS

[Hazard mitigation planning](#) reduces loss of life and property by minimizing risk and, ultimately, the impact of disasters. It begins with SLTT governments identifying natural disaster risks and vulnerabilities common in their areas. After identifying these risks, they develop long-term strategies to protect people and property from similar events. The hazard mitigation plan is often the foundation for zoning, subdivision and land development regulations, identifying goals and strategies for various planning elements to integrate into areas such as land use, transportation, climate change, sustainability, natural and cultural resource protection, watershed management and economic development. Your local floodplain administrator and state hazard mitigation office are useful resources to help you locate your current state. local or tribal hazard mitigation plan.

4.3.2. OTHER RELEVANT COMMUNITY PLANS

In addition to hazard mitigation plans, you can leverage other, local plans when preparing your climate exercise:

- A **Community Development or Comprehensive Plan** is an official policy guide for future development-related decisions. It is typically general and long term in nature, providing a picture of how the community wishes to develop over the next 15+ years. As a policy document, the plan provides a framework for residents and decision makers to conceptualize how the city should look and function, as well as the best methods and strategies to achieve those goals.
- A **Continuity of Operations Plan (COOP)** is an effort within individual departments and agencies to maintain continuity of their essential functions across a wide range of emergencies and events.
- An **Economic Development Plan** provides a comprehensive overview of the local economy, sets policy direction for economic growth and identifies strategies, programs and projects to improve the economy.
- An **Emergency Operations Plan** details what local emergency management functions (e.g., police, hospitals) do during a disaster, including incident command implementation, command center location and activities, and specific plans by department.
- An **Environmental Management or Sustainability Plan** typically addresses urban and regional planning with a focus on sustainability. It analyzes and minimizes the environmental impacts of proposed construction projects and confirms they meet all environmental regulations.
- A **Land-Use Plan** is typically a zoning plan that outlines the future location and type (e.g., residential, office, retail, industry) of development activity to be permitted or not permitted (e.g., green space, parks) within urban and regional areas over a set horizon period.
- A **Pre-Disaster Recovery Plan** helps confirm “that an affected community is ready to undertake an organized process and does not miss opportunities to rebuild in a sustainable, resilient way. With a planning framework in place, a community is better situated to address pre-existing local

needs, take advantage of available resources, and seize opportunities to increase local resiliency, sustainability, accessibility, and social equity.”¹⁷

- A **Transportation Planning Plan** provides guidance in prioritizing funding and implementing local transportation projects. The plan provides specific and detailed recommendations on transportation projects, balancing regional access considerations, financial resources, multi-modal opportunities, traffic flow improvements, safety and accessibility issues with a community’s long-term goals and objectives.

4.4. Building an Exercise Planning Team

The exercise planning team manages and is responsible for designing, developing, conducting and evaluating the exercise. The membership of an exercise planning team should fit the type and scope of an exercise and be a manageable size yet represent the full range of participating jurisdictions/organizations and stakeholders. For multi-jurisdictional/organizational exercises, the planning team should include representatives from each functional area or relevant discipline.

4.4.1. TAPPING INTO EXISTING NETWORKS

The impacts of climate change are not limited to a single jurisdiction, and therefore effective planning takes individuals from jurisdictions and organizations throughout the whole community. Effective and collaborative preparedness activities benefit from multi-jurisdictional planning, strategies and methodologies.

Empowering community members and organizations to act together maximizes sustainability and scalability of capabilities to address shared risks, threats and hazards. Planning and conducting climate-focused exercises strongly benefit from a diversity of perspectives, including representation from socially vulnerable communities most often impacted by the effects of climate change. Relevant roles, positions and experts to build effective networks include (but are not limited to):

- Civil and environmental engineers
- Climate and environmental scientists and educators
- Community group leaders
- Community/Jurisdiction managers and administrators
- Community/Jurisdiction planners
- Elected and appointed officials
- Fiscal and economic representatives
- Hazard-specific subject-matter experts
- Hospital and public health department representatives
- Organizations supporting historically underserved communities
- Owners and operators of community systems/critical infrastructure

¹⁷ [Pre-Disaster Recovery Planning Guide for Local Governments \(fema.gov\)](https://www.fema.gov/pre-disaster-recovery-planning-guide-for-local-governments)

- Public information officers
- Public safety/emergency managers
- Utility operators (public and private).

Link to Exercises

- Your exercise planning team should be comprised of people from these planning networks (i.e., representative of the whole community) to help design, conduct and evaluate an exercise. The planning team should also leverage these networks to identify exercise players.

