



Threat and Hazard Identification and Risk Assessment Guide

Comprehensive Preparedness Guide (CPG) 201

*Second Edition
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Homeland
Security

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Forward

Comprehensive Preparedness Guide (CPG) 201, Second Edition provides communities additional guidance for conducting a Threat and Hazard Identification and Risk Assessment (THIRA). The First Edition of this Guide (April 2012) presented the basic steps of the THIRA process. Specifically, the First Edition described a standard process for identifying community-specific threats and hazards and setting capability targets for each core capability identified in the National Preparedness Goal as required in Presidential Policy Directive (PPD) 8: National Preparedness.¹

This Second Edition expands the THIRA process to include estimation of resources needed to meet the capability targets. The Second Edition also reflects other changes to the THIRA process based on stakeholder feedback, such as streamlining the number of steps to conduct a THIRA and providing additional examples. Where appropriate, this Guide highlights key changes from the First Edition of CPG 201. This Second Edition supersedes the First Edition of CPG 201.

Overview

Every community should understand the risks it faces. By understanding its risks, a community can make smart decisions about how to manage risk, including developing needed capabilities. Risk is the potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences.² By considering changes to these elements, a community can understand how to best manage and plan for its greatest risks across the full range of the threats and hazards it faces. The THIRA process helps communities identify capability targets and resource requirements necessary to address anticipated and unanticipated risks.

THIRA Process

This Guide describes a four-step process for developing a THIRA:

1. **Identify the Threats and Hazards of Concern.** Based on a combination of experience, forecasting, subject matter expertise, and other available resources, identify a list of the threats and hazards of primary concern to the community.
2. **Give the Threats and Hazards Context.** Describe the threats and hazards of concern, showing how they may affect the community.
3. **Establish Capability Targets.** Assess each threat and hazard in context to develop a specific capability target for each core capability identified in the National Preparedness Goal. The capability target defines success for the capability.
4. **Apply the Results.** For each core capability, estimate the resources required to achieve the capability targets through the use of community assets and mutual aid, while also considering preparedness activities, including mitigation opportunities.

¹ For additional information on the National Preparedness Goal please visit <http://www.fema.gov/national-preparedness>.

² DHS Risk Lexicon, June 2013.

The THIRA process is flexible and scalable and will work for communities of all sizes. Communities can adapt these four steps, illustrated in Figure 1, to meet their specific needs and resources.



Figure 1: The THIRA Process

Relationship to Other Risk Assessments

The THIRA process standardizes the risk analysis process that emergency managers and homeland security professionals use every day through the normal course of their work. The THIRA process builds on existing local, state, tribal, territorial Hazard Identification and Risk Assessments (HIRAs) by:

- Broadening the threats and hazards considered to include human-caused threats and technological hazards
- Incorporating the whole community into the planning process, including individuals; families; businesses; faith-based and community organizations; nonprofit groups; schools and academia; media outlets; and all levels of government, including local, state, tribal, territorial, and Federal partners
- Providing increased flexibility to account for community-specific factors.

Core Capabilities

Communities use the core capabilities described in the National Preparedness Goal to organize their capability targets in the THIRA process (see Table 1). The core capabilities provide a common language for preparedness across the whole community. The core capabilities are relevant to all five preparedness mission areas:

- **Prevention:** Prevent, avoid, or stop an imminent, threatened, or actual act of terrorism.
- **Protection:** Protect our citizens, residents, visitors, and assets against the greatest threats and hazards in a manner that allows our interests, aspirations, and way of life to thrive.
- **Mitigation:** Reduce the loss of life and property by lessening the impact of future disasters.
- **Response:** Respond quickly to save lives; protect property and the environment; and meet basic human needs in the aftermath of a catastrophic incident.

- Recovery:** Recover through a focus on the timely restoration, strengthening, and revitalization of infrastructure, housing, and a sustainable economy, as well as the health, social, cultural, historic, and environmental fabric of communities affected by a catastrophic incident.

Table 1: Core Capabilities by Mission Area³

Prevention	Protection	Mitigation	Response	Recovery
Planning				
Public Information and Warning				
Operational Coordination				
Forensics and Attribution Intelligence and Information Sharing Interdiction and Disruption Screening, Search, and Detection	Access Control and Identity Verification Cybersecurity Intelligence and Information Sharing Interdiction and Disruption Physical Protective Measures Risk Management for Protection Programs and Activities Screening, Search, and Detection Supply Chain Integrity and Security	Community Resilience Long-term Vulnerability Reduction Risk and Disaster Resilience Assessment Threats and Hazard Identification	Critical Transportation Environmental Response/ Health and Safety Fatality Management Services Infrastructure Systems Mass Care Services Mass Search and Rescue Operations On-scene Security and Protection Operational Communications Public and Private Services and Resources Public Health and Medical Services Situational Assessment	Economic Recovery Health and Social Services Housing Infrastructure Systems Natural and Cultural Resources

National Preparedness System

The National Preparedness System is the instrument the Nation employs to build, sustain, and deliver the core capabilities in order to achieve the goal of a secure and resilient Nation. Figure 2 illustrates the six components of the National Preparedness System.⁴

³ Planning, Public Information and Warning, and Operational Coordination are core capabilities common to all mission areas.

⁴ For additional information on the National Preparedness System please visit <http://www.fema.gov/national-preparedness>.



Figure 2: Components of the National Preparedness System

The THIRA process supports the first two components of the National Preparedness System:

1. Identifying and Assessing Risk
2. Estimating Capability Requirements.

The THIRA process helps communities answer the following questions:

- What does the community need to prepare for?
- What resources are required in order to be prepared?
- What actions (e.g., mitigation activities) could be employed to lessen or eliminate the threat or hazard?
- What impacts need to be incorporated into the community’s recovery preparedness planning?

The results of the THIRA process form the foundation for subsequent National Preparedness System activities.

Whole Community Involvement

Developing an effective THIRA requires active involvement from the whole community. Recognizing that preparedness is a shared responsibility, the National Preparedness System calls for the involvement of everyone—not just government agencies—in preparedness efforts. When developing and updating THIRAs, jurisdictions should ensure their assessment and planning effort includes representatives and perspectives of the whole community. An informed public is the best advocate for building and sustaining required capabilities and creating a secure and resilient community.

Experience from the first year of THIRA implementation shows the importance of whole community involvement. THIRAs developed with whole community involvement are more comprehensive and measurable.

Updating Previous THIRAs

When reviewing, revising, or updating an existing THIRA, jurisdictions should examine the success and/or limitations of previous whole community engagement. In particular, jurisdictions should assess whether partners representing the five preparedness mission areas and 31 core capabilities participated. Communities are encouraged to engage representatives from different homeland security and public safety disciplines and from outside government.

For each subsequent THIRA update, communities should also review how the threat and hazard landscape has changed. In particular, consider the inclusion of new or emerging threats and hazards, to include future risks (Step 1); updating threat and hazard context descriptions based on demographic factors (Step 2); and revising capability targets based on current capability levels (Step 3). Communities should refine resource requirements (Step 4) based on changes made in previous steps and review how successful preparedness measures, such as protection or mitigation efforts, affect their THIRAs.

Step 1: Identify the Threats and Hazards of Concern

In Step 1 of the THIRA process, communities develop a list of community-specific threats and hazards. This section:

- Defines the **types of threats and hazards** that communities should consider
- Introduces **sources of threat and hazard information**
- Describes **factors to consider when selecting threats and hazards** for inclusion in the THIRA
- Provides guidance on **updating previous THIRA submissions**.

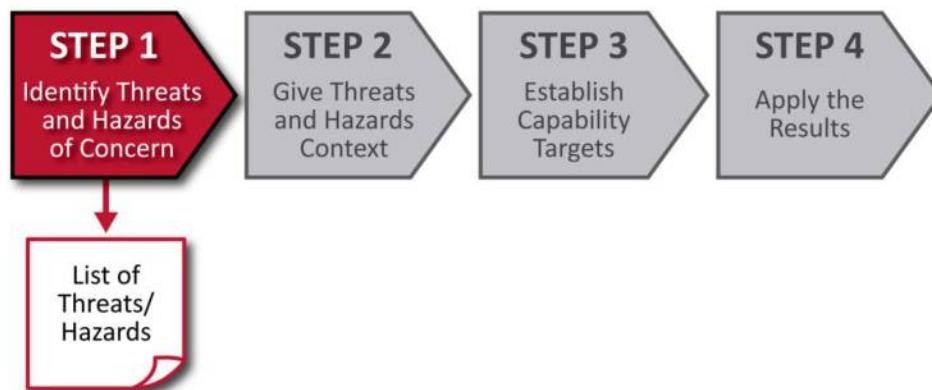


Figure 3: Step 1 of the THIRA Process

Types of Threats and Hazards

Communities face a variety of threats and hazards. The three types of threats and hazards are:

- **Natural hazards**, which result from acts of nature, such as hurricanes, earthquakes, tornadoes, animal disease outbreak, pandemics, or epidemics.

- **Technological hazards**, which result from accidents or the failures of systems and structures, such as hazardous materials spills or dam failures.
- **Human-caused incidents**, which result from the intentional actions of an adversary, such as a threatened or actual chemical attack, biological attack, or cyber incident.

Table 2 provides examples of each type of threats and hazards.

Table 2: Example Threats and Hazards

Natural	Technological	Human-caused
<ul style="list-style-type: none"> ▪ Avalanche ▪ Animal disease outbreak ▪ Drought ▪ Earthquake ▪ Epidemic ▪ Flood ▪ Hurricane ▪ Landslide ▪ Pandemic ▪ Tornado ▪ Tsunami ▪ Volcanic eruption ▪ Wildfire ▪ Winter storm 	<ul style="list-style-type: none"> ▪ Airplane crash ▪ Dam failure ▪ Levee failure ▪ Mine accident ▪ Hazardous materials release ▪ Power failure ▪ Radiological release ▪ Train derailment ▪ Urban conflagration 	<ul style="list-style-type: none"> ▪ Biological attack ▪ Chemical attack ▪ Cyber incident ▪ Explosives attack ▪ Radiological attack ▪ Sabotage ▪ School and workplace violence

Sources of Threat and Hazard Information

Communities should consult a number of sources to identify threats and hazards during the THIRA process. These sources may include:

- State and local homeland security and emergency management laws, plans, policies, and procedures
- Existing threat and hazard assessments (e.g., HIRAs)
- Records from previous incidents, including historical data
- Local, regional, and neighboring community THIRAs
- Analysis of critical infrastructure interdependencies, including disruptions and failures that may originate elsewhere but produce cascading effects experienced locally (e.g., an electrical power disruption that spreads both geographically and across sectors)
- Intelligence fusion center bulletins and assessments
- Whole community partners, such as:
 - Emergency management/homeland security agencies
 - Local and state hazard mitigation offices
 - Local or Regional National Weather Service offices

- Tribal governments
- Federal Emergency Management Agency (FEMA) Regional Offices
- Private-sector partners
- Local/state fire, police, emergency medical services, and health departments
- Major urban area and state fusion centers
- Infrastructure owners and operators
- U.S. Department of Homeland Security (DHS) Protective Security Advisors
- DHS Regional Cyber Security Analysts
- Volunteer Organizations Active in Disasters
- Colleges/universities, and other research organizations.

Additional Online Sources of Threat and Hazard Information

- National Oceanic and Atmospheric Administration (NOAA) Areal Locations of Hazardous Atmospheres (<http://response.restoration.noaa.gov/aloha>)
- DHS OneView (<https://gii.dhs.gov/OneView>)
- FEMA Hazus-MH (<http://www.fema.gov/hazus>)
- FEMA Hurrevac (<http://www.hurrevac.com>)
- U.S. Department of Energy LandScan (<http://web.ornl.gov/sci/landscan>)
- National Weather Service Sea, Lake and Overland Surges from Hurricanes (<http://www.nhc.noaa.gov/surge/slosh.php>)
- NOAA Sea Level Rise and Coastal Flooding Viewer (<http://csc.noaa.gov/digitalcoast/tools/slrvieviewer>)
- U.S. Army Corps of Engineers Debris Model (<http://eportal.usace.army.mil/sites/ENGLink/DebrisManagement/default.aspx>)
- FEMA Full-Spectrum Risk Knowledgebase (<https://riskknowledge.fema.gov>)
- FEMA Lessons Learned Information Sharing (<https://www.llis.dhs.gov>)

Factors for Selecting Threats and Hazards

Communities should include only those threats and hazards of significant concern in their THIRA. To identify threats and hazards of significant concern, consider two key factors: likelihood of incident and significance of threat/hazard effects.

Factor #1: Likelihood of Incident

Likelihood is the chance of something happening, whether defined, measured, or estimated objectively or subjectively. **Communities should consider only those threats and hazards that could plausibly occur.**

As a starting point, communities should consider the threats and hazards that have historically affected them, as well as those threats and hazards that exist regardless of historical occurrence (e.g., earthquakes, industrial accidents, or intelligence-driven assessments of potential terrorist attacks). This should include analyzing after-action reports and information about the root causes of threats and hazards (e.g., major floods caused by inadequate levees), as well as consultation

with scientists and appropriate subject matter experts. Communities may also consider looking at historical archives (e.g., at the local library) for reports of disasters in the community.

For threats and hazards for which it is difficult to estimate the likelihood of an incident (e.g., terrorism), communities should consider available intelligence data to determine inclusion in the THIRA. Engaging state/local law enforcement or a major urban area or state fusion center can provide the necessary insight into these types of events in order to focus on plausible threats. Local public health and medical personnel can also offer insight about health-related concerns such as pandemics.

Communities should take care to not over-rely on historical averages or patterns that may give a false sense of likelihood. For example, many severe natural hazards (such as earthquakes or floods) occur with such low frequency that relying on historical records alone may be misleading. High-magnitude earthquakes, though rare, can have severe consequences and therefore should be considered if the community is at risk for earthquake damage. Communities should also consider the threats and hazards that similar communities include in their planning processes or have recently responded to.

The scale and severity of disasters are growing and will likely pose systemic threats. Increasing changes in demographic trends and technology are making the effects of disasters more complex to manage. Population shifts to vulnerable areas and other demographic changes will affect future disaster management activities and should be considered when selecting threats and hazards.

Factor #2: Significance of Threat/Hazard Effects

The threat/hazard effects represent the overall impacts to the community. **Communities should consider only those threats and hazards that would have a significant effect on them.** Consider that different incidents present different types of challenges. In some cases the sheer magnitude of the incident may be substantial; others may involve coordination complexities, political sensitivities, or economic and social challenges.

Communities should not limit their THIRA to threats and hazards that they would be able to manage, but should also consider threats and hazards resulting in large-scale disasters or catastrophic incidents. Conversely, communities should exclude from the THIRA threats and hazards with only minor impacts, regardless of likelihood.

Although incidents may have wider regional or national effects, communities should focus strictly on the impacts within their jurisdiction. In some cases, it may be useful to include threats and hazards that occur in other locations if they trigger local effects. For example, an industrial accident at a chemical plant located in one particular community could affect people in another community who are downwind from the accident.

Step 1 Output

The output of Step 1 is a list of the community's threats and hazards of concern. These threats and hazards will serve as the basis for Step 2.

Step 2: Give the Threats and Hazards Context

In Step 2 of the THIRA, communities add context descriptions to each threat and hazard identified in Step 1. Context descriptions outline the conditions, including time and location, under which a threat or hazard might occur. This section:

- Identifies **factors to consider** when developing context descriptions
- Provides **examples of a completed threat/hazard context description.**



Figure 4: Step 2 of the THIRA Process

Context Description: Factors to Consider

To develop threat and hazard context descriptions, communities should take into account the **time, place, and conditions** in which threats or hazards might occur. Communities can use expert judgment or analysis of probability and statistics to inform the descriptions of the different threat and hazard conditions. Consider the following types of questions when developing context for each threat and hazard:

- How would the timing of an incident affect the community's ability to manage it? What time of day and what season would be most likely or have the greatest impacts?
- How would the location of an incident affect the community's ability to manage it? Which locations would be most likely or have the greatest impacts? Populated areas? Coastal zones? Industrial or residential areas?
- What other conditions or circumstances make the threat or hazard of particular concern? Atmospheric conditions (e.g., wind speed/direction, relative humidity)? Multiple events occurring at the same time?

Threats and hazards can have different impacts depending on the time, place, and conditions in which they occur. As such, communities may need to develop more than one context description for a threat or hazard. For example, a hurricane-prone community may need multiple context descriptions to account for varying storm intensities, landfall locations, and landfall times.

For any given community, there are countless combinations of threat and hazard conditions that lead to slightly different contexts. Communities need not consider every combination; rather they should include those details that affect what the community needs to be prepared for. For example, a jurisdiction identified an Enhanced-Fujita Scale 3 tornado as a hazard in Step 1. The

jurisdiction should consider the time of day and the path of the tornado when developing the context statement because the effects and resulting impacts may be different during the day than at night. Effective context descriptions should provide an overall sense of scale for the impacts of a threat or hazard.

Communities should recognize that past experience with threats and hazards may differ from the future threat and hazard environment. Factors such as **demographics**, **climate**, and the **built environment** are subject to change. Communities should consider these factors when developing threat and hazard context descriptions.

Examples of Context Descriptions

Table 3 provides two examples of context descriptions for a community. The community included the following two threats and hazards in its THIRA: an earthquake (natural) and a terrorist attack using an improvised explosive device (human-caused). Each of these threats and hazards includes a context description outlining the conditions, including time and location, that are most relevant to the community. These two threats and hazards are for example purposes only; a community may elect to analyze any number of threats and hazards of significant concern.

Table 3: Example Context Descriptions

Threat/Hazard	Earthquake	Terrorism
Context Description	A magnitude 7.8 earthquake along the Mainline Fault occurring at approximately 2:00 PM on a weekday with ground shaking and damage expected in 19 counties, extending from Alpha County in the south to Tau County in the north, and into the Zeta Valley.	A potential threat exists from a domestic group with a history of using small IEDs in furtherance of hate crimes. There are a number of large festivals planned during the summer at open air venues that focus on various ethnic and religious groups. These events draw on average 10,000 attendees daily.

Step 2 Output

The output of Step 2 is context descriptions for each threat and hazard identified in Step 1. These context descriptions will be used to develop impacts and desired outcomes for Step 3.

Step 3: Establish Capability Targets

In Step 3, communities establish capability targets for each core capability. Capability targets define success for each core capability based on the threat and hazard contexts developed in Step 2. Communities apply the capability targets from Step 3 to generate resource requirements and consider preparedness activities, including opportunities for mitigation in Step 4. This section:

- **Describes impacts and desired outcomes** and how they support development of capability targets
- Provides guidance on **how to develop capability targets**
- Provides **examples of completed capability targets**.

**Figure 5: Step 3 of the THIRA Process****Changes from the First Edition of CPG 201**

Step 3 combines two steps from the First Edition of CPG 201: Step 3 (Examine the Core Capabilities Using the Threats and Hazards) and Step 4 (Set Capability Targets). Communities still produce one capability target per core capability in Step 3.

Impacts and Desired Outcomes

Capability targets should be specific and measurable. To develop specific and measurable targets, communities should consider **impacts** and **desired outcomes** for each threat and hazard.

Impacts

Impacts describe how a threat or hazard might affect a core capability. Impacts are linked to the size and complexity of threats and hazards. Larger, more complex threats and hazards might cause larger, more complex impacts.

- For the **Response** and **Recovery** mission areas, impacts often describe actions that a community would take to manage an incident after it has occurred (e.g., rescue 500 people; provide food and shelter for 1,000 evacuees; provide long-term housing for 200 displaced families).
- For the **Prevention**, **Protection**, and **Mitigation** mission areas, impacts often describe actions a community would take prior to an incident to stop it from occurring or to reduce its effects (e.g., screen 80,000 event attendees for weapons; receive situation reports from four partner agencies).

Impacts should be specific and include quantitative descriptions as much as possible to allow jurisdictions to gain an understanding of what is needed to manage risk. Communities may seek to express impacts using the following types of categories:

- Size of geographic area affected
- Number of displaced households
- Number of fatalities
- Number of injuries or illnesses
- Disruption to critical infrastructure

- Intelligence requirements and needs
- Amount of direct economic impacts
- Economic effects of supply chain disruption.

Communities can use a range of inputs, including expert judgment and advanced modeling, to consider impacts. Given the breadth of preparedness mission areas and core capabilities, communities should work with the full range of whole community partners to develop, review, and validate impacts.