4.4.2. INTEGRATING HAZARD MITIGATION AND CLIMATE EXPERTISE

Integrating shared knowledge, science and expertise enhances the planning activities needed to address the threats and hazards that climate change poses. For example, FEMA Regional Exercise Officers (REOs) are well positioned to engage with the broader preparedness community beyond SLTT jurisdictions, including local businesses and nongovernmental community partners. REOs oversee FEMA exercise efforts at the regional level and have established relationships with community exercise and emergency management practitioners. Similarly, hazard mitigation planners regularly integrate threat and hazard data into actionable guidance to build community resilience. Table 5 below identifies helpful starting points to leverage community subject matter experts (scientists, planners, educators) and relevant organizations to design a climate-focused exercise.

Table 5: Example Preparedness and Climate Resources

Preparedness Resource	Climate Resource
<ul style="list-style-type: none"> ▪ State hazard mitigation officers and planners ▪ FEMA REOs ▪ Department of Homeland Security (DHS) protective security advisors 	<ul style="list-style-type: none"> ▪ American Association of State Climatologists ▪ U.S. Climate Resilience Toolkit climate experts ▪ Environmental Protection Agency (EPA) Climate Adaptation Resource Center

4.5. Estimating Capability Requirements

To fully understand capability requirements, each community, organization and level of government must consider single threats or hazards, how they may interact with each other and longstanding socioeconomic concerns and the full range of risks they may face. The results from a risk assessment in the context of the desired outcome(s) for each [Mission Area](#) (i.e., prevention, protection, mitigation, response and recover) can estimate required types and levels of capability.

This estimation process begins with developing a set of planning factors. Planning factors:

- Can be developed for any Mission Area.

- Are based on assessments of risk and the desired outcome(s) to be achieved.
- Can be changed in size and scope to accommodate impacts from larger and more complex incidents that involve multiple jurisdictions, states, regions or the entire nation.
- Help inform decisions about the capability level required and the resources needed to achieve it.

Communities can then examine current capability levels through the lenses of real-world incidents, assessments and exercises to determine whether changes to current capability levels are warranted. This process of comparing current and required capability levels identifies gaps and shortfalls the community may choose to address.

Regardless of the level of government, this capability estimate process uses the planning factors to establish target levels for the related capabilities. This aids in identifying the resources required to achieve those targets. By helping to identify these requirements, this process helps users focus on how they will build and sustain the desired level of capability.

4.5.1. STAKEHOLDER PREPAREDNESS REVIEW (SPR)

Communities complement the THIRA with the [Stakeholder Preparedness Review \(SPR\)](#) (see Figure 3). They use the SPR to estimate their current capabilities and compare those to their THIRA targets to determine capability gaps.

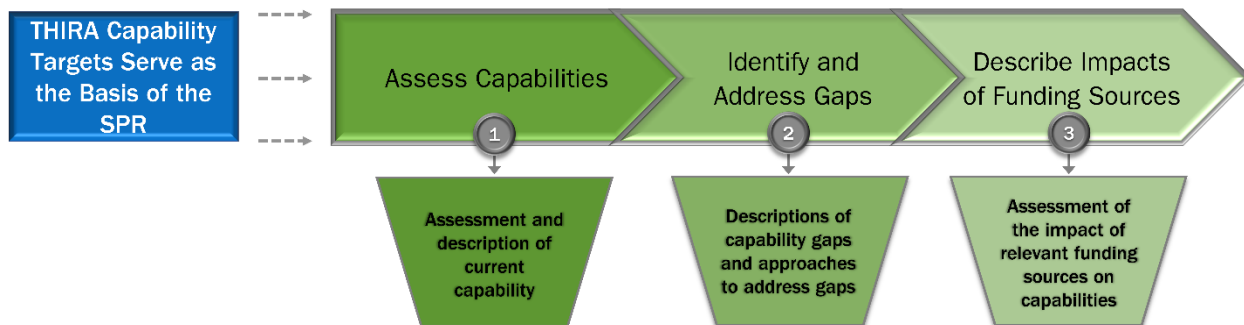


Figure 3: SPR Steps

In cases where their current preparedness levels fall short of their targets, communities describe the planning, organization, equipment, training and exercise gaps to resolve to achieve their targets and then describe the improvements to make to address those gaps. In cases where their current preparedness levels meet or exceed their targets, communities articulate their requirements to sustain their capabilities and their intended approaches to meet those requirements.

This process informs a variety of emergency management efforts, including but not limited to grant investments and work plans, integrated preparedness plans (including training and exercises), budgeting, emergency operations planning, mutual aid agreements and hazard mitigation planning.

SPRs must be submitted annually. THIRA and SPR submissions are required for each state and territory through each respective [State Administrative Agency](#). Other jurisdictions such as [Urban Area Security Initiative \(UASI\)](#) grant recipients or Tribal Nations receiving the [Tribal Homeland Security Grant Program \(THSGP\)](#) funding are also required to submit THIRAs and SPRs. For information on specific THIRAs/SPRs, contact the state administrative agency or FEMA-SPR@fema.dhs.gov.