Desired Outcomes

Desired outcomes describe the timeframe or level of effort needed to successfully deliver core capabilities. Capabilities are only useful if communities can deliver them in a timely and effective manner. For example, success in the Response and Recovery mission areas often requires communities to deliver capabilities within a certain timeframe (e.g., complete search and rescue operations within 72 hours). Other mission areas may be better presented in terms of percentages (e.g., ensure 100% verification of identity to authorize, grant, or deny physical and cyber access to specific locations).

When considering desired outcomes, communities should not be constrained by current ability to meet timeframes or other conditions of success. Communities should consider various types of time-based desired outcomes as shown in Table 5.

Table 4: Example Time-based Desired Outcomes

Outcome Type	Example Outcome Description
Completing operations	Complete evacuation of neighborhood within four hours
Establishing services	Establish feeding and sheltering operations for displaced populations within 24 hours
Service duration	Maintain behavioral screening checks for affected population for one month
Combination	Establish feeding and sheltering operations within 24 hours and maintain services for a period of two weeks

Developing Capability Targets

Capability targets define success and describe what the community wants to achieve for each core capability. Communities should combine quantitative details from impacts and desired outcomes to develop capability targets.

Straightforward Example

For some core capabilities, forming the capability target may be as simple as combining the largest impacts with corresponding desired outcomes. As an example, consider a community developing a capability target for the Fatality Management Services core capability (see Figure 6).

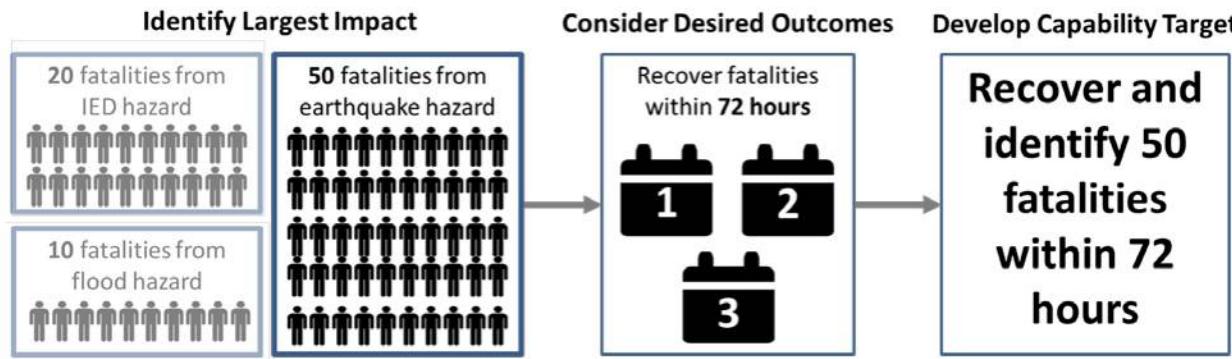


Figure 6: Straightforward Example of Developing Capability Targets

Complex Example

For some capabilities, developing capability targets may be more complicated. Different threats and hazards may stress different facets of a core capability. As an example, consider a community developing capability targets for the Critical Transportation core capability (see Figure 7).

- The community reviews its Critical Transportation impacts and desired outcomes:
 - A fire threatens a chemical plant which could release toxic gases, thereby requiring the community to evacuate several city blocks in the direction that the toxic cloud is estimated to disperse. The affected area is over three square miles, and houses 20,000 residents who must be evacuated in three hours.
 - An earthquake requires the delivery of vital response personnel, equipment, and services within 12 hours. 150 miles of major highway need to be assessed and repaired.

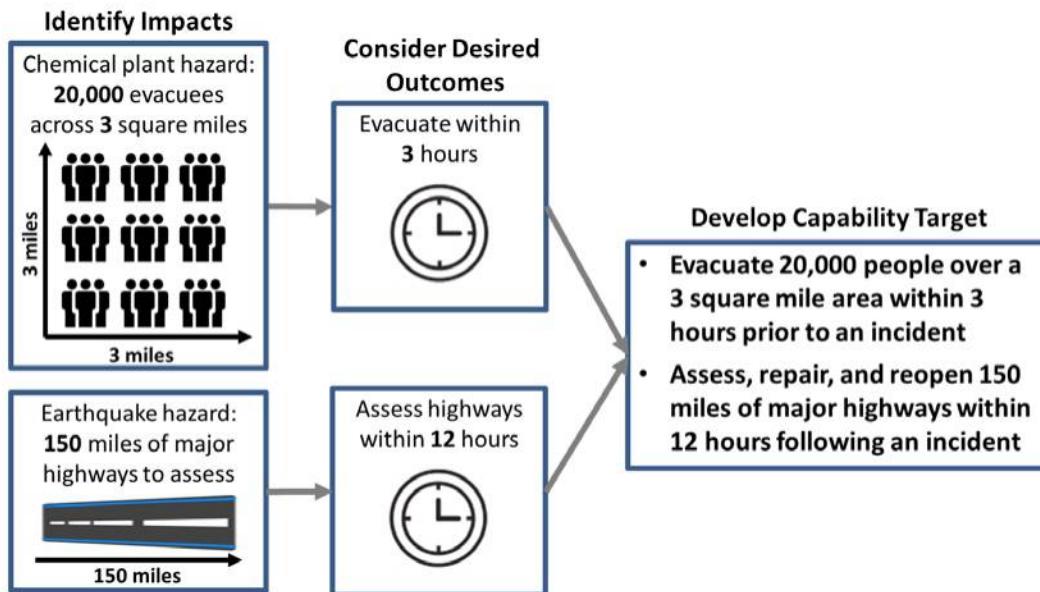


Figure 7: Complex Example of Developing Capability Targets

By developing capability targets that account for the range of impacts and desired outcomes associated with their different threats and hazards, communities will develop a “meta-scenario.”

A meta-scenario combines the context statements developed in Step 2 and includes the most stressing aspects of each threat and hazard. This approach leads to capability targets that increase at each level of government, specifically: a state needs to prepare for the worst impacts across multiple counties and a region needs to prepare for the worst impacts across multiple states.

Example Capability Target

Table 5 provides an example of a capability target for the Mass Search and Rescue Operations core capability for a community. The capability target includes the following impacts: the numbers of buildings to be searched, people to be rescued, and families to be sheltered. The target also describes the desired outcomes: completing collapse search and rescue within 72 hours. Communities should produce such a table for each core capability.

Table 5: Example Capability Target Statement

Threat/Hazard	Earthquake	Terrorism
Context Description	A magnitude 7.8 earthquake along the Mainline Fault occurring at approximately 2:00 PM on a weekday with ground shaking and damage expected in 19 counties, extending from Alpha County in the south to Tau County in the north, and into the Zeta Valley.	A potential threat exists from a domestic group with a history of using small IEDs in furtherance of hate crimes. There are a number of large festivals planned during the summer at open air venues that focus on various ethnic and religious groups. These events draw on average 10,000 attendees daily.
Core Capability: Mass Search and Rescue Operations		
Capability Target	<p>Within 72 hours, rescue:</p> <ul style="list-style-type: none"> ▪ 5,000 people in 1,000 completely collapsed buildings ▪ 10,000 people in 2,000 non-collapsed buildings ▪ 20,000 people in 5,000 buildings ▪ 1,000 people from collapsed light structures. 	

Step 3 Output

The output of Step 3 is a minimum of one capability target for each core capability listed in the National Preparedness Goal. These capability targets will be used to identify resource requirements in Step 4. Additionally, communities can begin to identify preparedness activities to reduce future resource requirements.

Step 4: Apply the Results

In Step 4, communities apply the results of the THIRA by estimating the resources required to meet capability targets. Communities express resource requirements as a list of resources needed to successfully manage their threats and hazards. Communities can also use resource

requirements to support resource allocation decisions, operations planning, and mitigation activities.⁵ This section:

- Introduces **capability estimation**
- Discusses **resource typing, including National Incident Management System (NIMS)-typed resources and other standardized resource types**
- Provides an **example of a completed resource requirement list**
- Identifies how communities may **apply these results to resource allocation decisions and mitigation activities.**

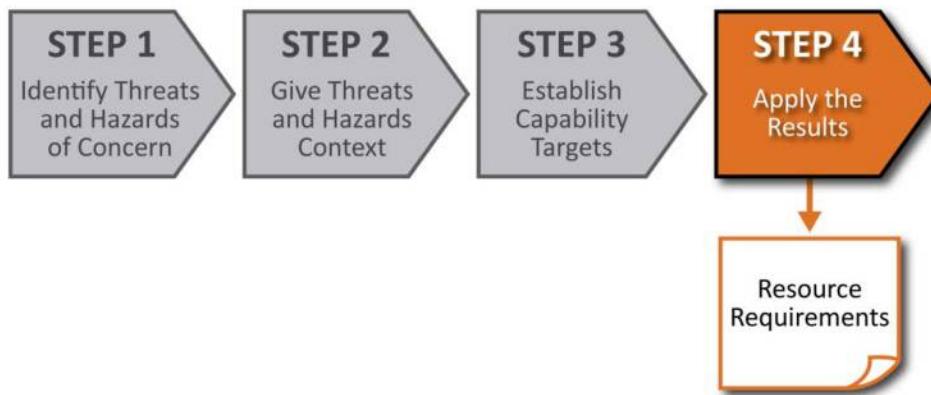


Figure 8: Step 4 of the THIRA Process

Changes from the First Edition of this Guide

Step 4 retains the activities from the First Edition of CPG 201 and adds capability estimation to establish resource requirements lists.

Capability Estimation

To estimate resource requirements, communities should consider the resources needed to achieve the capability targets from Step 3. As a first step, communities can identify the major actions needed to achieve their capability targets. Communities should avoid developing very detailed, tactical-level task lists. Rather, communities should strive to identify mission-critical activities. Communities can draw mission-critical activities from current community-level plans, as well as from the National Planning Frameworks.⁶

Communities should consider the quantity and types of resources needed to complete each mission-critical activity in support of the capability targets. To identify quantity and types of resources, communities can use existing tools and information sources, such as:

- Strategic, operational, and/or tactical plans
- Resource typing data, including standardized resource characteristics
- Existing capacity analysis and capability calculators

⁵ CPG 101, Version 2, Developing and Maintaining Emergency Operations Plans discusses how to incorporate resource requirements and capability estimates into emergency operations planning. For more information, please see http://www.fema.gov/pdf/about/divisions/npd/CPG_101_V2.pdf.

⁶ For more information, please visit <http://www.fema.gov/national-planning-frameworks>.

- Data regarding resources frequently requested through mutual aid.

Through this process, communities should identify the resources from across the whole community needed to meet capability targets.

Each community should decide which combination of resources is most appropriate to achieve its capability targets. While any number of combinations may achieve success, communities should consider costs, benefits the resources provide, and the ability to manage the risks associated with each potential solution. Different solutions may fit best within different communities' political and economic frameworks.

Resource Typing

Resource typing is categorizing, by capability, the resources requested, deployed, and used in incidents. Resource typing helps communities request and deploy needed resources through the use of common terminology. Communities should develop resource requirements expressed as a list of **NIMS-typed resources or other standardized resources**.

Tier I NIMS-Typed Resources

FEMA categorizes and describes several types of standardized, deployable resources. Measurable standards identifying resource capabilities and performance levels serve as the basis for these categories. These NIMS-typed resource definitions include the composition and capabilities of teams, personnel, equipment, and supplies commonly deployed in incidents. FEMA refers to NIMS-typed resources as Tier I resources. The complete list of Tier I resource types can be found at <http://www.fema.gov/resource-management>.

Step 4 of the THIRA process enables communities to estimate how many resources—including FEMA's Tier I NIMS-typed resources—are needed to achieve capability targets. As FEMA and the emergency management community continue to define additional Tier I NIMS-typed resources, the THIRA process will provide a more accurate and complete picture of community-level resource needs.

Tier II Resources and Other Standardized Resources

Communities should also consider resources standardized by entities other than FEMA when developing their resource requirements. For example, state, tribal, and local governments sometimes establish standardized definitions of deployable resources. FEMA refers to these state, tribal, and local-typed resources as Tier II-typed resources. Tier II-typed resources refer to resources defined and inventoried by local, state, tribal, and territorial jurisdictions that are specific and limited to intrastate mutual aid requests and regional mutual aid assistance. FEMA does not play a role in defining these local types or standards, unlike NIMS-typed resources (Tier I resources).

Mission Ready Packages (MRPs) available through the Emergency Management Assistance Compact (EMAC) describe other types of standardized resources, including credentialed personnel. EMAC MRPs describe resources available for deployment for intrastate and interstate mutual aid.

Communities should identify resources at a manageable level of detail. Identifying teams or “packages” of people, equipment, and associated training allows for comparison across jurisdictions. These resources handle specific tasks within specified timeframes. The second

column in Table 7 shows a recommended level of resource detail. The “Case Management Team” represents a distinct resource package.

Table 6: Desired Level of Detail for Other Standardized Resources

Too Broad	Recommended	Too Detailed
All adequate personnel to meet the outcome	1 Type 3 Case Management Team	1 operations manager 1 team leader 1 case management supervisor 1 case manager 1 community coordination specialist

For some capabilities, communities can calculate resource requirements by considering: capability targets; the operational capacities of resources; and available time. The following example demonstrates this approach:

Example: Calculating Resource Requirements

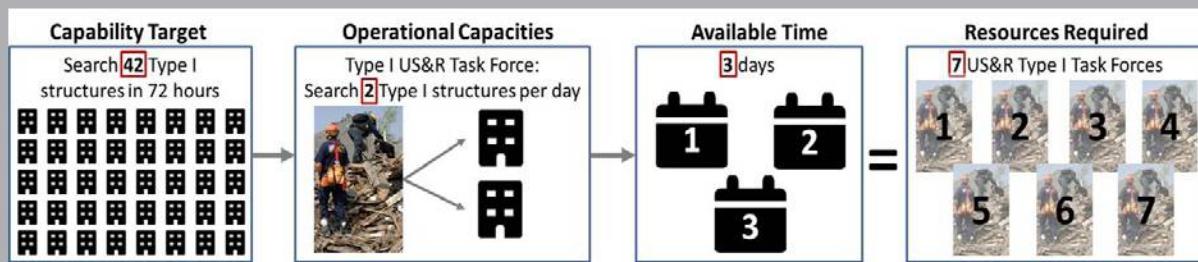
Consider a community trying to estimate the number of Urban Search and Rescue (US&R) Task Forces needed for its Mass Search and Rescue Operations resource requirement. The community should first consider the types of buildings located within the affected area (e.g., high-rise buildings, non-combustible, mid-rise). This information helps determine the level of effort and skill required to conduct effective search and rescue. For example, if the community can estimate the number of buildings in each category, the average number of floors per building in each category, and the average area per floor in each category, the community can derive rough estimates of the number of floors and total square footage first responders would need to search in response to a major incident. The community's firefighters, public works staff, building owners, or building inspectors can provide this information to planners.

The community is planning for mass search and rescue in its downtown area. An examination of the area's building stock finds that most buildings are high-rise structures constructed of concrete and protected steel. In consideration of their building stock and the occupancy of the buildings, the community reaches out to its existing search and rescue expertise as well as that from other jurisdictions to get a recommendation of possible solutions. As a result of their analysis, the community determines that highly skilled Type I US&R Task Forces are needed to deal with the requirements while other resources can be used more efficiently and effectively to deal with less challenging search and rescue needs.

Specialized knowledge can be instrumental in helping to address the following types of questions that arise when estimating resource requirements:

- What resources are appropriate for achieving capability targets?
- What are the typical performance characteristics of those resources?
- How might performance vary depending on the local conditions?

The community could use the following calculation to estimate resource requirements.



This example calculation highlights the importance of including subject matter experts from the whole community in the THIRA process.

Example of a Completed THIRA

Table 7 shows the progression from capability target to resource requirement for the Mass Search and Rescue Operations core capability. The community uses subject matter expertise, existing plans, and simple calculations to determine the key resources necessary to meet capability targets.

Table 7: Example Completed THIRA

Threat/Hazard	Earthquake	Terrorism
Context Description	A magnitude 7.8 earthquake along the Mainline Fault occurring at approximately 2:00 PM on a weekday with ground shaking and damage expected in 19 counties, extending from Alpha County in the south to Tau County in the north, and into the Zeta Valley.	A potential threat exists from a domestic group with a history of using small IEDs in furtherance of hate crimes. There are a number of large festivals planned during the summer at open air venues that focus on various ethnic and religious groups. These events draw on average 10,000 attendees daily.
Core Capability: Mass Search and Rescue Operations		
Capability Target	<p>Within 72 hours, rescue:</p> <ul style="list-style-type: none"> ▪ 5,000 people in 1,000 completely collapsed buildings ▪ 10,000 people in 2,000 non-collapsed buildings ▪ 20,000 people in 5,000 buildings ▪ 1,000 people from collapsed light structures. 	
Resource Requirement		
Resources	Number Required	
Type I US&R Task Forces	10	
Type II US&R Task Forces	38	
Collapse Search and Rescue (S&R) Type III Teams	100	
Collapse S&R Type IV Teams	20	
Canine S&R Type I Teams	20	

Applying the THIRA Results to Resource Allocation Decisions and Preparedness Activities

Communities can apply their THIRA results to allocate resources and inform preparedness activities, including opportunities for mitigation.

Resource Allocation Decisions

A community can use its THIRA results to make decisions about how to allocate limited resources. By establishing resource requirements, a community determines the resources needed to achieve capability targets.

In some cases, THIRA results may indicate a need to sustain existing capabilities. In other cases, results may identify resource shortfalls and capability gaps. Communities can use this information to guide capability investment decisions and to brief community leaders, senior officials, and the public on resource requirements. Communities have several options available to build or sustain capabilities, including:

- In some cases, communities may rely upon the resources of other levels of government to achieve a capability target. Accordingly, cities, counties, states, tribes, and regions should work collaboratively to build and sustain capabilities. For example, if states require national resources to meet a capability target, they should collaborate with FEMA Regional Offices and other Federal agencies.
- Communities can build capabilities and fill gaps in a variety of other ways. For example, communities can:
 - Establish mutual aid agreements with surrounding communities
 - Work with whole community partners (e.g., faith-based organizations) to augment capabilities
 - Invest community or grant dollars
 - Request technical assistance for planning or exercises to help deploy resources more effectively.

Regardless of how a community chooses to make resource allocation decisions, the THIRA process provides a framework to establish resource requirements and monitor progress towards building, sustaining, and delivering capabilities.

Preparedness Activities

THIRA results can also inform preparedness activities, including mitigation opportunities that may reduce the amount of resources required in the future. Through the THIRA process, communities can identify opportunities to employ mitigation plans, projects, and insurance to reduce the loss of life and damage to property. In this way, communities can reduce the impacts they need to manage, and hence reduce the resources needed to achieve capability targets. Table 8 shows examples of mitigation activities and associated effects and outcomes.

Using THIRA results to inform mitigation activities aligns with the traditional mitigation planning process of identifying hazards, assessing losses to the community, and setting mitigation priorities and goals for the community.

Table 8: Example Mitigation Activities and Associated Effects/Outcomes

Mitigation Activity	Effect	Outcome
Seismic retrofitting on utility buildings	Increased utility resilience	Key emergency services retain 100% power during incidents
Installing safe rooms in residential and commercial buildings for areas affected by tornados	Increased ability for individuals to shelter in place during disasters	100% preservation of life safety for occupants taking shelter in safe rooms designed to FEMA P-320/361 standards

Step 4 Output

In Step 4, communities develop a list of resource requirements (e.g., NIMS-typed resources, EMAC MRPs) to meet the capability targets while also considering preparedness activities that may reduce future resource requirements.

Conclusion

Understanding the risks faced by communities and the Nation as a whole is essential to national preparedness. This Guide provides a common and consistent approach for communities to support the first two components of the National Preparedness System: 1) Identifying and Assessing Risk; and 2) Estimating Capability Requirements. It expands on existing local, state, tribal, and territorial hazard identification and risk assessment processes.

The THIRA is complemented by a Strategic National Risk Assessment (SNRA) that analyzes the greatest risks to the Nation, and contributes to a shared understanding of the full range of risks, including long-term trends that face our Nation.⁷ THIRAs and the SNRA, along with other specialized risk assessments, provide an integrated national risk picture, which in turn helps to achieve the National Preparedness Goal of “a secure and resilient Nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.”