Additionally, reference FEMA's [Increasing Resilience Using THIRA/SPR and Mitigation Planning](#) job aid to better understand the similarities and differences between mitigation planning and THIRA/SPR process and to leverage best practices for streamlining state, territory and tribal submissions of the mitigation plan and THIRA/SPR.

Link to Exercises

- Capability gaps identified during the SPR process should further validate assumptions and inform exercise objectives.
- Following a climate-focused exercise, define how your community will build capability over time to mitigate anticipated long-term impacts of climate change by implementing a continuous Improvement program (CIP).

4.5.2. FEMA MISSION AREAS AND CORE CAPABILITIES

FEMA identifies [Five Mission Areas and 32 Core Capabilities](#) to assist everyone who has a role in mitigating the impacts of long-term climate change. For example, the Core Capabilities in the Mitigation mission area (detailed in Figure 4) orient discussions and strategies for community planning activities and climate-related exercises. Consider the Mitigation mission area in the context of hazard mitigation related to a changing climate.

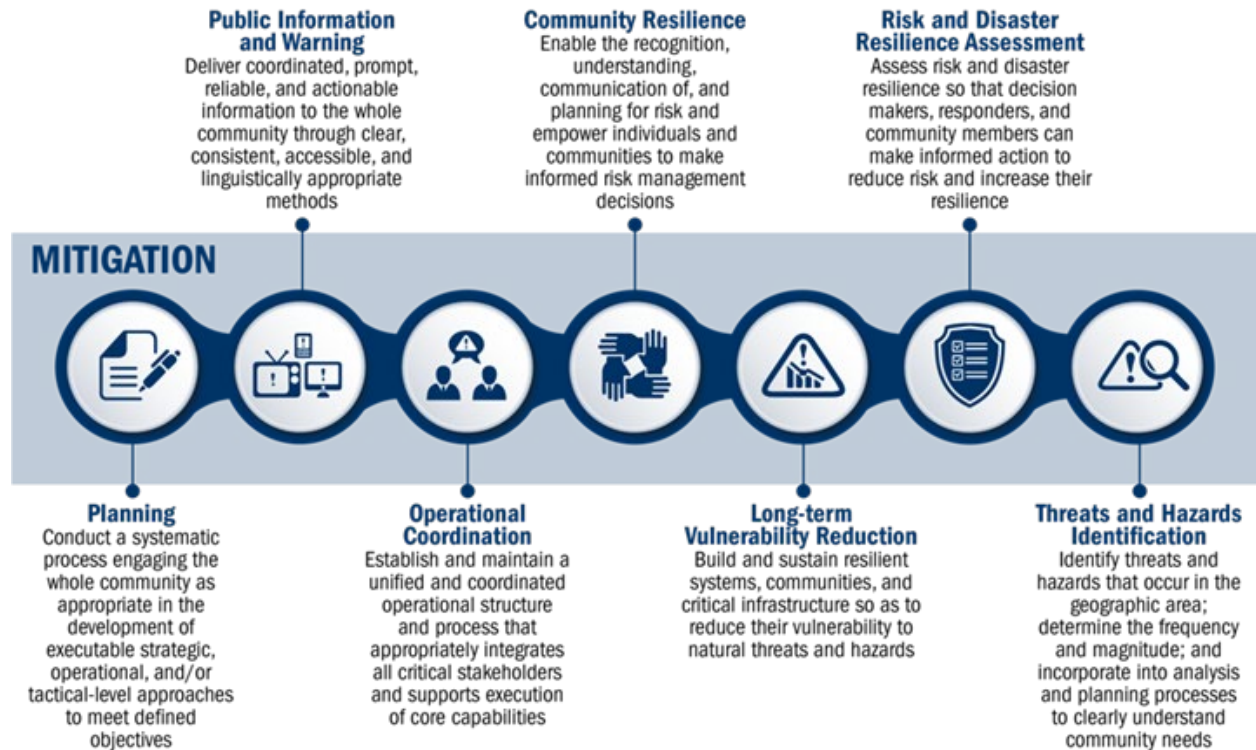


Figure 4: Mitigation Mission Area Core Capabilities

Some Core Capabilities are more appropriate than others in preparedness planning for a changing climate, as they typically apply to disasters rather than shaping new standards of resilience (e.g., planning considerations, building codes, infrastructure features, behavioral changes, social awareness).

5. Improvement Planning



5.1. Reviewing and Updating Plans

Improvement planning is the process by which areas for improvement identified during an exercise are turned into concrete, measurable corrective actions to improve plans (e.g., hazard mitigation plans, environmental and sustainability plans) and build and sustain capabilities for long-term readiness. Effective improvement planning is an important tool to:

- Prioritize corrective actions identified from individual exercises;
- Provide valuable input into strategy development;
- Initiate a review or new development of plans, policies and procedures; and
- Identify and obtaining needed training, equipment and other resources.