Achieving the National Preparedness Goal requires participation by the whole community. Consistent application of THIRAs provides an important tool for integrating whole community contributions toward achieving the National Preparedness Goal. Through the THIRA process, communities are better able to educate individuals, families, businesses, organizations, community leaders, and senior officials about the risks they face and their roles in and contributions to prevention, protection, mitigation, response, and recovery.

⁷ For more information, please see <http://www.dhs.gov/xlibrary/assets/rma-strategic-national-risk-assessment-ppd8.pdf>.

Appendix A: THIRA Template

The following table illustrates one possibility for how communities may organize the information in their THIRAs.

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Appendix B: Glossary

Capability Target: Capability targets define success for each core capability and describe what the community wants to achieve by combining detailed impacts with basic and measurable desired outcomes based on the threat and hazard context statements developed in Step 2 of the THIRA process.

Context: A community-specific description of an incident, including location, timing, and other important circumstances.

Core Capability: Defined by the National Preparedness Goal, 31 activities that address the greatest risks to the Nation. Each of the core capabilities is tied to a capability target.

Desired Outcome: The standard to which incidents must be managed, including the timeframes for conducting operations or percentage-based standards for performing security activities.

Human-caused Hazard: A potential incident resulting from the intentional actions of an adversary.

Impact: How a threat or hazard might affect a core capability.

Likelihood: The chance of something happening, whether defined, measured, or estimated objectively or subjectively, or in terms of general descriptors (e.g., rare, unlikely, likely, almost certain), frequencies, or probabilities.

Natural Hazard: A potential incident resulting from acts of nature.

NIMS-typed Resource: A resource categorized, by capability, the resources requested, deployed and used in incidents.

Resource Requirement: An estimate of the number of resources needed to achieve a community's capability target. A list of resource requirements for each core capability is an output of the THIRA process.

Technological Hazard: A potential incident resulting from accidents or failures of systems or structures.

Threat/Hazard Effect: The overall impacts to the community were an incident to occur.

Whole Community: An approach to emergency management that reinforces the fact that FEMA is only one part of our Nation's emergency management team. We must leverage all of the resources of our collective team in preparing for, protecting against, responding to, recovering from and mitigating against all hazards; and that collectively we must meet the needs of the entire community in each of these areas.

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Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) Guide

Comprehensive Preparedness Guide (CPG) 201
3rd Edition
May 2018



Homeland
Security

Preface

Comprehensive Preparedness Guide (CPG) 201, 3rd Edition, provides guidance for conducting a Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR), formerly State Preparedness Report. The 1st Edition of CPG 201 (April 2012) presented the basic steps of the THIRA process. Specifically, the 1st Edition described a standard process for identifying community-specific threats and hazards and setting targets for each core capability identified in the National Preparedness Goal. The 2nd Edition (August 2013) expanded the THIRA process to include resource estimation, streamlined the number of steps in the process, and provided additional examples of how to develop a THIRA.

CPG 201, 3rd Edition, includes both the THIRA and SPR because they are interconnected processes that, together, communities use to evaluate their preparedness. The 3rd Edition also introduces updates to both methodologies. The THIRA includes standardized language to describe threat and hazard impacts and capability targets. This allows communities to collect more specific, quantitative information while also providing important context. Through the updated SPR process, communities collect more detailed and actionable data on their current capabilities and identified capability gaps. Communities then indicate their intended approaches for addressing those gaps, and assess the impact of relevant funding sources on building and sustaining capabilities.

Where appropriate, the 3rd Edition highlights key changes from previous editions of CPG 201. This 3rd Edition supersedes the 2nd Edition of CPG 201.

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Introduction

The National Preparedness Goal

The *National Preparedness Goal, Second Edition* (2015)¹ defines what it means for all communities to be prepared for the threats and hazards that pose the greatest risk to the security of the United States. The National Preparedness Goal (“the Goal”) is:

A secure and resilient Nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.

The Goal identifies 32 distinct activities, called **core capabilities**, needed to address the greatest risks facing the Nation (see Figure 1).² The Goal organizes these core capabilities into five categories, called **mission areas**.³ Some core capabilities apply to more than one mission area. For example, the first three core capabilities—Planning, Public Information and Warning, and Operational Coordination—are **cross-cutting capabilities**, meaning they apply to each of the five mission areas.

The National Preparedness Goal describes the five mission areas as follows:

- **Prevention:** Prevent, avoid, or stop an imminent, threatened, or actual act of terrorism.
- **Protection:** Protect our citizens, residents, visitors, and assets against the greatest threats and hazards in a manner that allows our interests, aspirations, and way of life to thrive.
- **Mitigation:** Reduce the loss of life and property by lessening the impact of future disasters.
- **Response:** Respond quickly to save lives; protect property and the environment; and meet basic human needs in the aftermath of an incident.
- **Recovery:** Recover through a focus on the timely restoration, strengthening, and revitalization of infrastructure, housing, and a sustainable economy, as well as the health, social, cultural, historic, and environmental fabric of communities affected by an incident.

The mission areas and core capabilities organize the community-wide activities and tasks performed before, during, and after disasters into a framework for achieving the goal of a secure and resilient Nation.

¹ For additional information on the National Preparedness Goal, please visit: <https://www.fema.gov/national-preparedness-goal>.

² For additional information on core capabilities, please visit: <https://www.fema.gov/core-capabilities>.

³ For additional information on mission areas, please visit: <https://www.fema.gov/mission-areas>.

The 32 Core Capabilities

The Five Mission Areas				
Prevention	Protection	Mitigation	Response	Recovery
		Planning		
		Public Information and Warning		
		Operational Coordination		
	Intelligence and Information Sharing	Community Resilience	Infrastructure Systems	
	Interdiction and Disruption	Long-Term Vulnerability Reduction	Critical Transportation	Economic Recovery
	Screening, Search, and Detection	Risk and Disaster Resilience	Environmental Response/ Health and Safety	Health and Social Services
Forensics and Attribution	Access Control and Identity Verification	Threats and Hazards Identification	Fatality Management Services	Housing
	Cybersecurity		Fire Management and Suppression	Natural and Cultural Resources
	Physical Protective Measures		Logistics and Supply Chain Management	
	Risk Management for Protection Programs and Activities		Mass Care Services	
	Supply Chain Integrity and Security		Mass Search and Rescue Operations	
			On-Scene Security, Protection, and Law Enforcement	
			Operational Communications	
			Public Health, Healthcare, and Emergency Medical Services	
			Situational Assessment	

Figure 1: Five mission areas organize the 32 core capabilities needed to address threat and hazards of concern.

The National Preparedness System

Communities assess, build, sustain, and deliver the core capabilities through an organized process called the **National Preparedness System**.⁴ The National Preparedness System has six components (see Figure 2), each of which ties into the others to guide community-wide preparedness activities and achieve the Goal of a secure and resilient Nation.

⁴ For additional information on the National Preparedness System, please visit: <https://www.fema.gov/national-preparedness-system>.



Figure 2: There are six components of the National Preparedness System.

Using the THIRA/SPR Strategically

The THIRA/SPR sets a strategic foundation for putting the National Preparedness System into action. Communities complete the THIRA every three years and use the data from the process to assess their capabilities in the SPR, which is an annual review. It is important that communities complete the THIRA on a multi-year cycle, as it enables them to assess year-over-year trends in changes to their capabilities, while still periodically reviewing the capability targets to keep them relevant.

The three-year THIRA/SPR cycle starts with the first step in the National Preparedness System: *Identifying and Assessing Risk*. **Risk** is the potential for an unwanted outcome resulting from an incident or occurrence, as determined by its likelihood and the associated consequences.⁵ In the THIRA, communities identify risks with the potential to most challenge their capabilities and expose areas in which the community is not as capable as it aims to be. These areas, or **capability gaps**, create barriers in a community's ability to prevent, protect against, mitigate, respond to, and recover from a threat or hazard. Understanding the risks they face will make it easier for communities to determine what level of capability they should plan to build and sustain. Communities can use the information that comes from the THIRA/SPR process to answer five key strategic questions about their preparedness risks and capabilities (see Figure 3).

⁵ DHS Risk Lexicon, June 2010: https://www.dhs.gov/sites/default/files/publications/dhs-risk-lexicon-2010_0.pdf.



Figure 3: Communities use the THIRA/SPR to answer five key questions.

Since 2012, communities have used the THIRA/SPR to answer these questions, helping them better understand the risks their communities face. This helps communities make important decisions on how to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risks.

In addition to the *Identifying and Assessing Risk* component of the National Preparedness System, communities use the THIRA/SPR for *Estimating Capability Requirements*. This involves determining the specific level of capability that best addresses a community's risks. These community-specific capability levels are what communities use to determine their current level of capability, identify their capability gaps, and identify how they can close those gaps. At the end of the three-year THIRA/SPR cycle, communities reassess their risks by completing the THIRA again and the process restarts. The outputs of the THIRA/SPR provide communities a foundation to prioritize decisions, close gaps in capability, support continuous improvement processes, and drive the other National Preparedness System components (see Figure 4).

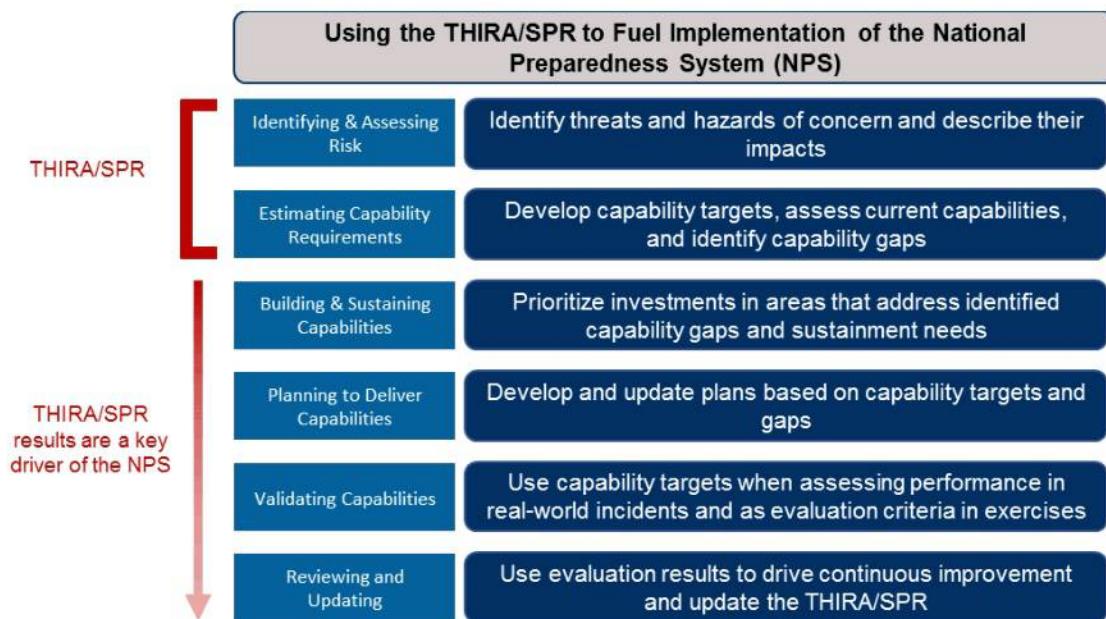


Figure 4: The THIRA/SPR fuels NPS implementation.

Community-Wide Involvement

Recognizing that preparedness is a shared responsibility, the National Preparedness System calls for everyone—not just government agencies—to be involved in preparedness efforts.

Community-wide involvement is an important principle in preparedness that entails involving stakeholders throughout preparedness development, and ensuring preparedness materials reflect their roles and responsibilities. Including stakeholders early on and throughout the THIRA/SPR process helps the community to conduct accurate and comprehensive assessments. Furthermore, involving stakeholders throughout the process empowers them to use the data to help drive priorities and investments within their own organizations.

As such, developing a comprehensive and accurate THIRA/SPR requires active community involvement from stakeholders and subject-matter experts (SMEs), such as:

- Colleges/universities, and other research organizations
- Cybersecurity experts
- Emergency management/homeland security agencies
- Emergency Planning Committees
- Federal agencies (e.g. Department of Health and Human Services)
- FEMA regional offices
- Fire, police, emergency medical services, and health departments
- Hazard mitigation offices
- Infrastructure owners and operators
- Major urban area and state fusion centers
- National Laboratories
- National Weather Service offices
- Port or transit organizations
- Supply chain stakeholders
- Private sector partners (including the 16 critical infrastructure sectors)

- Professional associations
- Tribal governments
- U.S. Department of Homeland Security (DHS) Protective Security Advisors
- Volunteer Organizations Active in Disasters (VOAD)
- Other organizations or agencies with significant impact on the local economy

Communities should also include SMEs from planning, exercises, mitigation, training, and other key areas in their THIRA/SPR process. Including the perspectives and expertise of these key stakeholders gives communities critical information regarding planning factors and capability levels across all mission areas. As a result, emergency managers will be well-positioned to provide essential information about the status of capabilities and consider THIRA/SPR data in their planning efforts, including the development of strategic, operational, and tactical plans.

Importance of Community-Wide Involvement

The outputs of the THIRA/SPR process inform all other preparedness activities; helping communities identify challenges, drive priorities, and close gaps in capabilities. Therefore, when developing and updating THIRA/SPRs, communities should ensure their assessment and planning efforts include community-wide input and perspectives.

The THIRA Process

Introduction to the Three Steps of the THIRA

The THIRA is a three-step risk assessment completed every three years. It helps communities answer 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?

The THIRA helps communities understand their risks and determine the level of capability they need in order to address those risks. The outputs from this process lay the foundation for determining a community's capability gaps during the SPR process.

This section describes the three-step process for developing a THIRA (see Figure 5):



Figure 5: There are three steps in the THIRA process.

1. **Identify Threats and Hazards of Concern:** Based on a combination of experience, forecasting, subject matter expertise, and other available resources, develop a list of threats and hazards that could affect the community. When deciding what threats and hazards to include in the THIRA, communities consider only those that challenge the community's ability to deliver at least one core capability more than any other threat or hazard; the THIRA is not intended to include less challenging threats and hazards.
2. **Give Threats and Hazards Context:** Describe the threats and hazards identified in Step 1, showing how they may affect the community and create challenges in performing the core capabilities. Identify the impacts a threat or hazard may have on a community.
3. **Establish Capability Targets:** Using the impacts described in Step 2, determine the level of capability that the community plans to achieve over time in order to manage the threats and hazards it faces. Using standardized language, create capability targets for each of the core capabilities based on this desired level of capability by identifying impacts, objectives, and timeframe metrics.

THIRA: Key Changes

- FEMA now recommends that communities complete the THIRA on a three-year cycle, rather than annually.
- The THIRA is now a three-step assessment; FEMA has removed THIRA Step 4—Apply Results—from the process.

Step 1: Identify the Threats and Hazards of Concern

In Step 1 of the THIRA process, communities develop a list of threats and hazards (see Figure 6).



Figure 6: The output of Step 1 of the THIRA is a list of threats and hazards of concern.

Categories of Threats and Hazards

For the purposes of the THIRA, threats and hazards are organized into three categories.

- **Natural hazards:** acts of nature
- **Technological hazards:** accidents or the failures of systems and structures
- **Human-caused incidents:** the intentional actions of an adversary

Table 1 provides example threats and hazards for each of the three categories.

Table 1: Example threats and hazards by category.

Natural	Technological	Human-caused
Avalanche	Dam failure	Active shooter incident
Drought	Hazardous materials release	Armed assault
Earthquake	Industrial accident	Biological attack
Epidemic	Levee failure	Chemical attack
Flood	Mine accident	Cyber-attack against data
Hurricane/Typhoon	Pipeline explosion	Cyber-attack against infrastructure
Space weather	Radiological release	Explosives attack
Tornado	Train derailment	Improvised nuclear attack
Tsunami	Transportation accident	Nuclear terrorism attack
Volcanic eruption	Urban conflagration	Radiological attack
Winter storm	Utility disruption	

Communities consider two criteria when identifying threats and hazards for the assessment: (1) the threat or hazard is reasonably likely to affect the community; and (2) the impact of the threat or hazard challenges at least one of the 32 core capabilities more than any other threat or hazard. As a single incident may most challenge the ability to perform multiple core capabilities, the number of threats and hazards that each community includes will depend on the specific risk profile of the community.

The Most Challenging Threat or Hazard

For the purposes of this Guide, if a threat or hazard “most challenges” a core capability, it means that the community would struggle to deliver the core capability during that specific incident more so than for any other threat or hazard.

See Figure 7 for an example where a community selected an earthquake, a cyber-attack, a flood, an active shooter, and a chemical hazmat release—each of which most challenged at least one core capability.

Community A identifies the threat or hazard that presents the **greatest challenge** to each core capability.

Earthquake	Cyber Attack	Flood	Active Shooter	Hazmat Release - Chemical
Presents the greatest challenge to:				
Operational Coordination	Intelligence and Information Sharing	Public Information and Warning	Interdiction and Disruption	Access Control and Identity Verification
Risk Mgmt. for Protection Programs and Activities	Forensics and Attribution	Planning	Screening, Search, and Detection	Physical Protective Measures
Risk and Disaster Resilience Assessment	Cybersecurity	Supply Chain Integrity and Security	Threats and Hazards Identification	Long-term Vulnerability Reduction
Critical Transportation		Community Resilience	On-scene Security, Protection, and Law Enforcement	Environmental Response/Health & Safety
Fatality Management Services		Logistics and Supply Chain Management		Public Health, Healthcare, and EMS
Fire Management and Suppression		Mass Care Services		Situational Assessment
Mass Search and Rescue Operations		Operational Communications		Health and Social Services
Infrastructure Systems		Economic Recovery		
Natural and Cultural Resources		Housing		

Figure 7: A single threat or hazard may most challenge more than one core capability.

Sources of Threat and Hazard Information

Consulting multiple sources during the THIRA process helps establish a comprehensive list of the threats and hazards that communities may face. These sources may include, but are not limited to:

- Existing Federal, state, local, and tribal strategic and operational plans
- Existing threat or hazard assessments (e.g., the Hazard Identification and Risk Assessment)
- Forecasts or models of future risks due to changing weather and demographic patterns or emerging threats
- Hazard mitigation plans
- Intelligence fusion center bulletins and assessments
- Local, regional, tribal, and neighboring community THIRAs
- Records from previous incidents, including historical data
- Homeland security and emergency management laws, policies, and procedures
- Private-sector plans and risk assessments, including those for lifeline functions (communications, energy, transportation, and water)⁶

Factors for Selecting Threats and Hazards

When identifying threats and hazards to include in the THIRA, communities consider two key factors: (1) the likelihood of a threat or hazard affecting the community; and (2) the challenge presented by the impacts of that threat or hazard, should it occur.

⁶ Lifeline functions are functions that are essential to the operation of most critical infrastructure sectors. For additional information on lifeline functions please visit:

<https://www.dhs.gov/sites/default/files/publications/national-infrastructure-protection-plan-2013-508.pdf>.

Factor #1: Likelihood of a Threat or Hazard Affecting a Community

For the purposes of the THIRA, “likelihood” is the chance of a given threat or hazard affecting a community. Likelihood is important to consider because communities must allocate limited resources strategically. A particular threat or hazard might be possible, but communities should determine whether the likelihood of its occurrence is large enough to drive investment decisions. Through the THIRA, communities identify the threats and hazards that are challenging enough to expose their capability gaps, and are likely enough that a community can justify investing in the capabilities necessary to manage those threats and hazards.

The ability to predict the likelihood of a specific incident varies greatly across threats and hazards. Some hazards, such as floods, have mature prediction models that can allow communities to calculate the numerical probability of a specific incident, such as 1 in 100 or 1 percent a year, with a moderate degree of accuracy. Other incidents, such as terrorism, are more difficult to predict and communities may most easily express them on a logarithmic scale, such as 1 in 1,000, or on an ordinal scale, such as low, medium, and high. Regardless of how communities express the probability of a specific incident, understanding the likelihood of their threats and hazards can help communities understand capability requirements and prioritize investments.

Including estimates of probability in the THIRA is not necessary, but communities may do so if they deem it appropriate. Communities can also consider additional sources for useful likelihood and consequence information to inform their threat and hazard selections, such as hazard mitigation plans. Regardless of whether probability is included in the THIRA process, communities only consider those threats and hazards that could realistically occur.