5.2. Continuous Improvement Planning

Continuous improvement is a method in which capabilities are periodically examined to confirm they are sufficient, accurate and effective to handle the threats, hazards and risks that may be faced. Identifying strengths, areas for improvement, and corrective actions that result from exercises helps build, sustain and deliver capabilities as part of a continuous improvement process. Continually examining the implementation of corrective actions can identify capability gaps and determine corrective actions requiring validation through exercises.

Climate adaptation planning should be iterative and must anticipate future considerations. It is an ongoing cycle of assessment, planning, exercising and improving. To support this process, [FEMA's Continuous Improvement Program \(CIP\)](#) provides comprehensive technical assistance to partners through tools, templates, training and customized virtual and on-site engagements.

Figure 5 shows the four pillars that a CIP uses to organize the process of continuous improvement:

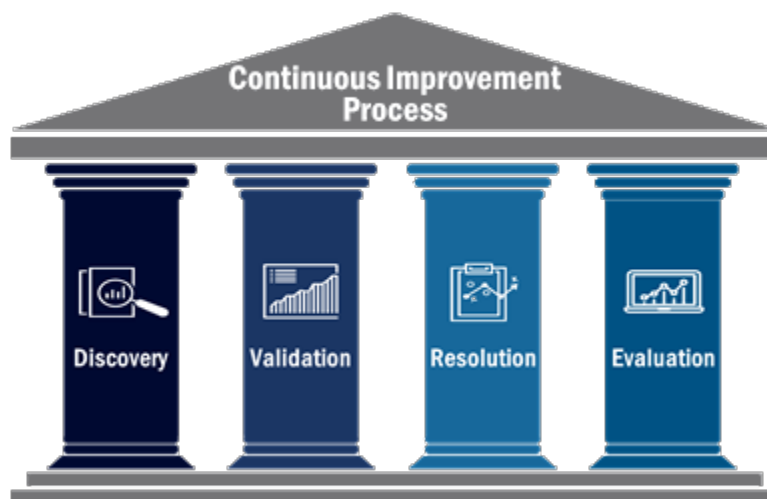


Figure 5: The Four Pillars of Continuous Improvement

- **Discovery** - Collect information to identify trends across incidents and exercises.

- **Validation** – Analyze data collected from plans, training events, exercises, real-world incidents, capability assessments and/or steady-state activities to identify and confirm the accuracy of observations and potential courses of action (COAs).
- **Resolution** – Use observations to develop and finalize appropriate COAs.
- **Evaluation** – Examine the implementation of the selected COAs and determine the extent to which they have strengthened the organization, institutionalized best practices, addressed areas for improvement and resolved mission-critical issues.

5.3. Corrective Action Tracking and Implementation

Corrective actions should be tracked and continually reported on until completion. These efforts are part of a more comprehensive continuous improvement process that applies before, during and after an exercise. Stakeholders should also establish or confirm a system to validate previous corrective actions that were successfully implemented. Over time, corrective actions effectively integrated back into local plans and policies enhances continuous improvement.

6. Resources



6.1. Understanding your Climate Change Risk

In addition to the risk assessment tools listed in this Guide, the following additional resources can help a community identify and understand their climate risk.

- FEMA's [Climate Change website](#) is a repository of resources to help emergency managers learn about how to address climate change in their communities.
- FEMA's [Hazard Explorer Tool](#) integrates location-enabled tools and resources to help identify and evaluate potential exercise scenario locations, hazard exposure and other risk-related factors to support exercise planning; which hazards exist near your location; where your population is most vulnerable; and what infrastructure and resources would be most impacted in your selected scenario location. The final output of this tool is a basic PDF map of your selected scenario location, as well as links to data sources to share with GIS experts to conduct more in-depth analysis for use in planning and conducting your exercise.
- FEMA's [Resilience Analysis and Planning Tool \(RAPT\)](#) is a GIS tool to help emergency managers and community partners at all GIS skill levels visualize and assess potential challenges to community resilience.
- The [EPA Climate Adaptation Resource Center](#) is a resource to help SLTT governments supply climate adaptation services to their communities. Decision makers can use the information provided by the Center to facilitate exercises specific to their jurisdiction. Once exercise planners decide on a specific area of interest, the resource center provides information on relevant adaptation strategies, case studies illustrating how other communities have adapted to those risks and EPA funding opportunities. Information that is specific to your locality is paramount in planning an informed exercise.
- [EPA's Environmental Justice Screening and Mapping Tool \(EJSCREEN\)](#) allows users to access high-resolution environmental and demographic information for locations in the United States and compare their selected locations to the rest of the state, EPA region or the nation. The tool can help users identify areas with minority and/or low-income populations, potential environmental quality issues, a combination of environmental and demographic indicators that is greater than usual, and more.
- The [Intergovernmental Panel on Climate Change \(IPCC\)](#) was created by the United Nations to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options.
- [NASA Sea Level Projections Tool](#) is a web-based tool that allows users to visualize and download sea level projection data from 2020 to 2150, along with how these projections differ depending on future scenarios. Users can click on a point anywhere in the ocean to obtain sea level projections for an individual location. Data reflects projections from the Intergovernmental Panel on Climate Change 6th Assessment Report (released August 9, 2021).