Factor #2: The Impacts of a Threat or Hazard

The projected impacts of threats and hazards determine the level of capability that a community will need to address those impacts. To understand their risks effectively, communities should identify and select threats and hazards that have impacts that most challenge their communities, and therefore their capabilities. When assessing impact, it is important to consider that different incidents present different types of challenges. In some cases, the sheer magnitude of the incident may be substantial. In other cases, there may be operational or coordination complexities or economic and social challenges.

Communities may include as many threats or hazards in their THIRA as they desire but should, at a minimum, include as many threats and hazards as needed to most challenge each of the 32 core capabilities.

Considering the Location of Threat and Hazard Consequences
Although incidents may have wider regional or national effects, communities completing the THIRA should focus strictly on the consequences within their community. In some cases, it may be useful to include threats and hazards that occur in other locations if they trigger local effects. For Example: An industrial accident at a chemical plant located in one particular community could affect people in another community who are downwind or downriver from the accident.

Step 2: Give the Threats and Hazards Context

In Step 2 of the THIRA process, communities create context descriptions and estimate the impacts of the threats and hazards identified in Step 1 (see Figure 8). Context descriptions and impacts inform THIRA Step 3 where communities determine the level of capability they would like to achieve. When creating context descriptions and estimating impacts, communities should consider community-wide sources, such as real-world incidents, SMEs, exercises, response and recovery plans, modeling, or tools. Identifying different sources provides communities with key data points that they can use to determine how a threat or hazard may affect their community. For example, SMEs can help shape context descriptions by outlining the time, place, and location of the threat or hazard in a way that shows how it challenges a community's capabilities.

Identifying sources of information is extremely important for continuity of the assessment

process. Communities may not update the THIRA for several years, so there may be changes in staff involved in the process between updates. The potential resulting loss in knowledge and experience after staff turnover can make it challenging to maintain continuity between updates. Citing sources helps to complete future THIRA updates, increasing consistency, improving data credibility, and reducing duplication of effort.

THIRA Step 2: Key Changes

- Communities now identify the impacts for their chosen threats and hazards in **Step 2**, rather than Step 3, because this flows more naturally from developing context descriptions.
- Communities now estimate the impacts of each threat and hazard using **standardized impact language** (numerical entry), rather than providing free-text impacts, establishing a common language for describing impacts at all levels of government.



Figure 8: The outputs of Step 2 of the THIRA are context descriptions and impact numbers.

Step 2.1: Context Descriptions

In Step 2.1 of the THIRA, communities add context to each threat and hazard identified in Step 1. **Context Descriptions** are the details about a threat or hazard needed to identify the impacts it will have on a community and includes critical details such as **location, magnitude, and time** of an incident.

If an element of the scenario is essential to understanding the impact of an incident and the capabilities required to manage it, that element should be included in the context description.

For example, at night, residential structures have a higher occupancy, while during the day, schools and office buildings have higher occupancies. In this example, search and rescue missions would target different locations based on the time of the day the scenario occurs. See Table 2 for more examples on how critical details can influence a context description.

Table 2: Questions to Consider When Developing Context Descriptions

Best Practices for Developing Context Descriptions	
Questions to Consider	Examples in Practice
How would the timing of an incident affect the community's ability to manage it? What time of day and what season would be most likely or have the greatest impact?	Community A is a very popular summer tourist destination. A tornado occurring at 7:00 p.m. in June might have the greatest impacts, as large numbers of tourists will be on the roads returning to their hotels.
How would the location of an incident affect the community's ability to manage it? Which locations would be most likely or have the greatest impacts (e.g., populated areas, coastal zones, industrial or residential areas)?	Community B has a high population density in the north and very low population density in the south. A pandemic might result in the greatest impacts in the north, where the disease can spread among the population more quickly.
What other conditions or circumstances make the threat or hazard of particular concern (e.g., atmospheric conditions like wind speed/direction and relative humidity, or multiple incidents occurring at the same time)?	Community C experiences a hazardous materials release. The worst impacts might occur on a day with increased wind speed directed towards the highly populated residential areas in the community.
What social or physical vulnerabilities make the threat or hazard of particular concern? (e.g., flood prone areas, populations with limited or no ability to evacuate)?	Community D is located in a mountainous region, with its population spread between the suburban areas in the foothills and the rural mountain communities. A wildfire might have greater impacts in the mountain communities, which have limited roads that the population can use to evacuate and is more difficult to access by response workers.

See the example context descriptions below for a comparison between sufficient and insufficient levels of detail. The example with sufficient detail provides suggested types of information that a community might want to consider including in their context descriptions.

Example Context Description: Insufficient Level of Detail

An active shooter incident occurs, involving multiple gunmen and many potential victims. There are dozens of fatalities and injuries, and first responders arrive to the scene quickly. There are reports that the incident may be related to terrorism.

Example Context Description: Sufficient Level of Detail

At approximately 2:00 p.m. on a Sunday afternoon, local police and State Troopers are dispatched to Thiraland City Mall responding to reports of an active shooter situation. 9-1-1 calls from patrons report between one and four shooters, with varying reports of the types of weapons, number of weapons, and number of injured people. At the time of the incident—among the busiest the mall experiences during a normal week—the 1,200,000 square foot facility was occupied by approximately 8,500 shoppers and employees. Upon arrival, authorities find crowds pouring out of the mall's exits. Some are unharmed while others are severely injured. Advanced Life Support (ALS) and Basic Life Support (BLS) units are en route, with mutual aid EMS being dispatched. Shots are still heard inside, and the injury count cannot be immediately estimated. The closest hospital facility is approximately 3 miles from Thiraland City Mall. The closest Level I Trauma Center is approximately 18 miles from Thiraland City Mall. The medical facilities have been notified of the incoming patients, but the unknown number and extent of injuries, ongoing shortages of IV bags, and understaffing raise concern about the facilities' ability to care for the incoming victims. Within an hour, the state fusion center is receiving credible intelligence of a terrorism link to the attack.

Step 2.2: Estimate Impacts

In Step 2.2, communities estimate the impacts a scenario would have on their community if the threat or hazard occurred. Communities write **impacts** in the language of common emergency management metrics, such as affected population, number of people requiring shelter, or number of people requiring screening. The THIRA process uses a uniform set of these common metrics, or **standardized impact language** (see Figure 9). The standardized impact language represents metrics estimated by every community, and in most cases, across multiple different threats and hazards. The estimated impact from this step provides the basis for creating capability target statements in Step 3 of the THIRA process (see Figure 10).

When determining the impacts of a threat or hazard, it is important to engage relevant stakeholders and SMEs that can provide varying perspectives. For example, when estimating impacts and setting capability targets for the Infrastructure Systems core capability, including input from each of the infrastructure sectors provides a holistic view of the different ways a threat or hazard may challenge the capability.⁷

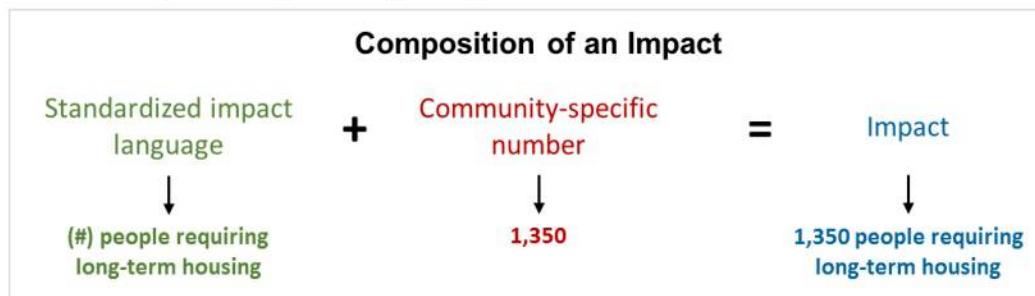


Figure 9: Impacts are developed by adding community-specific numbers to standardized impact language.

⁷ For additional information on the Critical Infrastructure sectors, please visit: <https://www.dhs.gov/critical-infrastructure-sectors>. More information is also available at: https://www.fema.gov/media-library-data/1471451918443-db91fec8ffd1c59fd79f02be5afddd/Recovery_FIOP_2nd.pdf.

Example Impacts (Partial List)	
Standardized Impact Language	Community-specific Number
Number of fatalities	
Number of structure fires	
Number of hazmat release sites	
Number of people requiring rescue	
Number of jurisdictions affected	12
Miles of road affected	890
Number of customers without power service	11,000
Number of businesses closed due to incident	190
Number of customers without water service	9,800
Number of people requiring medical care	230
Number of exposed people (hazmat related)	24

Example Standardized Target Language

Within (#) days of an incident, clear (#) miles of road affected, to enable emergency responder access.

Figure 10: Communities use standardized impacts data to create capability targets.

Communities develop capability targets in Step 3 based on their estimated impacts. As such, communities identify a community-specific number for the standardized impact language in Step 2.2 before proceeding to Step 3. Ideally, communities will estimate all standardized impacts for each threat or hazard scenario. However, at a minimum, to develop capability targets in THIRA Step 3, communities will develop an estimate for each standardized impact at least once across all included threats and hazards.

In addition to the impacts for which there is standardized language, communities may include as many other impacts in their THIRA as they deem appropriate. They may choose to include additional non-standardized impact language, if they want to describe certain effects of a disaster that are not included in the standardized impact language. Communities may find this helpful when considering their threats and hazards. If a community chooses to estimate an impact using data from only one scenario, they should use data from the scenario that would create the most challenging impact.

Identifying the Most Challenging Impact

The impact with the largest number is not necessarily always the most challenging to address. For example, it may be more challenging to provide medical care to a smaller number of individuals affected by a radiological attack (which may include additional considerations like decontamination or personal protective equipment) than a larger number of hurricane survivors.

Step 3: Establish Capability Targets

In Step 3 of the THIRA process, communities establish **capability targets**—which describe the level of capability a community plans to work toward achieving—for each of the 32 core capabilities (see Figure 11). These capability targets are not a reflection of a community’s current capability and may represent a long-term desired capability level. To develop capability targets, communities consider what is required to address the impacts of their threats and hazards. In addition to the risks posed by their threats and hazards, communities also take into account expected resources and other factors to determine the level of capability their community plans to work toward achieving.

Capability Targets
<ul style="list-style-type: none"> ▪ For the purposes of the THIRA/SPR, communities should view their capability targets as the level of capability communities plan to build to, instead of a target based on maximum capability requirements. ▪ Communities can also include a maximum requirement target in addition to their capability target if they choose.



Figure 11: The outputs of Step 3 of the THIRA are capability targets that use standardized target language.

In the THIRA, communities create capability targets for each of the 32 core capabilities. To create a capability target, communities fill in the blanks within the standardized target language to show the level of capability they want to achieve. FEMA developed standardized target language (see Figure 12) for each capability based on previous THIRA targets submitted by communities, the National Planning Frameworks,⁸ the critical tasks in the Federal Interagency Operational Plans (FIOPs),⁹ FEMA Core Capability Development Sheets,¹⁰ and community and interagency feedback on draft versions of the targets.

⁸ For additional information on the National Planning Frameworks, please visit: <https://www.fema.gov/national-planning-frameworks>.

⁹ For additional information on the FIOPs, please visit: <https://www.fema.gov/federal-interagency-operational-plans>.

¹⁰ For additional information on the Core Capability Development Sheets, please visit: <https://www.fema.gov/core-capability-development-sheets>.

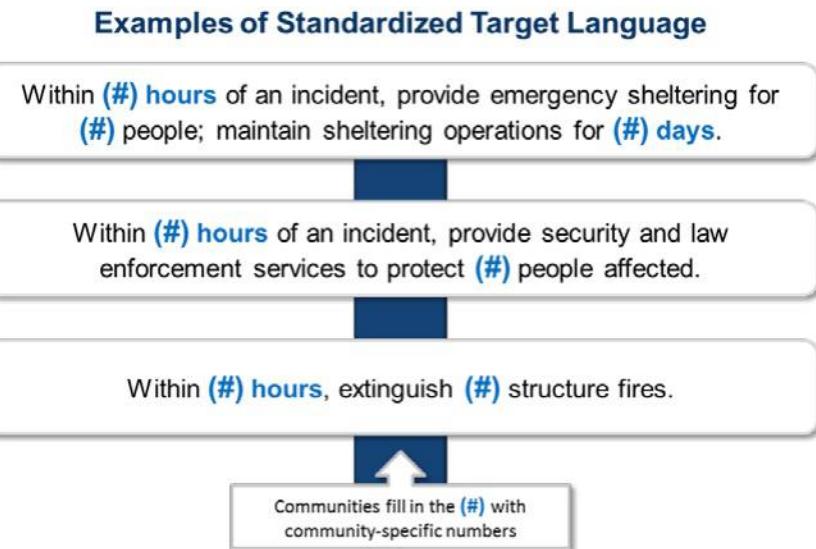


Figure 12: Standardized target statements allow communities to determine their specific needs.

The intent of standardized target language is to create measurable indicators of preparedness, not a comprehensive list of everything a community must do to achieve each of the core capabilities successfully. In addition to setting capability targets using the standardized language, communities may also develop non-standardized capability targets if they find it beneficial to capture other elements of their core capabilities.

Impacts, Objectives, and Timeframe Metrics

Each capability target describes a **critical task** that, when completed, helps communities successfully manage a threat or hazard. These critical tasks (1) are based on the activities that emergency managers plan for; and (2) define activities that must be performed for a wide variety of threats and hazards, not only the ones identified in the THIRA.

Additionally, communities estimate which threat or hazard most challenges their ability to achieve the critical task described in each capability target. This adds more utility to the THIRA during real-world incidents. For example, if a hurricane is approaching Community A, emergency managers can look at their THIRA data and see which critical tasks Community A estimated would be most challenged by a hurricane and use that data to inform decisions.

THIRA Step 3: Key Changes

- Communities insert community-specific numbers into **standardized target language** to develop **capability targets**, rather than provide free-text capability targets; this establishes a common language for discussing and establishing clear preparedness goals and better aligns the THIRA process with planning.
- Communities now indicate which threat or hazard places the greatest challenge on each critical task described in a target, providing potentially useful contextual information during response operations.
- Communities will only establish **timeframe metrics** (formerly referred to as desired outcomes) within their targets, and not also as a standalone element, reducing duplication effort.

Capability targets are specific and measurable; communities build them by combining **impacts**, which represent the size of the capability requirement, and **timeframe metrics**, which represent the timeframe in which the action must be performed (see Figure 13).



Figure 13: Capability targets are composed of impacts and timeframe metrics.

Impacts and Objectives

For each capability target, communities identify the level of capability they want to work toward achieving. To determine this desired level of capability, communities consider the impacts of their threats and hazards (as estimated in Step 2.2), estimated resource requirements, expected available resources, and other relevant factors. The impact that a community selects for their target does not need to match the impacts identified in Step 2.2. However, communities should ensure they understand the risk posed by their threats and hazards and use that knowledge to inform the impacts they include in their capability targets. For example, Community B estimates that an earthquake will result in 890 miles of road affected while a wildfire will result in 700. Community B lists “890” as its impact in Step 2.2 but this does not mean that they must set their capability target as “clear 890 miles of road affected.” Communities can set their capability target to the level they deem appropriate and should use their impact data to guide decisions on what that level of capability should be. If a community selects an impact that is different from the one identified in Step 2.2, they describe how they chose that impact and the sources used. THIRA capability targets should reflect communities’ unique planning and investment strategies.

In addition to capability targets, communities may also set an additional target called a “maximum requirement” target. The **maximum requirement** reflects the highest level of a potential capability requirement. This maximum requirement reflects the impacts of the threat or hazard that most challenges the critical task described in the capability target.

It is important to note that not all capability targets are impact-based. While most targets use post-incident quantitative impacts as explained above, some capabilities focus on preventing an occurrence of or lessening the vulnerabilities that affect the scale of a threat or hazard. Instead of a traditional standardized impact, these targets include a measurable objective that represents a goal the community has set for that core capability (see Table 3).

Table 3: Examples of the two main types of capability targets.

Examples: Types of Capability Targets	
Driven by Quantitative Impacts	Driven by Measurable Objectives
Within (#) months of an incident, reopen (#) businesses closed due to the incident.	Coordinate across state, local, and federal communities and integrate with partners, community-wide, to effectively invest (#) % of all available mitigation funding, within (#) years.
Within (#) hours of an incident, complete triage, begin definitive medical treatment, and transfer to an appropriate facility (#) people requiring medical care.	Every (#) months, (#) % of critical infrastructure facilities conduct a risk assessment and accompanying facility security level (FSL) determination for assessing and addressing changes in threats and vulnerabilities.

Timeframe Metrics

Timeframe metrics describe the timeframe or level of effort needed to successfully deliver core capabilities. When constructing targets, it is not enough to know how much of an objective you plan to accomplish, you may also need to know how quickly you must be able to activate that capability, and how long you need to be able to sustain it. The answers to these questions will be unique to the capability target in question.

When considering timeframes, communities should not be constrained by their current ability to meet timeframes or other conditions of success; rather, they should identify the timeframe that they desire to achieve. Communities should use the type of metric that is most appropriate for the given capability. For the core capability Mass Search and Rescue Operations that might be “search (#) structures **within # hours**,” while for Threats and Hazards Identification, a more appropriate timeframe might be “model (#) scenarios **every # years**.” Communities should work with SMEs and stakeholders to determine time-based metrics that are most appropriate for each capability.

Developing Capability Targets

Timeframe Metrics
Communities can use the following timeframe metrics: <ul style="list-style-type: none"> ▪ (#) minutes ▪ (#) hours ▪ (#) days ▪ (#) weeks ▪ (#) years

Capability targets define success for each core capability and describe what the community wants to achieve. In the THIRA, communities create capability targets for the core capabilities listed in the National Preparedness Goal. Communities use standardized language and community-specific metrics to construct these targets.

For example, under the Critical Transportation core capability, the standardized target language for debris removal is “Within (#) (time) of an incident, clear (#) miles of road affected, to enable access for emergency responders, including private and non-profit.” In this example, a community would choose a time-based metric (i.e., hours), and fill in the number of hours and miles of affected road to capture the level of capability they plan to work toward achieving.

In addition to setting capability targets using the standardized target language for each of the 32 core capabilities, communities may also want to develop additional targets. These additional targets can capture goals to achieve additional capabilities or critical tasks that are specific to the community’s needs.

The SPR Process

The SPR is an annual three-step self-assessment of a community's capability levels based on the capability targets identified in the THIRA. It helps answer the questions:

- What are our current capability levels and how have our capabilities changed over the last year?
- What gaps exist between the capabilities we want to achieve and the capabilities we currently have?
- What do we need to do to close the capability gaps or sustain the capabilities?
- What impact did different funding sources—including grants—have on building or sustaining the capabilities assessed by the capability targets over the last year?

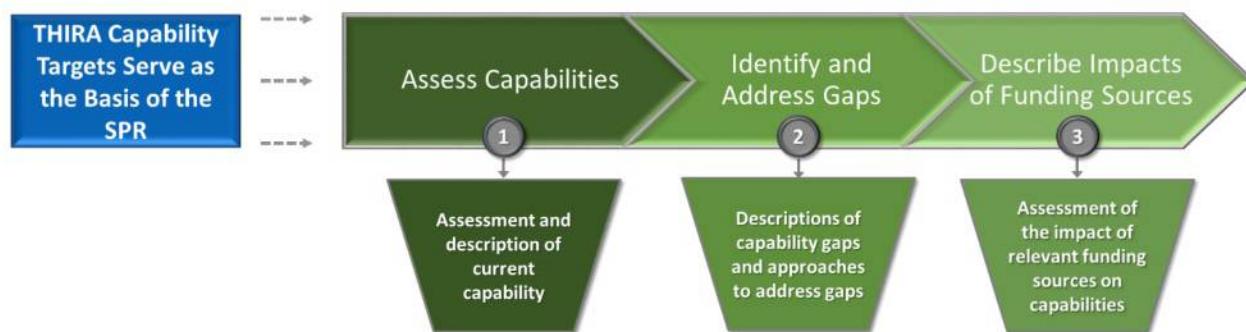


Figure 14: The SPR process consists of three steps, building off the capability targets developed in the THIRA.

The SPR supports the National Preparedness System by helping to identify current capabilities and capability gaps in preparedness at the community level. States, territories, tribes, urban areas, and the Federal Government use the SPR results to prioritize capabilities to build and sustain, plan for threats and hazards, and validate capabilities.