- [NASA Socioeconomic Data and Applications Center \(SEDAC\)](#) is an archive of synthesized Earth science and socioeconomic data and information, focused on human interactions in the environment and available to the public.
- [NOAA Sea Level Rise Viewer](#) is a web mapping tool to visualize community-level impacts from coastal flooding or sea level rises, up to 10 feet above average high tides. It includes photo simulations of how future flooding might impact local landmarks and data related to water depth, connectivity, flood frequency, socioeconomic vulnerability, wetland loss and migration and mapping confidence.
- The [NOAA High Tide Bulletin](#) shows when regions around the nation may experience higher than normal high tides. Bulletins are updated quarterly. NOAA annual high tide flooding reports summarize events of the previous calendar year and expected events for the current year.
- The [U.S. Climate Resilience Toolkit \(CRT\)](#) helps people find and use tools, information, and subject matter expertise to build climate resilience. The Toolkit offers information from across the federal government in one easy-to-use location to improve people's ability to understand and manage their climate-related risks and opportunities and to help them make their communities and businesses more resilient to extreme events. In particular, the CRT has focus areas on the built environment, water, and coasts.
- The [USDA Climate Hubs](#) are an interagency collaboration that provides science-based information, technology, tools and education to help stakeholders make climate-informed decisions within distinct regions.
- The [U.S. Department of Housing and Urban Development \(HUD\) Community Resilience Toolkit](#) offers descriptions of natural hazard risks and ideas for adaptation actions that communities can take to increase their resilience to climate change. State and local governments receiving HUD Community Planning and Development (CPD) funds can use this guide to identify types of adaptation actions that are eligible for CPD funding. The toolkit draws specific attention to the risks to vulnerable populations as well as adaptation actions that prioritize low- and moderate-income communities.

6.2. Building Local Capability

FEMA and other federal agencies offer funding to help local communities build their capacity to mitigate the impacts of long-term climate change.

- [FEMA Hazard Mitigation Assistance](#) provides funding for eligible hazard mitigation measures that reduce disaster losses. For example:
 - FEMA's [Hazard Mitigation Grant Program](#) provides funding to SLTT governments so they can rebuild in a way that reduces or mitigates future disaster losses in their communities. This grant funding is available after a presidentially declared disaster.

- [Building Resilient Infrastructure and Communities \(BRIC\)](#) supports states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. [Note: BRIC has replaced FEMA’s existing Pre-Disaster Mitigation program.]
- FEMA’s [Flood Mitigation Assistance \(FMA\) Program](#) is a competitive grant program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the [National Flood Insurance Program](#).
- [FEMA Preparedness Grants](#) support citizens and first responders as we work together as a nation to build, sustain and improve our capability to prepare for, protect against, respond to, recover from and mitigate disasters and emergencies. For example:
 - The [Emergency Management Performance Grant \(EMPG\)](#) supports efforts to build and sustain Core Capabilities across all Mission Areas.
 - The [Homeland Security Grant](#) is comprised of three grant programs funding a range of preparedness activities, including planning, organization, equipment purchase, training, exercise and more across all Core Capabilities and Mission Areas.
 - The [Regional Catastrophic Preparedness Grant Program \(RCPGP\)](#) provides resources to close known capability gaps in housing and logistics and supply chain management, encouraging innovative regional solutions to issues related to catastrophic incidents and building on existing regional efforts.
- FEMA’s [Building Community Resilience with Nature-Based Solutions Guide](#) helps communities identify and engage the right subject matter experts and resources to build resilience with nature-based solutions. Whether working across various SLTT government departments or tapping the strengths of nongovernmental community partners, planning and building cost-effective nature-based solutions requires collaboration.
- [FEMA’s National Exercise Program \(NEP\)](#) is a two-year cycle of exercises across the nation that examine and validate capabilities in all preparedness mission areas. The NEP provides technical assistance for preparedness exercises from experienced exercise specialists to SLTT and other whole community partners at no cost to the partners. Support can include assistance with exercise design, scenario development, planning, conduct, and/or evaluation in the form of subject-matter expertise, material production, or facilitation for selected exercises. Exercises are selected for NEP technical assistance through an application process, resource availability, and based on their alignment to the Principals’ Strategic Priorities, a set of priorities for each two-year cycle set by the National Security Council.
- The EPA’s [Clearinghouse for Environmental Finance](#) connects communities to a wide range of funding and technical financial resources through three component sites: the Water Finance Clearinghouse, the Air Finance Clearinghouse, and the Land Finance Clearinghouse. Each

clearinghouse provides an easily navigable web-based portal with two searchable databases: available funding sources and resources such as reports, weblinks and webinars on financing mechanisms and approaches to help communities access capital to meet their environmental infrastructure needs.