Developing an accurate and complete SPR requires the perspectives of a broad range of informed stakeholders and SMEs from a variety of fields. Communities are encouraged to seek input from community stakeholders and SMEs, including local governments (such as counties and townships), businesses, faith-based organizations, non-profit organizations, lifeline functions (communications, energy, transportation and water), and institutions of higher education.

This section describes a three-step process for completing an SPR (see Figure 14):

1. **Assess Capabilities.** Based on the language from the capability targets set in THIRA Step 3, identify the community's current capability and how that capability changed over the last year, including capabilities lost, sustained, and built. Then, provide additional context to explain the reported data and its sources.
2. **Identify Capability Gaps and Intended Approaches to Address Them.** Determine the causes of the capability gap between the capability target and the current capability identified in SPR Step 1. Then, describe the actions and investments needed to close the capability gap or sustain the capability.

3. **Describe the Impacts of Funding Sources.** Identify how relevant funding sources, including but not limited to grant programs and the community's own resources, helped to build or sustain the capabilities assessed by the capability targets and describe how those capabilities were used in a real-world incident(s) over the past year.

Step 1: Assess Capabilities

The purpose of Step 1 of the SPR is to assess and describe a community's current capability and how the capability has changed during the last year (see Figure 14). There are three primary elements in Step 1 of the SPR:

- **Step 1.1:** Communities quantitatively assess their current capability and how that capability has changed over the last year.
- **Step 1.2:** Communities qualitatively describe how their capabilities have changed over the last year.
- **Step 1.3:** Communities provide context on how they calculated their capability and how confident they are in that assessment.

SPR: Key Changes

- Communities now assess their current capability using the same language as their capability target, rather than assigning 1-5 ratings to core capabilities.
- Communities will also now provide free-text descriptions to elaborate on their capability estimates, and will rate their confidence in the accuracy of the information they report.

Step 1.1: Quantitatively Assess Capability

The purpose of Step 1.1 of the SPR is to identify how a community's capabilities have changed over the last year and how those changes affect the community's current capability (see Figure 15). This step requires determining five quantitative data-points:

- **Beginning Capability:** How much capability did the community have at the start of the year being assessed?
- **Capability Lost:** How much capability did the community lose over the course of the year?
- **Capability Sustained:** How much of the capability that the community started the year with still remains?
- **Capability Built:** How much capability did the community add during the year?
- **Current Capability:** How much capability does the community have now?

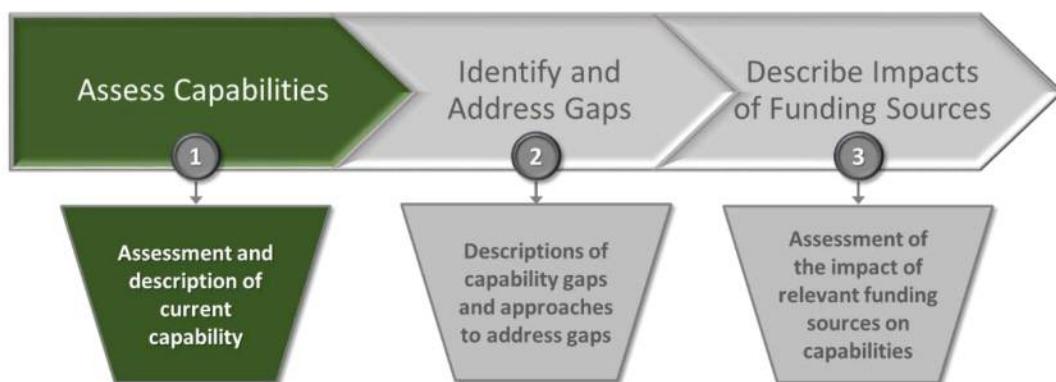


Figure 15: The output of Step 1 of the SPR is an assessment and description of current capability.

Accurately assessing capabilities, while important, is challenging, and often situation-dependent. The quantitative data entered in Step 1.1 of the SPR process, while only an estimate, should be as accurate as a community can reasonably achieve to make the assessment results useful to the community.

All capabilities are fundamentally dependent on **timeframe metrics**. Asking a community “how many people can you feed?” provides limited data unless paired with the questions “how quickly?” and “for how long?” During Step 3 of the THIRA process, communities identify a timeframe metric for each capability target. When communities assess their current capability in the SPR, they base their assessment on the same timeframe metric that they identified in Step 3 of the THIRA (see Figure 16). For example, if a capability target says a community will perform a capability in one week, the capability assessment will determine the extent to which they can actually perform that capability in one week.

Benefits of Identifying Changes in Capability

Capturing capabilities built, sustained, and lost provides a more complete preparedness picture by accounting for the work communities are doing to **build capability, offset attrition and maintain existing capabilities**.



Figure 16: Communities use the timeframe metric(s) from their capability target in the capability assessment.

The data collected in Step 1 of the SPR forms the basis of the formulas used to calculate the current capability. One approach is to start with the **beginning capability**, and subtract the amount of **capability lost** over the last year to identify the **capability sustained**. Using that capability sustained, communities can add in the **capability built** over the last year to identify the **current capability** (see Figure 17).

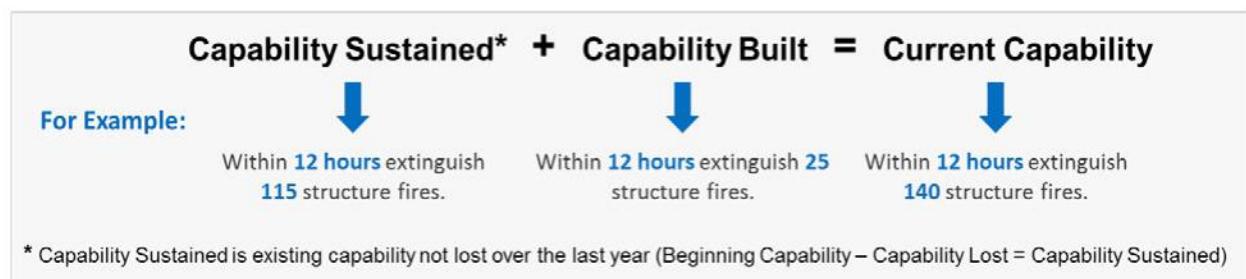


Figure 17: Communities can use a formula to calculate their current capability.

Beginning Capability

The beginning capability describes the level of capability the community had at the beginning of the year they are assessing. This number will typically be the current capability from the prior year's SPR, if the community completes the SPR annually (see Figure 18).



Figure 18: The beginning capability is frequently, though not always, the current capability from the previous year's SPR.

The beginning capability may be different from the previous year's current capability, however, if the community receives new information about its current capability after the completion of the last year's SPR and prior to beginning the current year's SPR. This could occur in several ways, including performance in a real-world incident or exercise that provides the community with a better understanding of their capability (see Figure 19). In such cases, communities will use their new estimate of their beginning capability, and describe the reasons behind the change in the SPR Step 1.3 free-text box.



Figure 19: The beginning capability can change from the previous year's SPR current capability if a community identifies more accurate information between SPRs.

Capability Lost

Unfortunately, capabilities that a community has built are sometimes lost, either through attrition (retirements, expired training, etc.) or degradation (resources are used, equipment breaks, etc.). Accurately tracking capabilities requires understanding how much capability is lost. Tracking lost capabilities also helps to demonstrate the challenge that emergency managers face in maintaining the existing capabilities needed to meet their capability targets.

In some cases, a capability may be completely lost, such as the dissolution of a public-private partnership focused on infrastructure restoration. In many cases, however, a capability may only partially degrade, such as a mitigation planning team losing personnel due to retirements. In the SPR, communities will track current capabilities that can actually be used, and therefore a capability should be considered lost if it was operational at the time of the last SPR submission but is no longer operational at the time of the current submission. If a community brings that capability back on-line in the future, they should consider it a capability built.

Capability Sustained

Capabilities that communities maintain from the previous year are considered sustained.

Including capabilities sustained in the SPR recognizes the necessary investments that communities make to maintain the capabilities they have previously built. If a capability was operational at the time of the previous SPR submission and is still operational at the time of the current submission, it is considered sustained, even if that capability was not operational during portions of the preceding year.

Capability Built

Capabilities built are new capabilities that were not operational during the prior year. This can occur for several reasons: 1) because the capability did not exist during the prior year; 2) because the capability was under development during the prior year; and 3) because the capability had partially degraded during the prior year and needed to be brought back on-line. Table 4 depicts examples of Building Capability and common reasons why each might occur.

A capability is not operational until it is complete. For example, a fire company may be working to become a Type III Search and Rescue team, and over the span of five years, they may add personnel, equipment, and training. All of that work is important, but the capability is not operational for the purposes of the SPR capability assessment until all required components are complete. Communities can still capture the development of incomplete capabilities, however, in SPR Step 1.2, in the free-text descriptions for the capability built over the past year.

Most communities will not build all capabilities every year due to funding, available time and personnel, or other reasons. FEMA does not make any judgement on what is “normal” regarding how often, and to what degree, capabilities should change. The methodology is designed to accurately capture any positive, neutral, or negative changes in capability in a way that most accurately reflects the unique experience of each community.

Reporting Changes in Capability

Reporting annual changes in capability by those lost, sustained, and built—compared to the previous 1-5 ratings—better highlights small, but significant improvements in capabilities. This allows communities to account for the work they are doing to offset attrition and maintain existing capabilities, which helps prioritize investments and inform strategic plans.

Table 4: Examples of several ways that how communities might build capability.

Examples of How Communities Can Build Capability	
Driver of Capability Building	Examples
Capability did not exist in the prior year	<ul style="list-style-type: none"> ▪ First-time purchases of resources and materials ▪ Additional personnel hires ▪ New partnerships with community stakeholders that have required capabilities
Capability was under development during the prior year	<ul style="list-style-type: none"> ▪ Training is underway, but it was incomplete at the time of the prior SPR ▪ The community ordered new equipment, but had not yet received it at the time of the prior SPR
Capability had partially degraded during the prior year and was brought back on-line	<ul style="list-style-type: none"> ▪ Damaged equipment was repaired since the prior SPR ▪ A team that required a position filled has hired a new employee for that position since the prior SPR ▪ Renewed expired training since the prior SPR

Current Capability

Current capability represents a community's current operational capability. An operational capability is one that can be used somewhere within the community. A capability does not need to be immediately available for it to be operational (see Figure 20). A capability that is currently deployed, for example, should be considered operational unless it will not be available for future use until additional requirements are met. Single use and disposable capabilities that are currently deployed should not be considered operational for the SPR.

Example of Operational vs. Non-Operational Capability

Operational

A ladder truck that requires minor, routine maintenance after an operation can still be considered operational.

However...

Non-Operational

If the ladder truck is completely inoperative without major repairs or replacement, it is **not** considered operational.

Figure 20: An example of operational vs. non-operational capability.

Individual resources are often not capabilities by themselves. Capabilities typically require some combination of planning, organization, equipment, training, and exercises. As such, communities likely have many capabilities that are partially built, but not fully operational. For example, if a community hires people to make up a shelter management team but cannot provide them the required training and has no plans addressing shelter management, their capability is not fully operational. These partial capabilities should not be included in a community's current capability because they are not operationally ready; however, the partial capabilities often represent a cost-effective way to build new capabilities and close capability gaps.

Using Internal Capabilities

The capabilities assessed in SPR Step 1.1 should be those that exist within the boundaries of the community, whether owned by sub-jurisdictions, or private and non-profit organizations. The capabilities should not be from the Federal Government or achieved through interstate mutual aid. The capability targets are goals for building internal capability, therefore communities complete the capability assessment considering only internal capabilities.

Step 1.2: Describe Current Capabilities and Capability Changes

The purpose of Step 1.2 of the SPR is to elaborate on the quantitative assessment of the capability change provided in Step 1.1 (see Figure 21). Communities identify the POETE areas—planning, organization, equipment, training, and exercises (see Table 5)—in which they lost, sustained, and built capability, and develop free-text descriptions explaining:

- What caused the reported level of capability lost over the last year?
- What actions did the community take to sustain the reported level of capability sustained over the last year?
- What actions did the community take to achieve the reported capability built over the last year?
- How might existing mutual aid agreements help bridge the gap between the capability target and current capability?

Connection Between SPR Step 1.1 and Step 1.2



Figure 21: A visual depiction of the relationship between SPR Steps 1.1 and 1.2.

While the quantitative assessment provides a valuable breakdown of how capability has changed over the past year, it does not explain how or why those changes occurred. As such, communities describe, in as much detail as possible, the specific actions, investments, resources, or external factors that led to the changes in capability. Many of the explanations may relate to

funding availability and will be reflected in SPR Step 3. For example, communities might explain that they built their capability by fully training all their shelter management teams and purchasing an additional facility that the community can use as a fully accessible shelter.

Table 5: These are the definitions of the POETE areas: planning, organization, equipment, training, and exercises.

POETE Areas	
Planning	Development of policies, plans, procedures, mutual aid agreements, strategies, and other publications; also involves the collection and analysis of intelligence and information
Organization	Individual teams, an overall organizational structure, and leadership at each level in the structure
Equipment	Equipment, supplies, and systems that comply with relevant standards
Training	Content and methods of delivery that comply with relevant training standards
Exercises	Exercises and actual incidents that provide an opportunity to demonstrate, evaluate, and improve the ability of core capabilities to perform assigned missions and tasks to standards

When referring to equipment, teams, and personnel throughout the assessment of capabilities, communities consider pre-existing national resource type definitions, such as those outlined in **National Incident Management System (NIMS)** resource typing.¹¹ Including these resources and terms allows communities to maintain consistent language over multiple assessment periods. Providing as much detail as possible makes the SPR data more useful for planning, prioritizing investments, and preparing for real-world incidents.

While the SPR does not quantitatively assess mutual aid, it is an important consideration for planners. Mutual aid is an essential component of a successful response and recovery, as it offsets capability gaps and is often the most efficient way to deliver certain capabilities, resources, and services. As such, communities use a free-text box to describe how mutual aid agreements may affect their current capability and should provide any additional context that they deem necessary or useful. For example, they may provide additional information on the nature and extent of their mutual aid agreements with other communities, such as what they include, how long the agreement has been in place, or whether the mutual aid agreement has been activated during a real-world incident. This information supplements the internal capability assessment and planners can use it to identify sources of additional capability, or potential overlap in mutual aid agreements among communities in the same region.

In addition to the free-text descriptions, communities identify the POETE area changes that resulted in changes in capability over the past year. For capability lost, communities select the POETE areas in which that capability was lost over the past year. For capability sustained and

¹¹ For additional information on NIMS and resource typing please visit: <https://www.fema.gov/national-incident-management-system>.

capability built, communities note in which POETE areas they made investments that resulted in either capability sustainment or growth.

Step 1.3: Provide Context on Current Capability Estimations

The purpose of Step 1.3 of the SPR is to provide additional context for the responses provided in Step 1.1 and Step 1.2. Communities do this in three ways:

- Describe their level of confidence in the accuracy of their quantitative assessment
- Identify the sources used to determine their responses
- Provide any other useful context to better understand their quantitative responses

Describe Confidence in the Accuracy of the Quantitative Assessment

Communities may find that they can measure some capabilities more easily than others. Moreover, even for those capabilities, the necessary data may be difficult to access or otherwise be unavailable. Conversely, some communities may be extremely proficient in understanding and measuring their capability in certain areas due to vast experience across many disasters. To identify their level of confidence in the accuracy of their capability assessment, Step 1.3 asks communities to rate their confidence on a five-point Likert scale:

- 1 – Lower confidence
- 2
- 3
- 4
- 5 – Higher confidence

Benefits of Assessing Confidence in Capability Assessments

Rating the level of confidence in each capability assessment allows the Federal Government to identify areas of relative low or high confidence throughout the Nation, which it can use to target technical assistance efforts.

The data confidence ratings provide additional context on the reliability of the reported capability assessments, which can be useful in both strategic and operational contexts. Federal planners will have a stronger sense of which information is most credible and can better understand how the data should be interpreted as they follow-up with communities. In addition, it allows communities to be transparent about potential variance and, therefore, more accurate in their reporting. See Table 6 for examples of why a community might report a given confidence level on the scale.

Table 6: Examples of how communities can approach their selection of a confidence level for their capability assessment.

Confidence Level	Example Rationale for Chosen Confidence Level
Confidence Level: 1	<ul style="list-style-type: none"> ▪ Have not performed a large-scale sheltering mission in over 13 years, and have no AARs to review ▪ No past exercises focusing on their sheltering capability; they have minimal subject-matter expertise ▪ Capability estimate is based on that of similar surrounding states, but they have very little confidence that it is accurate
Confidence Level: 2	<ul style="list-style-type: none"> ▪ Have not performed a large-scale sheltering mission in over 10 years, and only has a high-level AAR to review ▪ No past statewide exercise of their sheltering capability; only two counties have exercised their capability ▪ Data on potential locations for shelters is five years old ▪ They used the minimal available data to estimate a statewide capability to shelter 7,000 people, but they think it could be as high as 11,000 people or as low as 4,000 people
Confidence Level: 3	<ul style="list-style-type: none"> ▪ They performed a large-scale sheltering mission seven years ago, during which they had a peak sheltering capacity of 9,500 people ▪ Several counties have conducted sheltering exercises in recent years showing an increased capability ▪ Recently hired several SMEs have experience leading shelter management teams in other states ▪ The list of potential locations for shelters was recently updated but they are not confident about some options in rural communities ▪ They estimate that they can shelter a maximum of 11,800 people, but they believe it could be as high as 14,000 or as low as 10,500
Confidence Level: 4	<ul style="list-style-type: none"> ▪ Reviewed their AAR from an incident four years ago, where they had a peak sheltering capacity of 13,000 people ▪ Starting with 13,000 people as a baseline, SMEs met to discuss the changes since the last incident ▪ The list of available locations for sheltering is less than two years old and includes a wide variety of options ▪ Based on documented improvements and a recent regional sheltering tabletop exercise, they estimate that they can shelter 15,000 people and are mostly confident that their estimate is accurate within 750 people
Confidence Level: 5	<ul style="list-style-type: none"> ▪ They performed a large-scale sheltering mission two years ago where they had a peak sheltering capacity of 14,200 people ▪ The list of available locations for sheltering is less than a year old and includes recent additions of private-sector facilities with agreements to provide sheltering ▪ They participated in a regional sheltering and mass care exercise last year (including private-sector partners and several large counties) ▪ Based on their capability in the recent incident, the validation provided by the regional exercise, and the formal agreements with the private-sector, they are confident that they can now shelter a maximum of 15,500 people

Identify the Sources of Information Used to Determine the Quantitative Responses

Communities identify the sources of information considered in assessing capabilities, including real-world incidents, SMEs, exercises, plans, policies, modeling or tools, and other sources of

information. Identifying sources of information is extremely important for continuity of assessments within a community. Citing sources helps to map out where the baseline for the assessment originated for future SPRs, increasing consistency and reducing duplication of effort.

Provide Context to Better Understand the Quantitative Current Capability Assessment

While the quantitative assessment provides valuable estimates of a community's capability, it cannot capture all the information needed to contextualize the quantitative assessment or expand on it. In Step 1.3, communities provide that extra context. Communities are encouraged to consider the following questions:

- How would your capability change if the timeframe metrics were increased or decreased?
- Is there a range of capability numbers that accurately capture the upper and lower bounds of your capability? If so, what made you select the number that you did for your estimated current capability?
- Are there specific known factors in your community that would significantly alter your estimated current capability?
- What is the rationale behind your selected level of confidence in your data?

For example, a community might report that it can shelter 13,000 people within 48 hours

and maintain that capability for 14 days. Due to internal conditions, however, it is possible that community would be able to shelter far more people if the duration of the sheltering was only seven days. Including in the free-text description that the community can shelter 20,000 people for seven days is important information that response planners can use to improve the accuracy of their planning efforts. This information would otherwise not have been known through only the quantitative assessment results.

Moreover, understanding why a community might have a relatively low confidence in their capability assessment is also valuable information. The data necessary to validate the capability may simply not be available or may not be possible to collect. This additional context enables communities to more accurately interpret the reported data confidence ratings and as appropriate, to target outreach, prioritize technical assistance efforts, and develop supporting operational plans.