- The National Institute of Standards and Technology (NIST) [Community Resilience Program](#) published a [Survey of Federal Community Resilience Programs and Available Resilience Planning Tools](#) with links to 43 federal programs that provide resources (e.g., grants, loan guarantees, equipment, training) to support any aspect of community resilience, including preparing for future disruptive events.

6.3. Exploring Hazard Mitigation Planning

Effective hazard mitigation planning addresses capability targets established by jurisdictional and regional coalitions. Hazard mitigation planning requires communities to:

- Understand local and regional risks, vulnerabilities and opportunities;
- Address difficult decision points and solutions; and
- Invest in long-term community well-being and resilience.

Several FEMA training videos help develop plans related to hazard mitigation and climate adaptation:

- [Addressing Future Climate, Population and Land Use Changes Through Hazard Mitigation Planning](#): As the number and intensity of disaster events continue to grow, it is important to account for future conditions and climate change in your hazard mitigation plan. “Future Conditions” includes the impacts of a changing climate, changes in population and changes in land use and the built environment. This recorded webinar provides ideas, resources and examples of how to integrate future conditions information into your hazard mitigation planning process to increase overall resilience.
- [Planning for Future Conditions: Is Your Community Ready?](#): The 2010s were a landmark decade for natural disasters. Relentless rains overtopped levees and flooded farms and towns along the Mississippi; the Camp Fire in California and thousands of other blazes across the west caused record damage to buildings and infrastructure; and millions lost power and were evacuated during Hurricanes Harvey, Irma and Maria. This disaster activity will continue. We can prepare for changing disaster risk by planning for future conditions, but we have to start now.
- [PrepTalks: “Our Changing World: The Challenge for Emergency Managers”](#): David Kaufman explains the pathways of success for emergency managers as our society continues to change and grow.

FEMA provides extensive guidance for [hazard mitigation planning](#) at every jurisdictional level to increase awareness, build partnerships, identify long-term strategies, align risk-reduction with other community objectives, focus on the greatest vulnerabilities and communicate priorities to potential

funding sources. Additionally, FEMA’s State Mitigation Planning Key Topics Bulletins provide additional planning guidance. Topics include: [Mitigation Strategy](#), [Mitigation Capabilities](#), [Planning Process](#) and [Risk Assessment](#). Figure 6 depicts FEMA’s overarching concept of the hazard mitigation planning process.

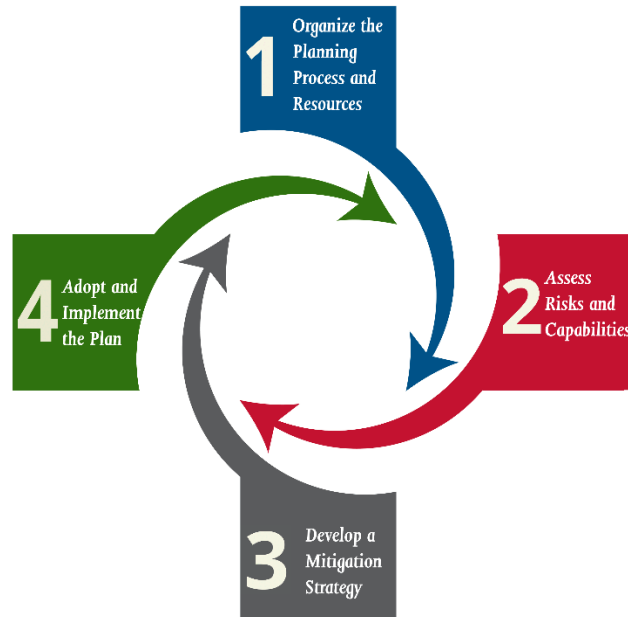


Figure 6: Hazard Mitigation Planning Process

6.3.1. STATE AND TERRITORY-LEVEL HAZARD MITIGATION PLANNING

The [FEMA State Mitigation Plan Review Guide](#) provides FEMA policy on natural hazard mitigation planning legal requirements. It outlines comprehensive benchmarks for states and territories when building hazard mitigation plans, especially regarding the consideration of future hazard events, including effects of climate on identified hazards.

An important tactic for sustaining tailored adaptation measures is to integrate with the established state/territory hazard mitigation planning process. It is an opportunity for synthesizing the THIRA, SPR, NCA, CRT tools and expert insight into a community plan for building capabilities and resilience against changing risks.

6.3.2. TRIBAL HAZARD MITIGATION PLANNING

Like state guidance, the [FEMA Tribal Mitigation Review Guide](#) outlines policy on how tribal nations can integrate future hazard conditions into hazard mitigation planning. It emphasizes a performance-based rather than a prescriptive approach and references the relationship between FEMA, other federal departments and agencies and Tribal governments. A [Tribal Mitigation Planning Handbook](#) also helps Tribes with hazard mitigation planning.

6.3.3. LOCAL HAZARD MITIGATION PLANNING

FEMA provides guidance for local governments to develop, update and implement local hazard mitigation plans through the [Local Mitigation Plan Review Guide](#) (for federal and state plan reviewers) and the [Local Mitigation Planning Handbook](#) (for local plan developers). Based on principles laid out in the [National Mitigation Framework](#), these regular planning practices are increasingly integrating climate considerations in yearly cycles.

Aligning climate adaptation efforts with ongoing hazard mitigation processes not only maximizes strategic value, but also the sustainability and potential funding resources for adaptation efforts.

6.3.4. INCORPORATING CLIMATE EQUITY INTO PLANNING

Vulnerable communities such as young children, the elderly and those of vulnerable socioeconomic status are disproportionately impacted by climate change. This has given rise to the importance of climate justice as communities work toward hazard mitigation, adaptation and resilience. The related concept of environmental justice “is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation and enforcement of environmental laws, regulations and policies.” ([U.S. EPA](#)).

The EPA offers a myriad of resources to help incorporate vulnerable communities into hazard mitigation efforts. Its pamphlet [Community-Based Adaptation to a Changing Climate](#) outlines some of the concerns and opportunities. EPA’s Office of Environmental Justice provides guidance, tools, partnership and funding resources to help communities and agencies address environmental and climate justice. [Our Communities Our Power: Advancing Resistance and Resilience in Climate Change Adaptation](#), published by the National Association for the Advancement of Colored People, offers concrete guidance on incorporating climate justice and equity into hazard mitigation and adaptation.

6.3.5. CONTINUITY GUIDANCE CIRCULAR AND RESOURCE TOOLKIT

FEMA maintains planning resources for whole community continuity of operations planning, including the [Continuity Guidance Circular](#) and the [Continuity Resource Toolkit](#).

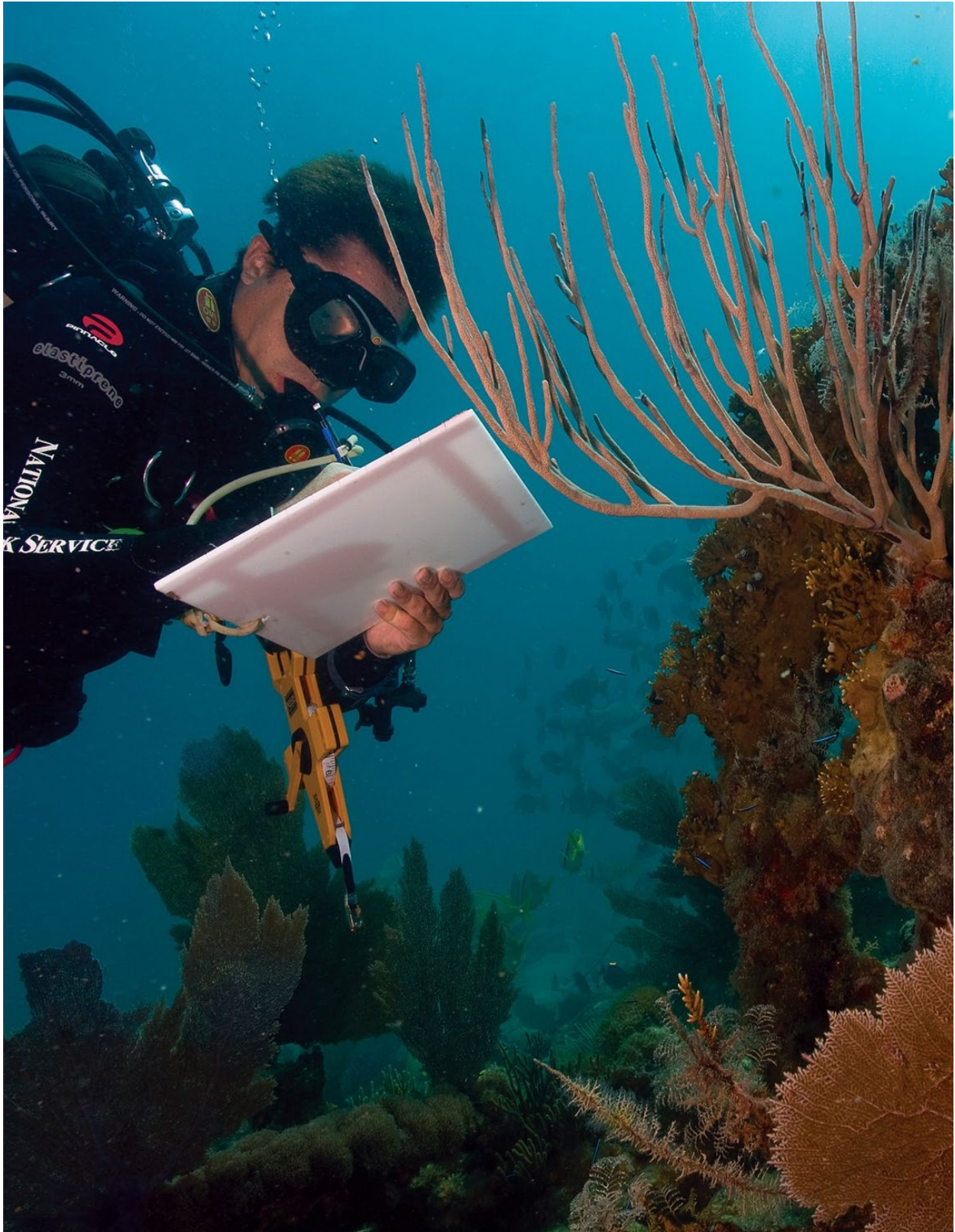
- The Continuity Guidance Circular is a resource for federal and non-federal entities to guide, update and maintain organizational continuity planning efforts and appropriately integrate and synchronize continuity efforts. These entities should also engage with partners, stakeholders and other coordinating structures to integrate organizational continuity plans into community- and government-wide planning efforts.
- The Continuity Resource Toolkit provides tools, templates and resources to help implement concepts found in the Continuity Guidance Circular.