Communities may also be interested in assessing their level of capability for timeframe metrics that they did not include in the capability target. This can also be useful for planning purposes, to identify a community's capability for various situations with differing requirements. For example, a community may wish to know the number of customers they can return power to within 24 hours, in addition to the capability target timeframe metric of three days.

Step 2: Identify and Address Capability Gaps

In Step 2 of the SPR, communities describe the capability gap between the capability target they set in THIRA Step 3 and the current capability determined in Step 1 of the SPR, and describe how they plan to address those capability gaps (see Figure 22). There are two primary elements in Step 2:

- **Step 2.1:** Communities identify and provide free-text descriptions of the capability gaps in relevant POETE areas.
- **Step 2.2:** Communities describe how they plan to address their capability gaps and sustainment needs in relevant POETE areas.

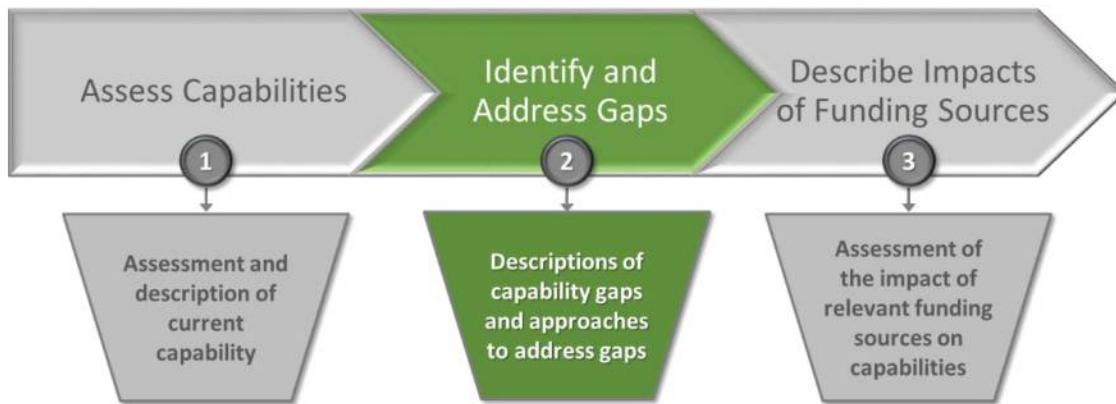


Figure 22: The output of Step 2 of the SPR is a description of capability gaps and approaches to address capability gaps.

Step 2.1: Identify and Describe Capability Gaps

The purpose of Step 2.1 of the SPR is to identify and contextualize the capability gap between a community's capability target and their estimated current capability (see Figure 23). The remaining questions in this step allow communities to add context to that capability gap and explain why the capability gap exists. By understanding capability gaps, communities can begin to prioritize their building and sustainment activities.

SPR Key Changes

- The new SPR methodology collects more information on capability gaps than the previous methodology, which only required communities to select standard functional area gaps.
- Communities now report a numerical capability gap (based on their capability target), identify specific POETE areas that contain gaps, provide free-text descriptions for each POETE area, and describe their intended approaches to address those capability gaps.

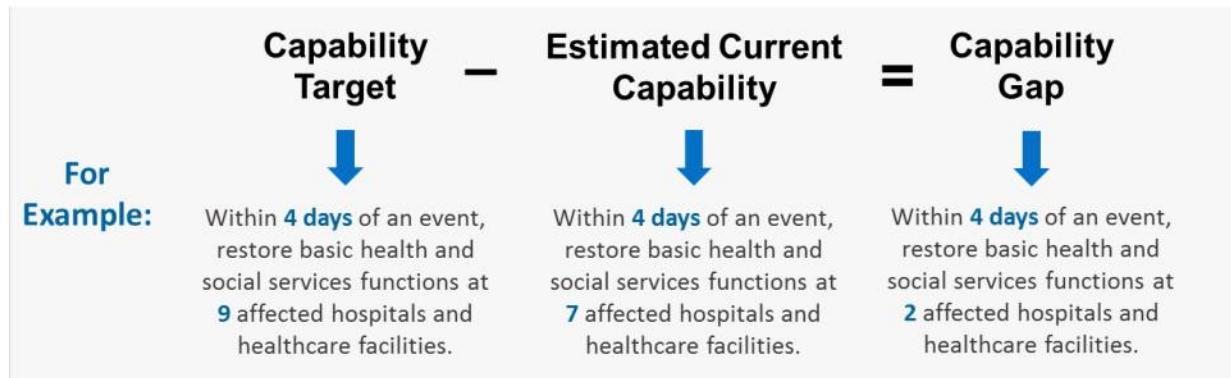


Figure 23: The calculation for identifying an example capability gap.

Priority for Achieving Capability Target

A community has a capability gap if the current capability is less than the capability target. After identifying that capability gap, communities assign a priority rating (High Priority, Medium Priority, and Low Priority) to identify how important it is to achieve that capability target. Communities should attempt to assign priority ratings relative to their other targets and avoid providing the same priority rating for all or most capability targets. This will result in more useful data, as it will clearly demonstrate which capability gaps are more important to address.

Assigning a Priority Rating



Figure 24: Explanation for how to assign a priority rating for capabilities with and without a capability gap.

In rare cases, a community might not have a capability gap, or may even end up with greater capability than the capability target they set in the THIRA. If their current capability matches or exceeds their capability target, the community still reports a priority rating (see Figure 24) for the capability. This will reflect the level of importance the community places on sustaining their capability, relative to their other targets. For example, a community might have no capability gap in their Mass Search and Rescue Operations capability target, but due to frequent severe flooding, they prioritize the sustainment of that capability more than they prioritize building capacity in other core capabilities that have capability gaps.

POETE Capability Gap Selection and Description

Once communities have prioritized their ability to achieve their capability targets, they provide more context as to the shortfall(s) causing their capability gaps. For each capability target's capability gap, communities identify the POETE areas in which they have a shortfall. The POETE model divides capabilities into meaningful, broad categories of activity and can help communities think through their specific capability gaps. Communities that report a capability gap—meaning their capability target is greater than current capability—report a shortfall in at least one of the POETE areas for the core capability.

In the POETE areas with identified capability gaps, communities then provide a free-text description of how shortfalls or other limitations in that POETE area contributed to their capability gap (see Figure 25). In some cases, the shortfall might be a long-term issue, such as the need to develop and implement training for 100 percent of the required workforce, while other shortfalls may be more temporary occurrences, such as a facility undergoing renovations. This process enables communities to provide actionable data about their capability gaps, and can help communities plan to address key capability gaps.

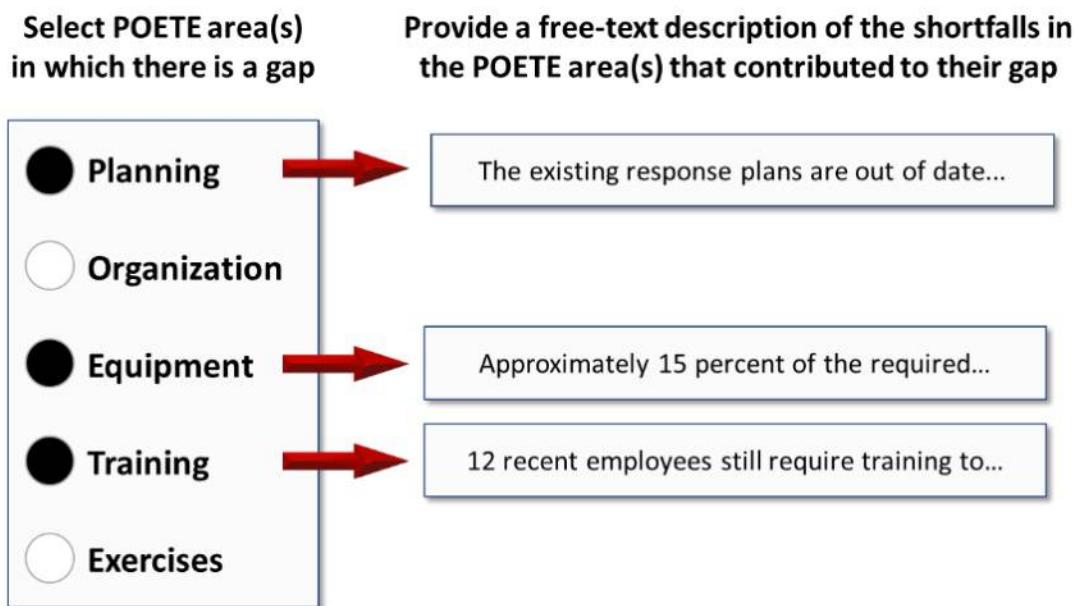


Figure 25: Communities select POETE capability gaps and provide free-text descriptions.

Recognizing that community-specific factors will affect the level of detail available to report, the amount of information and detail that communities provide in free-text descriptions will vary. It is highly recommended, however, that communities provide all the key information that they believe is necessary to fully understand the shortfalls leading to the capability gap. See Table 7 below for an example of how to identify capability gaps for an example Mass Care Services capability target.

Table 7: An example capability gap identification for an example Mass Care Services capability target.

Example Capability Gap Identification	
POETE Area	Free-Text Capability Gap Description
Capability Target	Within 48 hours of an incident, provide emergency sheltering for 20,000 residents, including 4,000 with access and functional needs. Maintain sheltering operations for 14 days .
Current Capability	Within 48 hours of an incident, provide emergency sheltering for 17,000 residents including 3,000 with access and functional needs. Maintain sheltering operations for 14 days .
Capability Gap	Within 48 hours of an incident, provide emergency sheltering for 3,000 residents including 1,000 with access and functional needs. Maintain sheltering operations for 14 days .
Planning	Our community has not identified buildings that could be used together to house 20,000 residents. Our housing annex has not been updated in many years and does not include all communities within 1 hour of the affected area. Mutual aid agreements that previously existed with private sector facility owners have lapsed.
Organization	Our community does not have sufficient personnel to maintain six Type I Shelter Management Teams. In addition, the recent restructuring of our Emergency Management and Homeland Security divisions into one agency is very new and has not yet operated during a major disaster.
Equipment	While many rural faith-based institutions are willing to open their doors to be shelters, they lack sufficient bathing facilities. Most are also inaccessible to shelter seekers with access and functional needs.
Training	18 new shelter management team members will need role appropriate training (Type I and II Shelter Managers, Type I Shelter Registration Team Leaders, and Type I Shelter Dormitory Team Leaders). Our community currently lacks the funding and resources to provide this training.
Exercises	Our community has never conducted an exercise that would provide functional experience operating a shelter; the only exercise involving sheltering was a brief tabletop exercise in 2015 which only covered sheltering roles and responsibilities. Further, the private sector and faith-based institutions that are committed to supporting sheltering operations in our community have never been involved in any exercises involving sheltering.

In most cases, the standardized target language will not address the full scope of each core capability. Communities therefore also identify any POETE are gaps related to each capability that the standardized target language does not address. For these gaps, communities do not

include free-text descriptions elaborating on the cause of the capability gaps. Identifying capability gaps across all aspects of the core capabilities can help communities to develop strategic plans and prioritize investments for building and sustaining capabilities.

Step 2.2: Describe Approaches to Address Gaps and Sustainment Needs

Once communities have identified their capability gaps, they identify their intended approaches for addressing the capability gaps or sustainment needs. This information will help communities use SPR results to drive their strategic planning and investment strategies. Communities identify approaches for sustainment or filling the capability gap(s) in the relevant POETE area and then add specific information, including:

- Over what timeframe does this intended approach cover?
- What activities or investments will need to occur to address the existing capability gap or support sustainment?
- What partners may support the efforts?

Due to a variety of factors, including funding, available resources, and personnel, communities cannot always plan to address all capability gaps in any given year. Therefore, communities may not always have an intended approach for addressing every single POETE area gap they identified and described in Step 2.1. Additionally, communities can report plans to address sustainment needs, even if they did not select the POETE area in Step 2.1. See Table 8 below for example plans to address capability gaps and sustain the existing capability for the example Mass Care Services capability target shown above in Table 7.

Table 8: Example approaches to addressing capability gaps and sustainment needs for an example Mass Care Services capability target.

Example Approaches for Addressing Capability Gaps and Sustainment Needs	
POETE Area	Free-Text Approaches to Address Capability Gaps and Sustainment Needs
Planning	Engage stakeholders and internal partners to conduct a full review and update of the housing annex to our State Response Plan. Also, assess the current list of facilities available to use as shelters to identify requirements for additional facilities.
Organization	Identify 18 employees willing to serve on a shelter management team as part of our surge capacity force.
Equipment	Our community does not currently intend to address the equipment gap in the next year, due to competing priorities.
Training	Provide appropriate training for four Type I and three Type II Shelter Managers, six Type I Shelter Registration Team Leaders, and five Type I Shelter Dormitory Team Leaders.
Exercises	Include a housing component in our full-scale hurricane response exercise in March.

Once a community has described their intended approaches to building or sustaining their capability, they indicate the general timeframe during which they plan to do so. For example, some communities might want to plan for a single grant cycle, while others might have more general, long-term plans to address their capability gaps and sustainment needs. It is important to note that describing an approach in this section does **not** create an obligation to complete the activity within the identified timeframe. Communities should view it as a resource they can use internally to drive their strategic planning and investment strategies.

Step 3: Describe Impacts of Funding Sources

The purpose of Step 3 of the SPR is to indicate the extent to which relevant funding sources—including but not limited to a community’s own resources and Federal and state grants—played a role in building and sustaining the capabilities assessed by the capability targets (see Figure 26). There are two primary elements in Step 3 of the SPR:

- **Step 3.1:** Assess the degree to which specific funding sources had a role in building and sustaining the capability assessed by the target.
- **Step 3.2:** Qualitatively assess how your community used capabilities built and sustained with funding in a real-world incident over the past year.

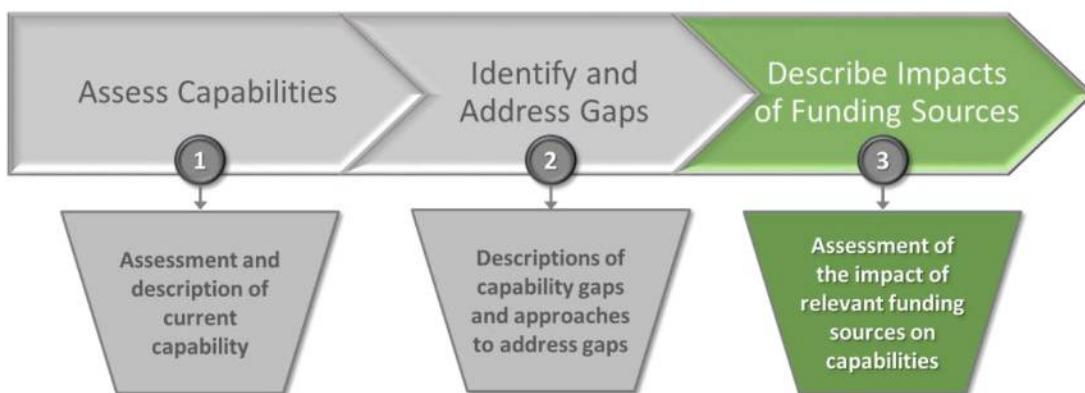


Figure 26: The output of Step 3 of the SPR is an assessment and description of the impact of funding sources on capabilities.

This information can help communities better understand the impact that their funding has on building and sustaining capabilities and to relay that information to key stakeholders and decision-makers.

Step 3.1: Assess the Role of Funding for Building and Sustaining Capabilities

The purpose of Step 3.1 is to estimate the degree to which various funding sources, including but not limited to communities’ own resources and Federal and state grants, impacted the building and sustainment of the capabilities assessed by the capability targets.

When answering these questions, communities consider the relevant POETE area activities or resources (including assets with national resource-typed definitions as outlined in NIMS) that they supported with each funding source. Communities should try to estimate, with reasonable accuracy, which efforts and investments relevant to each capability target they funded with each

source. Then, among those efforts and investments, communities identify whether they were used primarily to sustain an existing capability, to build new capability, or both.

A coordinated approach to track investments using different funding sources can help drive investments to be increasingly effective. This enhances communities' ability to understand the return on investment of their funding sources.

Identifying the sources of funding for specific, quantitative changes in capability can guide communities' strategic planning considerations and help them make resource allocation decisions to build and sustain capabilities as effectively as possible.

Step 3.2: Assess the Role of Funding in Real-World Incidents

Finally, communities describe the impact that capabilities built or sustained with different funding sources had in real-world incidents over the past year. This is intended to capture how they used previous years' investments since the last assessment. While this question is concerned with capabilities used over the past year, the funding can be from any year in the past.

Communities attempt to answer the following questions:

- Was the capability used to address a real-world incident? If so, how?
- What would have been the impact on the community's ability to deliver the capability had it not received funding?
- What impact would that change in capability have had on survivors, infrastructure, or the response and recovery mission overall?

Answering these questions enables communities to report positive examples of how they used specific funding sources to increase or sustain preparedness capabilities and make a difference during response to real-world incidents. Communities will also be able to describe how sustainment of their capabilities would be negatively impacted by reduced funding—whether it is the community's own capital, state or Federal grants, or another source—despite reporting no capability built by that funding. This can help communities think strategically about how to spend their money and consider whether they are doing so efficiently.

Revealing the Entire Picture of Funding Contribution

Identifying the degree to which different funding sources supported sustainment activities enables communities to identify the impact of their funding, even in those instances where there is no change in capability.

This reveals the entire picture by reflecting the reality that emergency managers are constantly working and making investments to maintain what they have achieved, and are not just building new capabilities.

Conclusion

Understanding the risks faced by communities, and the Nation as a whole, is essential to sustaining and building national preparedness. This document provides a common and consistent approach for communities to support the first two components of the National Preparedness System: 1) *Identifying and Assessing Risk*; and 2) *Estimating Capability Requirements*, as implemented through the THIRA/SPR. It provides a foundation for all levels of government to complete the National Preparedness System by generating actionable data to drive investment strategies through identified planning efforts, organizational and equipment investments, and training and exercise initiatives.

The THIRA/SPR provides a national risk and capability picture from the perspective of the states, territories, urban areas, and tribes. This contributes to achieving the National Preparedness Goal of “a secure and resilient Nation with the capabilities required to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.” Achieving the Goal requires participation at all levels of the community. Through the THIRA/SPR process, communities are better able to educate individuals, families, businesses, organizations, community leaders, and senior officials about the risks they face and their roles in and contributions to prevention, protection, mitigation, response and recovery efforts.

Glossary of Terms

Beginning Capability: The level of capability the community had at the beginning of the year they are assessing.

Capability Assessment: The process of identifying how a community's capabilities have changed over the last year and how those changes affect the community's current capability.

Capability Built: New capabilities that were not operational during the prior year.

Capability Gap: The difference between the capability target a community sets in THIRA Step 3 and the current capability they determine in SPR Step 1.

Capability Lost: Capabilities that a community had as of the previous year's SPR that they no longer have during as of the current year's SPR, due to attrition or degradation.

Capability Sustained: Capabilities that communities have maintained from the previous year.

Capability Target: The level of capability that a community plans to achieve over time in order to manage the threats and hazards it faces.

Context Description: The details about a threat or hazard scenario needed to identify the impacts it will have on a community that includes critical details such as the location, magnitude, and time of an incident.

Core Capabilities: The distinct critical elements necessary to achieve the National Preparedness Goal.

Critical Task: Defined actions that are executed by organizations to deliver the core capabilities.

Cross-Cutting Core Capabilities: The three core capabilities—Planning, Public Information and Warning, and Operational Coordination—that span all five mission areas. They serve to unify the mission areas and, in many ways, are necessary for the success of the remaining core capabilities.

Current Capability: Represents a community's current operational capability that can be used somewhere within the community.

Functional Areas: The broad categories of activity included under a core capability.

Human-Caused Hazard: A potential incident resulting from the intentional actions of an adversary.

Impact: The community-specific effects a threat or hazard scenario would have on a community if the threat or hazard occurred, written in the language of common emergency management metrics.

Internal Capabilities: Capabilities that exist within the boundaries of a community, whether owned by sub-jurisdictions, or private and non-profit organizations. The capabilities should not be from the Federal Government or achieved through interstate mutual aid.

Likelihood: The chance of something happening, whether defined, measured, or estimated objectively or subjectively, or in terms of general descriptors (e.g., rare, unlikely, likely, almost certain), frequencies, or probabilities.

Maximum Requirement: The highest level of potential capability requirement reflecting the impacts of the threat or hazard that most challenges the critical task described in the capability target.

Mission Areas: Categories used to organize the core capabilities and national preparedness activities: Prevention, Protection, Mitigation, Response, and Recovery.

Mitigation Core Capabilities: Reduce the loss of life and property by lessening the impact of future disasters.

Mutual Aid: Agreements that establish the terms under which one party provides resources—personnel, teams, facilities, equipment, and supplies—to another party.

National Preparedness Goal: Defines what it means for the whole community to be prepared for all types of disasters and emergencies. The goal itself is: ‘A secure and resilient Nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk.’

National Preparedness System: Outlines an organized process for everyone in the whole community to move forward with their preparedness activities and achieve the National Preparedness Goal.

Natural Hazard: A potential incident resulting from acts of nature.

POETE Areas: A model that divides capabilities into meaningful, broad categories of activity—planning, organization, equipment, training, and exercises.

Prevention Core Capabilities: Prevent, avoid, or stop an imminent, threatened, or actual act of terrorism.

Protection Core Capabilities: Protect our citizens, residents, visitors, and assets against the greatest threats and hazards in a manner that allows our interests, aspirations, and way of life to thrive.

Recovery Core Capabilities: Recover through a focus on the timely restoration, strengthening, and revitalization of infrastructure, housing, and a sustainable economy, as well as the health, social, cultural, historic, and environmental fabric of communities affected by an incident.

Response Core Capabilities: Respond quickly to save lives; protect property and the environment; and meet basic human needs in the aftermath of an incident.

Risk: The potential for an unwanted outcome resulting from an incident or occurrence, as determined by its likelihood and the associated consequences.

Standardized Target Language: Common, uniform emergency management metrics with blanks for community-specific numbers that are required for all communities to complete; for example: (#) people requiring sheltering.

Technological Hazard: A potential incident resulting from accidents or failures of systems or structures.

Timeframe Metrics: The amount of time or level of effort needed to successfully deliver core capabilities and/or sustain the delivery of the core capabilities.

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2019 National Threat and Hazard Identification and Risk Assessment (THIRA)

Overview and Methodology

07/25/2019



FEMA

The *2019 National Threat and Hazard Identification and Risk Assessment (THIRA): Overview and Methodology* provides an in-depth description of the Federal Emergency Management Agency's (FEMA) approach to completing a national-level risk assessment. The intended audience is emergency management officials engaged in risk assessment at the community and Federal level, as well as other practitioners in the private sector or academia.

Executive Summary

FEMA's Vision for Assessing National Risk and Capability

Emergency management is a shared responsibility of the whole community. Every year, Federal agencies assist and coordinate with state, local, tribal, and territorial (SLTT)¹ governments and other stakeholders to perform life-saving and life-sustaining activities before, during, and after disasters. While the Nation faces risks from many threats and hazards each year, planning separately for all of them would require an enormous amount of time and resources. Rather than plan for every possible threat and hazard, the Nation has embraced **capabilities-based planning**—building and sustaining core capabilities that can help prevent, protect against, mitigate, respond to, and recover from multiple threats and hazards.² Capabilities-based planning is the foundation of the National Preparedness System.

The Disaster Recovery Reform Act of 2018 (DRRA)—enacted after the devastation of the 2017 hurricane season and 2018 California wildfires—emphasizes the importance of capabilities-based planning. Specifically, DRRA requires FEMA to “complete a national preparedness assessment of capability gaps at each level based on tiered, capability-specific performance objectives to enable prioritization of grant funding.”

To meet this requirement, FEMA is developing a suite of assessment products, known collectively as the National Risk and Capability Assessment (NRCA), that will measure risk and capability across the Nation in a standardized and coordinated process. The assessments under the NRCA will synchronize and strengthen preparedness efforts across the emergency management community (see **Figure 1**). By analyzing data on community, Federal, non-governmental, and private-

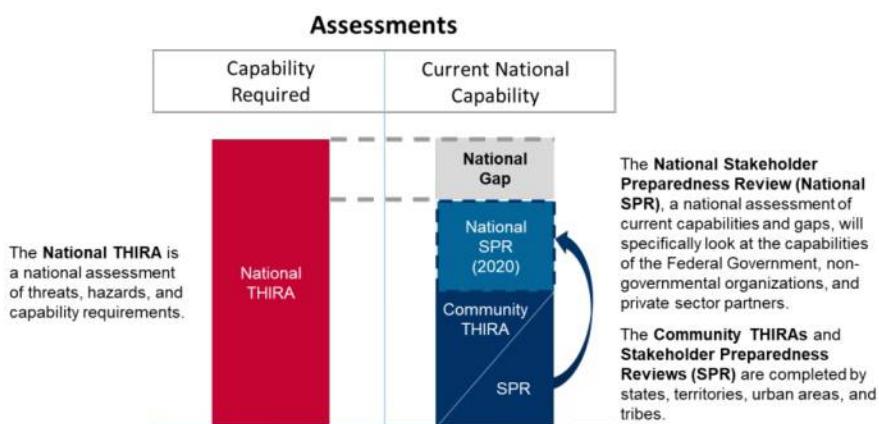


Figure 1: The assessments identify the national-level capability needs and gaps to meet catastrophic incidents.

¹ The term “state, local, tribal, and territorial governments” is used interchangeably with the term “communities” throughout this document.

² The core capabilities are listed and defined at <https://www.fema.gov/core-capabilities>.

sector capabilities, FEMA will be able to present a complete analysis of national preparedness. Ultimately, the assessments will help answer the question: “How prepared is the Nation?”

The 2019 National THIRA

The National Threat and Hazard Identification and Risk Assessment (National THIRA) is a foundational component of this group of assessments. Since 2012, communities have used a standard THIRA methodology to identify and assess the threats and hazards they face. In 2018, this methodology was updated to include new standardized language. The National THIRA applies the updated THIRA methodology and the standardized language at the national level to answer the following key questions:

- Which realistic threats and hazards will be the most challenging for the Nation to manage?
- If they occurred, what impacts would those threats and hazards have on the Nation?
- Based on those impacts, what capabilities will the Nation need to manage the incident?

The National THIRA describes the level of capability that the Nation—including government, private, and non-profit sectors—would need to fully manage the Nation’s threats and hazards of greatest concern while concurrently engaging in response and recovery efforts for ongoing disasters.

To complete the *2019 National THIRA*, FEMA took the following steps:

- Conducted a literature review of existing government response plans and academic studies to develop a preliminary list of **59** threats and hazards.
- Consulted with subject-matter experts (SMEs) and reviewed a preliminary list of threats and hazards to select **nine scenarios**—consisting of both natural and human-caused incidents—that would most challenge the Nation’s capabilities.
- Developed a set of **29 standardized impacts**, based on in-depth research and stakeholder feedback. These standardized impacts represent key metrics that emergency managers use to understand the magnitude of a disaster, such as fatalities or number of people requiring shelter.
- Finalized **22 specific, quantifiable capability targets**, representing the most critical and measurable elements of selected core capabilities.

The *2019 National THIRA* represents an initial effort to identify the greatest threats and hazards to the Nation, the potential impacts of those threats and hazards to life and property, and the capabilities needed to address those impacts. As FEMA refines its approach to conducting national risk and capability assessments, the National THIRA will continue to evolve and improve. Subsequent iterations of the National THIRA will incorporate the best available information and insights provided by Federal and SLTT stakeholders. Another assessment product, the National Stakeholder Preparedness Review (National SPR), will measure the nation’s preparedness capabilities, analyze gaps between current capability and capability targets, and suggest approaches to address the gaps. In the future, the suite of assessment products—including the National THIRA, National SPR, and community THIRAs/SPRs—will offer a comprehensive, unified assessment of national preparedness.

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Organization of the 2019 National THIRA

This document contains two main sections and five appendices. The first section—**National THIRA Overview**—provides a conceptual overview of the National THIRA and how it fits into FEMA’s vision for a broader national assessment. Informed by this conceptual overview, the second section—**2019 National THIRA: Methodology and Outputs**—describes the full approach FEMA took to complete the *2019 National THIRA*. This section briefly outlines the steps FEMA has taken to identify the Nation’s realistic worst-case scenarios and their impacts, and how FEMA established capability targets that provide specific capabilities required to manage those impacts. This section also includes a brief description of the outcomes of the *2019 National THIRA*.

The five appendices offer supplemental information that supports the *2019 National THIRA*, elaborating on specific data and processes. **Appendix A: Limitations and Future Research** describes caveats and limits to the use of the *2019 National THIRA*, including data constraints encountered throughout development. This appendix also discusses how future National THIRAs will address those challenges. **Appendix B: Scenario Context Descriptions** includes the context descriptions that FEMA developed for each of the final scenarios,³ including the Plausible Concurrent Operations. **Appendix C: Standardized Impacts** defines the 29 standardized impacts, which are the metrics that FEMA used to estimate the impacts resulting from the threat and hazard scenarios. **Appendix D: Scenario Chronology** offers visualizations to illustrate the timelines of the incidents included in the Plausible Concurrent Operations, as well as the scenarios used for the *2019 National THIRA*.⁴ **Appendix E: Standardized Targets** presents the 22 standardized targets for the Cross-Cutting, Response, and Recovery core capabilities without impacts or timeframe metrics.

³ FEMA removed context descriptions and data for two scenarios that FEMA deemed too sensitive for inclusion in the public version of this document.

⁴ FEMA removed two scenarios from the chronology that FEMA deemed too sensitive for inclusion in the public version of this document.

National THIRA Overview

The National THIRA is an important component of the suite of assessment products that will measure risk and capability across the Nation in a standardized and coordinated process. Results from the National THIRA, when combined with data from the other assessments, will help answer fundamental preparedness questions: 1) How prepared is the Nation? 2) What preparedness gaps does the Nation face? and 3) What strategies does the Nation need to develop to address those gaps?

Components of the Assessments

Risks and Associated Impacts: All levels of government use the THIRA process to identify and assess threats and hazards of concern. The National THIRA assesses the impacts of the most challenging threats and hazards facing the Nation.

Capability Targets: For communities, the THIRA process uses capability targets to translate the likely impacts of events into goals for community capability. At the national level, the National THIRA establishes capability targets for the Nation to collectively address.

Current Capabilities: For communities, the SPR enables the measurement of current capabilities. At the national level, the National SPR will assess the Nation's ability to provide support beyond current community capabilities.

Gaps: The SPR process helps all levels of government to identify the current gaps that are preventing them from reaching their capability targets and develop strategies to close those gaps.

The National THIRA contributes to the national assessment by:

- Assessing the impacts of the most challenging threats and hazards facing the Nation;
- Setting national capability targets that identify how much capability the Nation will need; and
- Supporting measurement of national capabilities when combined with the National SPR.

Each of these elements is discussed in more detail below.

Assessing the impacts of the most challenging threats and hazards

In the *2019 National THIRA*, FEMA identified threats and hazards that can most challenge the Nation's Cross-Cutting, Response, and Recovery core capabilities. For these threats and hazards, FEMA developed context descriptions by consulting historical data and models to identify potential impacts. These impacts include cascading effects from an incident, as well as conditions that may make threats and hazards especially challenging for the Nation's capabilities, such as the location, magnitude, and time of an incident. Based on these context descriptions, FEMA then estimated the national-level impacts of the identified threats and hazards using language common to emergency managers. This process will help compare impacts across all communities, allowing the Nation to better prepare for threats and hazards.

Setting national capability targets

The 2019 National THIRA builds on previous assessments of catastrophic national risks, taking the analysis a step further by identifying the capabilities necessary to address those risks. Through extensive collaboration with other Federal partners, FEMA developed standardized target language for the Cross-Cutting, Response, and Recovery core capabilities. These standardized targets also align with FEMA's Community Lifelines construct, which prioritizes the services that enable continuous operation of business and government functions critical to human health and safety or economic security. With the completion of the National THIRA, all levels of government, including the Federal Government, will use this same standardized target language to complete the THIRA.

Each standardized target describes a **critical task**, which collectively reflect the types of activities emergency managers routinely plan for. These critical tasks broadly apply to a wide range of threats and hazards—not only those identified in the THIRA. The Nation's ability to perform critical tasks helps indicate the Nation's preparedness. Each standardized target also incorporates **impacts** and **timeframe metrics**. Setting a goal to manage the impact of the threat or hazard in a desired amount of time creates a **capability target** (see **Figure 2**).

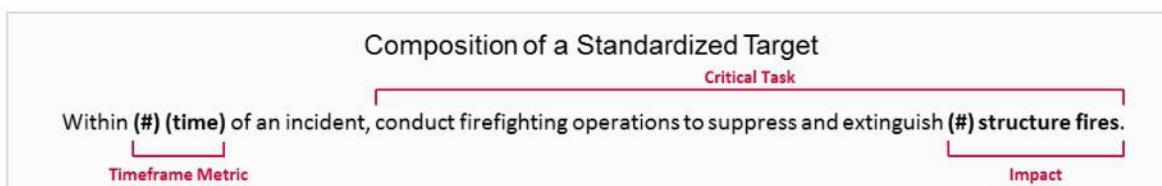


Figure 2: The basic components of a standardized target.

The National THIRA will compare the level of capability communities collectively intend to build and sustain to the estimated level of capability the Nation will need to manage a catastrophic threat or hazard. By identifying and understanding resulting gaps in capability, the Nation can strategize on how best to close these gaps. Gap-closing strategies may include increasing community capability or seeking out mutual aid capabilities.

Supporting measurement of national capabilities

FEMA will be able to combine data from the National THIRA with data from the National SPR to compare estimates of national capabilities to national targets (see **Figure 3**). In the National SPR, FEMA will collect capability data from Federal and other national-level sources, assessing their ability to support communities. FEMA will use the National THIRA and the National SPR to set national targets and measure national capabilities. This process will support building a culture of preparedness by identifying the Nation's gaps and informing investments to close them.

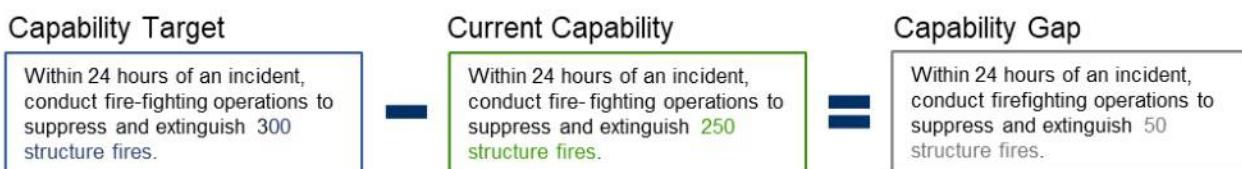


Figure 3: Communities establish capability targets and estimate current capabilities using the same language.

The National THIRA also contributes to improvements across the entire field of risk management by supporting efforts to:

- Incorporate standard risk and capability language into plans;
- Evaluate performance against capability targets to continuously identify gaps between the Nation’s capabilities and those targets; and
- Encourage investments in closing identified capability gaps.

Each of these elements is discussed in more detail below.

Incorporating standard risk and capability language into plans

Using modeling and historical datasets, the National THIRA will support FEMA’s scenario-based plans. For example, FEMA’s catastrophic plans identify planning factors and incident objectives using the standardized impact language and standardized target language from the National THIRA. The use of standardized impact and target language in FEMA plans will enable FEMA to better coordinate with state and local communities, evaluate performance, and identify and close gaps. Incorporating the National THIRA language and data into response plans will also help FEMA to better evaluate performance against targets during exercises and real-world incidents that follow those same plans.

Evaluating performance against capability targets to continuously identify gaps

Exercises test a community’s—or the Nation’s—ability to meet its capability targets. Capability targets, when incorporated into planning and used as exercise evaluation criteria, can measure how effectively the tested plan meets the goal and how well the participants perform the tasks in the plan. The after-action and continuous improvement process can validate capabilities already in place and describe areas for improvement. At the national level, the after-action and continuous improvement process can help FEMA and its stakeholders identify how to close capability gaps and bring the Nation closer to meeting the targets established through the National THIRA.

Encouraging investments in closing identified capability gaps

Identifying gaps between targets and current capability and creating approaches to close those gaps will lead to more efficient and effective preparedness investments. By integrating data from the National THIRA and National SPR, FEMA can use identified gaps between national targets and current capability to inform future strategic planning and budgeting efforts.

2019 National THIRA: Methodology and Outputs

The following section provides an overview of the three-step methodology FEMA used to develop the *2019 National THIRA*. The THIRA process that FEMA used is consistent with the *Comprehensive Preparedness Guide (CPG) 201, 3rd Edition*, applied at the national level.

Step 1: Identify Threats and Hazards of Concern

FEMA considered two factors when evaluating which threats and hazards to include in the National THIRA: 1) whether the threat or hazard could realistically affect the Nation; and 2) the challenge the threat or hazard would present to the Nation's capabilities if it occurred. FEMA ultimately included **nine scenarios** spread across **six threats and hazards** that could realistically occur and challenge the Nation's capabilities

(see **Figure 4**). By having a uniform, prioritized list of the Nation's realistic worst-case scenarios (see **Appendix B: Scenario Context Descriptions**), Federal agencies and other partner organizations involved in incident management will be better able to coordinate their planning and exercises efforts.

FEMA developed a research agenda and refined the threat and hazard list in four steps (see **Figure 5**):

1. Conducted a literature review to develop a preliminary list of threats and hazards;
2. Consulted with SMEs to identify the most challenging threats and hazards to the core capabilities;
3. Solicited stakeholder feedback to refine most challenging threats and hazards; and
4. Refined the threat and hazard list based on available data and SME review.



Figure 4: The output of Step 1 of the THIRA is a list of threats and hazards of concern.

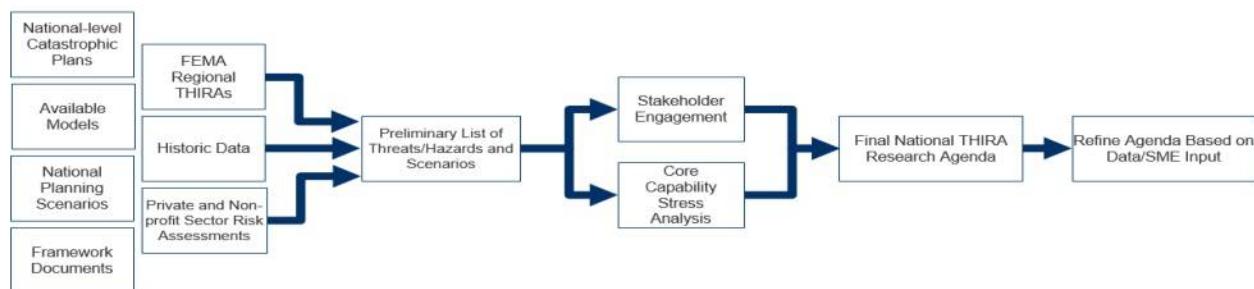


Figure 5: A visualization of the process that FEMA used to complete Step 1 of the 2019 National THIRA.

Literature Review to Develop Preliminary List of Threats and Hazards

The literature review included 55 sources, helping FEMA to identify the threats and hazards that could most challenge the Nation’s capabilities.⁵ In addition, FEMA engaged with 43 offices and programs across the Federal Government during its research.

FEMA used the results of its research and engagement to develop a preliminary list of threats and hazards that could realistically affect the Nation. FEMA included an incident if:

- A similar incident previously occurred; or
- Experts consider the incident to be a realistic threat or hazard to the Nation; or
- The Federal Government has previously considered the incident realistic or consequential enough to warrant planning and discussion at the Federal level.

FEMA included all incidents identified as realistic in an initial list of 59 threats and hazards. From this point, FEMA hypothesized the worst outcomes possible for each threat and hazard. If the threat or hazard was not bound to a specific location, FEMA selected a location where it would be the most realistic and likely the most challenging. For example, FEMA considered the effects of a major earthquake in the Pacific Northwest due to the proximity of a major fault line in the region. While some of the initial threats and hazards included catastrophic incidents, further research into these incidents did not result in any available modeling data. In place of these catastrophic incidents, FEMA considered similar, but still challenging, incidents that had modeling data available to include such data in the National THIRA scenarios.

Identification of Most Challenging Threats and Hazards

Next, FEMA narrowed its preliminary list to the threats and hazards most challenging to the Nation’s capabilities. This process included the participation of SMEs, including the owners of models and data inventories within other Federal offices, who reviewed the preliminary list and made determinations based on the severity of the threat or hazard.⁶ FEMA also considered key functions of each core capability, which helped identify the most catastrophic incidents for each threat or hazard in relation to current national capabilities.