6.4. Building and Sustaining Capabilities

After estimating local capabilities and identifying and prioritizing gaps, planners, government officials and elected leaders should work together to develop strategies to allocate resources effectively and leverage available assistance to reduce risk. These strategies should consider how to sustain or increase current levels of capability and address gaps to achieve local preparedness goals.

Building and sustaining capabilities should combine organizational resources, equipment, training and education. However, not all capabilities can be addressed in a given funding cycle; officials must prioritize the capabilities, addressing security and resilience while understanding the effects of not addressing some identified gaps. Grants and technical assistance options may also be available to support building and sustaining capabilities. FEMA's hazard mitigation assistance and preparedness grants can help communities reduce the risks associated with a changing climate.

Appendix A: National Preparedness Goal and System



National Preparedness Goal

The climate resilience concepts in this document draw from preparedness principles that are commonly practiced across the nation. In 2011, the White House released Presidential Policy Directive 8 (PPD-8): National Preparedness to describe the nation’s approach to achieving the [National Preparedness Goal](#) (see Figure 7), which defines what it means for the whole community to be prepared for all types of threats and risks.



Figure 7: National Preparedness Goal

National Preparedness System

The [National Preparedness System \(NPS\)](#) is an organized process for everyone in the whole community to move forward with preparedness activities and achieve the National Preparedness Goal. The guidance, programs, processes and systems that support each component of the National Preparedness System enable a collaborative, whole community approach to national preparedness that engages individuals, families, communities, private and nonprofit sectors, faith-based organizations and all levels of government (Figure 8). This approach is especially important to address climate challenges due to their wide-reaching, even worldwide, implications across jurisdictional boundaries. This Guide presents exercise methodology as a tool to facilitate whole community participation in the critical conversations that enhance climate preparedness and resilience.



Figure 8: The National Preparedness System

While the National Preparedness System applies to commonly understood emergency management issues such as response to extreme weather events, acts of terrorism and cybersecurity threats, the system can also address emerging risks and threats to communities due to a changing climate. This Guide uses salient components of the National Preparedness System as a model to prompt considerations to help translate climate science data and findings into discrete hazards to the community; the necessary capabilities to mitigate the effects of those hazards; and the optimal actions that community coalitions can take to build overall resilience to climate-related issues.

Applying the National Preparedness System

Complex and far-reaching threats and hazards, especially those posed by a changing climate, require the whole community to integrate preparedness efforts to build, sustain and deliver the Core Capabilities and achieve the desired outcomes identified in the National Preparedness Goal. By validating capabilities, exercises inform community, organizational and jurisdictional progress toward meeting the National Preparedness Goal. Exercises result in assessment of specific capability targets to identify strengths and shortfalls. They bring critical stakeholders together to brainstorm climate adaptation measures, hazard mitigation strategies and other actions that build resilience and enhance Core Capabilities to address threats related to a changing climate.