⁵ The list of 55 sources included modeling data of relevant threats and hazards, national-level catastrophic plans, FEMA Region THIRAs, historical data from previous incidents, National Planning Scenarios, private and non-profit sector risk assessments, and National Planning Frameworks.

⁶ The initial list of threats and hazards included both generalized threats and hazards and specific threat and hazard scenarios. FEMA provided a preliminary context for a generalized threat or hazard in the following cases:

- 1) If FEMA identified a specific scenario (through the literature review or expert elicitation) as posing a significant challenge; or
- 2) If FEMA considered the generalized threat or hazard significant enough to warrant further investigation, in which case, FEMA included specific scenarios that could plausibly create the most stress for a single capability.

There may be other stressful scenarios that FEMA did not include in this initial list. (For further discussion of this limitation see **Appendix A: Limitations and Future Research**.)

Solicitation of Stakeholder Feedback to Refine Most Challenging Threats and Hazards

FEMA shared its list of most challenging threats and hazards with stakeholders⁷ and requested their feedback. FEMA finalized the list after receiving stakeholder feedback, which addressed additional threats or hazards that would place a greater strain on the Nation's capabilities than those already on the list.

Development of Refined List of Threats and Hazards

After an expansive literature review, an analysis of the most challenging threats or hazards, and consultation with SMEs and key stakeholders, FEMA developed a refined list of nine scenarios spanning six threats and hazards (shown in **Appendix B: Scenario Context Descriptions**) to include in the National THIRA. In addition to the scenarios, the *2019 National THIRA* includes a set of Plausible Concurrent Operations that represents the ongoing response and recovery operations the Nation would likely be supporting when any of these other catastrophic incidents occur. This set of Plausible Concurrent Operations will help the Nation account for the challenges posed by these ongoing operations and the capabilities and resources required to support them, as it plans for catastrophic incidents. FEMA used information from previous incidents, including five floods, three major hurricanes, and the 2017 California wildfires, to make the Plausible Concurrent Operations realistic. The threats and hazards included in the *2019 National THIRA* can be found below (see **Table 1**); the hazards included in the Plausible Concurrent Operations can be found in **Appendix D: Scenario Chronology**.

Table 1: Threats and Hazards of Concern Identified for the 2019 National THIRA^{8,9}

Threat/Hazard Type	Threat/Hazard	Area/Region
Natural	Plausible Concurrent Operations ¹⁰	Nationwide
	Earthquake	Washington, Oregon, California, Idaho
		600,000 sq. km in the Midwest/East

⁷ FEMA engaged with stakeholders from the following departments and offices: the Department of Agriculture, the Department of Commerce's National Oceanic and Atmospheric Administration, numerous offices within the Department of Defense (including U.S. Army Corps of Engineers, Defense Threat Reduction Agency, and the Office of the Assistant Secretary of Defense [Preparedness Policy]), the Department of Energy, numerous offices within the Department of Homeland Security (including the Cybersecurity and Infrastructure Security Agency [formerly the National Protection and Programs Directorate], Office of Science and Technology, Countering Weapons of Mass Destruction Office, and the Office of Intelligence and Analysis), the Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response, the Department of the Interior (including the U.S. Geological Survey), the Department of Justice's Federal Bureau of Investigation, numerous offices within FEMA (including Office of Response and Recovery, Region VIII, and the Office of Counterterrorism and Security Preparedness), the General Services Administration, Argonne National Laboratory, Lawrence Livermore National Laboratory, Sandia National Laboratory, the Nuclear Regulatory Commission, and the White House Office of Science and Technology Policy.

⁸ FEMA did not identify any technological hazards in the *2019 National THIRA* because it determined these hazards would most likely be secondary hazards to another incident (e.g., a dam failure following an earthquake).

⁹ FEMA removed two scenarios from this table that were deemed too sensitive for inclusion in the public version of this document.

¹⁰ More information on Plausible Concurrent Operations is included in **Appendix B: Scenario Context Descriptions**.

Threat/Hazard Type	Threat/Hazard	Area/Region
	Hurricane	Galveston, Texas to the Midwest
		Fort Lauderdale, Florida to Alabama
		Hawaii
	Pandemic	Nationwide
	Space Weather	Nationwide

Step 2: Give Threats and Hazards Context

Context descriptions allow FEMA to determine why certain threats and hazards are particularly challenging for the Nation to address. They also provide key information that helps FEMA measure the estimated impacts of threats and hazards.

Through Step 2 of the National THIRA (see **Figure 6**), FEMA developed context descriptions for each of the threats and hazards identified in Step 1. Context descriptions, framed as narratives of potential scenarios, indicate what factors would make each threat or hazard especially challenging for the Nation, including location, magnitude, time of an incident, and cascading effects. In Step 2, FEMA also estimated the potential impacts of each scenario.

Development of Context Descriptions

FEMA reviewed plans and modeling data to identify information concerning the time, place, and conditions that made the impacts most severe for the threats and hazards selected in Step 1. FEMA then used that information to draft context descriptions. FEMA considered both historical and modeled incidents to develop context descriptions that were both realistic and catastrophic. For example, in the Cascadia and San Andreas earthquake scenario, FEMA aggregated impacts from an earthquake along the Cascadia subduction zone with an earthquake along the San Andreas fault line. The context descriptions FEMA developed for the *2019 National THIRA* are listed in **Appendix B: Scenario Context Descriptions**.

Estimation of Impacts

Next, FEMA estimated the impacts each scenario would have on the Nation if the threat or hazard occurred. To address a lack of standardization across response plans and models, FEMA developed **standardized language to describe 29 different impacts** that represent metrics commonly used by the emergency management community. The standardized impacts (see **Appendix C: Standardized Impacts**) represent key quantifiable consequences associated with major threats and hazards used to inform capability targets. By focusing on a select set of the most important impact data metrics, FEMA and other members of the emergency management community can ensure that response and recovery plans are more coordinated and systematic.

To estimate impacts, FEMA first conducted a literature review of catastrophic plans to identify the most



Figure 6: The outputs of Step 2 of the THIRA are context descriptions and impact numbers.

common types of impacts. FEMA then compared this list to emergency management doctrine to confirm that the standardized impacts correspond to language used by emergency response officials.¹¹ FEMA also engaged 43 Federal interagency stakeholders and consulted more than 100 community stakeholders to validate the standardized impacts. Standardized impacts enabled FEMA to compare the impacts of all considered threats and hazards using the same language. Where possible, FEMA also attempted to align the standardized impacts with modeling outputs.

To determine which scenario impacts would be the most challenging for each capability target, FEMA reviewed all 216 models and modeling tools in the Modeling and Data Inventory, which catalogs data and models used across the Federal interagency. FEMA gathered impact data from several interagency models, response plans, and other validated sources, and then collected and analyzed impact data for each threat and hazard scenario and capability target (see **Figure 7**).

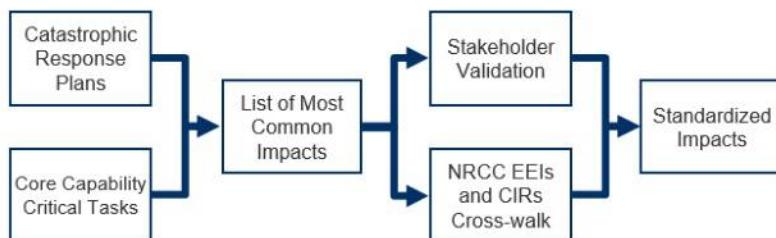


Figure 7: How FEMA developed Standardized Impacts.

The following table (**Table 2**) represents an example of the impacts FEMA collected for the *2019 National THIRA*. The impact data gathered for the purposes of this report demonstrate the unprecedented, extremely challenging nature of the threats and hazards selected. All impact data came from reliable, non-partisan sources, including 1) Federal, regional, or state emergency operations plans, 2) models or data inventories owned or managed by established research institutions (governmental, non-governmental, or academic), or 3) historical verified incident data.

Table 2: Example impact data collected for the 2019 National THIRA

Impact Type	Value	Source
Individuals Requiring Medical Care	48,000,000 (outpatient medical care)	U.S. Department of Health and Human Services. (2017). "Pandemic Influenza Plan: 2017 Update" pg. 44
Communities Affected	Lower 48 states	University of Cambridge Centre for Risk Studies. (2016). "Helios Solar Storm Scenario." pg. 23

Plausible Concurrent Operations

National-level incidents do not occur in isolation. FEMA and its Federal partners will almost certainly be engaged in ongoing disaster operations at the time of any catastrophic-level incident. These existing and ongoing commitments increase the total impacts that the Nation must manage. To capture this reality in the National THIRA, FEMA gathered impact data from historical incidents which occurred in recent years, including the three largest hurricanes from the 2017 hurricane season, the 2017 California wildfires, and five major floods from previous years. FEMA added the impact data from these incidents

¹¹ FEMA compared the list of common impacts to the National Response Coordination Center's essential elements of information and critical information requirements.

to form a notional baseline of existing operations—Plausible Concurrent Operations—that could be underway at the time a National THIRA scenario occurred.

FEMA added impacts from incidents in the Plausible Concurrent Operations to National THIRA scenario impacts if FEMA deemed they could occur concurrently with the National THIRA scenario. To determine this, FEMA developed a single incident chronology that identified the actual dates the real-world incidents occurred as well as notional dates assigned to the National THIRA scenarios. The chronology also included the approximate response and recovery periods for each disaster, identified by reviewing plans or consulting with SMEs (see **Figure 8**).

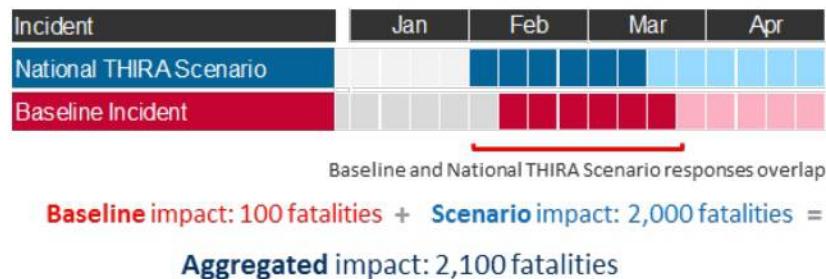


Figure 8: How FEMA combined scenario and baseline impacts to create aggregated impacts for use in capability target building.
The example shown is hypothetical.

Using this chronology, FEMA compared the Plausible Concurrent Operations incidents with the National THIRA scenarios to determine which impacts would notionally occur simultaneously (see **Appendix D: Scenario Chronology**). Where this overlap occurred, FEMA combined the scenario and baseline impacts to create aggregated impacts for use in the capability targets.

Step 3: Establish Capability Targets

Capability targets include specific and measurable metrics that describe the capabilities the Nation needs to manage potential catastrophic incidents. Additionally, the capability targets establish a benchmark that the emergency management community can use to track progress over time, allowing the Nation to assess how it currently responds to threats and hazards, as well as how it can improve.

For Step 3 of the National THIRA process (see **Figure 9**), FEMA created standard language, that when combined with scenario impact data and operational timeframe metrics, became national capability targets. These targets are specific benchmarks for measuring how prepared the Nation is for the potential impacts of its most challenging threats and hazards.

FEMA developed 22 standardized targets for the *2019 National THIRA*. The standardized targets (see **Appendix E: Standardized Targets**) represent a common set of measures that communities use to conduct a more comprehensive, unified assessment across all levels of emergency management. The



Figure 9: The output of Step 3 of the THIRA is capability targets that use standardized target language.

targets in this report demonstrate the massive response and recovery efforts that would be needed to address the catastrophic-level impacts of potential disasters. National targets will allow the emergency management community and all levels of government to better synchronize preparedness efforts and plan for these disasters.

National THIRA Capability Targets

Capability targets are composed of three parts: (1) an **impact**, which represents the size of the capability requirement; (2) a **critical task**, which represents the specific action needed to achieve the capability target; and (3) a **timeframe metric**, which represents the timeframe in which the action must be performed. Development of the impacts and timeframe metrics for the standardized targets are ongoing.

Critical Tasks

Each capability target focuses on a critical task of that core capability. The Nation's ability to perform critical tasks through all conditions helps indicate the Nation's preparedness. These critical tasks reflect the types of activities emergency managers routinely plan for and are broadly applicable to a wide range of threats and hazards, not only those identified in the *2019 National THIRA*.



Figure 10: The process FEMA used to develop capability target language for the *2019 National THIRA*.

FEMA used a structured approach to draft capability target language based on critical tasks to track the Nation's performance over time, allowing for both current assessments and future projections (see **Figure 10**). FEMA began by reviewing the capability targets that SLTT governments used in previous THIRAs. FEMA then cross-referenced these targets with emergency management doctrine, such as the [Federal Interagency Operational Plans \(FIOPs\)](#) and [National Planning Frameworks](#) to draft preliminary standardized target language.

Once FEMA completed drafting the standardized target language, SMEs from FEMA and other Federal agencies provided feedback. FEMA selected SMEs based on their responsibility for managing the activities associated with addressing the given impact(s) in a target. FEMA also included SMEs if they owned a particular model or dataset that generated data for a standardized impact. In addition, because these standardized targets are the same as the targets that communities will complete as part of the annual THIRA/SPR process, FEMA provided all state and local stakeholders required to complete the THIRA an opportunity to review the standardized language used for the core capability targets.

To determine which critical tasks the *2019 National THIRA* standardized targets would address, FEMA asked the same SMEs who provided feedback on the standardized target language to identify the most essential critical tasks for each capability. FEMA finalized targets based on the following criteria:

- **Importance of the critical task:** Does the target measure a specific task or action needed to deliver the capability target?
- **Nationwide applicability:** Is the target relevant to a broad range of communities? For example, would the target be just as useful in a rural community as an urban one?
- **Measurability of the target:** Can the target be meaningfully and quantifiably measured?
- **Operational usefulness:** Can the target guide planning, training, exercises, operations, continuous improvement, and strategic investment?

Standardized Impacts

Each capability target includes a standardized impact. FEMA used the standardized impacts it developed in Step 2 to help define the desired extent to which the Nation should be able to perform each critical task, making each target measurable. Including the standardized impacts in the target language also makes the targets outcome-oriented and establishes a common language for describing and estimating impacts and for managing them.

The National THIRA capability targets describe the level of capability required to manage and address the impacts of the most challenging threats and hazards facing the Nation for 22 critical tasks. FEMA will be able to use these quantifiable targets to track progress over time and convey the preparedness of the Nation in specific, measurable terms.

Timeframe Metrics

The final component of a capability target is the timeframe metric, which describes the desired timeframe for successful delivery. See **Figure 11** for how FEMA determined suitable metrics for the capability targets. FEMA reviewed FIOPs, Regional THIRAs, FEMA's maximum of maximums scenario, community THIRAs, private and non-profit sector risk assessments, and national-level catastrophic plans to determine suitable metrics for the standardized targets. FEMA plans to continue to engage with Federal interagency partners to determine suitable timeframe metrics for each target after the release of this document. As a result, the *2019 National THIRA* capability targets do not currently include timeframe metrics. Future iterations will incorporate these timeframe metrics.

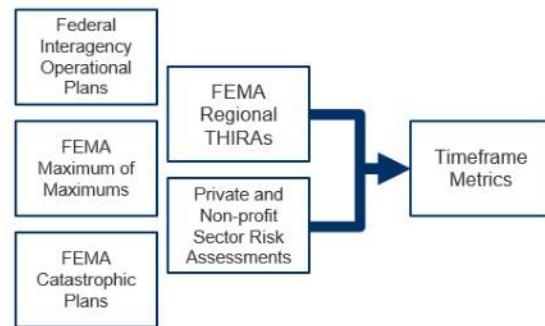


Figure 11: The process FEMA used to research potential timeframe metric statements.

Future Target Updates

The *2019 National THIRA* features targets only for Cross-Cutting, Response, and Recovery core capabilities. FEMA may create additional targets in the future, based on engagement with whole community partners. The *2019 National THIRA: Overview and Methodology* is a living document that reflects an evolving understanding of the Nation's preparedness challenges and needs.

National THIRA Capability Targets

FEMA developed 22 standardized targets for the *2019 National THIRA*; two examples are below (**Table 3**). While there is a single target for most Cross-Cutting, Response, and Recovery core capabilities, FEMA created multiple targets in some cases where the scope of a target was especially broad. **Appendix E: Standardized Targets** contains the full list of targets. When completed, several capability targets will combine the impacts of a *2019 National THIRA* scenario with those of the Plausible Concurrent Operations.¹² This means that the impacts used in some of the targets may be considerably larger.

Table 3: Examples of Standardized Targets

Example Capability Target: Health and Social Services	
SOCI-1	Within (#) (time) of an incident, restore functions at (#) affected healthcare facilities and social service organizations .
Example Capability Target: Natural and Cultural Resources	
NATU-1	Within (#) (time) of an incident, restore (#) damaged natural and cultural resources and historic properties registered in the jurisdiction .

Conclusion

The *2019 National THIRA* is the application of the THIRA process at the national level. As part of the first iteration, FEMA identified nine catastrophic incidents of concern to the Nation and developed 22 capability targets for the Cross-Cutting, Response, and Recovery core capabilities.

As FEMA refines its approach to conducting national risk and capability assessments, the National THIRA will continue to evolve and improve. While grounded in analysis and validated by stakeholder engagement, the *2019 National THIRA* reflects an initial snapshot of a continuing assessment. Future iterations of the National THIRA will incorporate the best available information and insights provided by Federal and SLTT stakeholders.

In the future, FEMA’s suite of assessment products—including the National THIRA, National SPR, and community THIRAs/SPRs—will offer a comprehensive, unified assessment of national preparedness built on standardized and coordinated processes. FEMA will use these assessments to support decision-makers in prioritizing national preparedness efforts and activities, providing the best possible picture of national preparedness needs.

¹² Combining the impacts of a National THIRA scenario with those of a set of Plausible Concurrent Operations is intended to more accurately reflect the challenges the Nation would need to address if one of the National THIRA scenarios actually occurred.

Appendix A: Limitations and Future Research

FEMA identified several limitations as it developed the *2019 National THIRA*, which are discussed below. These limitations complicated efforts to create capability targets. As FEMA develops future iterations of the National THIRA, it will address these issues, enabling FEMA to improve risk management and better understand and strengthen national capabilities.

National preparedness assessment is limited by a lack of standardization

The literature review of various catastrophic plans, risk assessments, and models made up a major component of the *2019 National THIRA*'s development. During this review, FEMA found very little standardization in the language used in the emergency management community to describe impacts and capabilities. As a result, risk analysis and measurement of national preparedness across the Nation is a challenge. Furthermore, limited standardized language between preparedness assessments and operations makes it challenging to use preparedness data to support disaster operations.

To address this, FEMA developed standardized impacts used to collect data for the *2019 National THIRA*. These standardized impacts should be integrated into plans, modeling efforts, and emergency management doctrine. Standardization of impact language will enable FEMA to better coordinate with state and local communities, evaluate performance, and identify and close preparedness capability gaps.

It is also important to recognize that there is a fundamental trade-off when language is standardized. Standardized language necessarily focuses on common areas of interest, maximizing its value as an indicator across a wide area; however, standard language does not incorporate unique regional geographic, demographic, and threat- and hazard-based concerns. One risk of using standard language is that it can lead to an inaccurate presumption that an impact or capability that cannot be measured in a standard way is not critical or valuable. FEMA's assessments recognize this balance, through the community THIRA and SPR process, by establishing standard language across all communities while also empowering communities to add their own quantitative or qualitative impacts, capabilities, and gaps to capture the nuances necessary to understand their community's risks and capabilities.

While the *2019 National THIRA* presented a potential long-term solution to these challenges, the lack of standardization has directly affected the data available to inform the *2019 National THIRA* and has limited its analysis.

Assumptions in existing plans and models often do not account for ongoing incidents or after-effects

To develop the *2019 National THIRA*, FEMA reviewed existing catastrophic plans and modeling data. During this process, FEMA found that plans and data models make assumptions that may lead to FEMA or other emergency management agencies underestimating the capabilities required to support national preparedness. These assumptions include: 1) **follow-on incidents do not result in significant impacts**, and; 2) **major, complex incidents occur in isolation**.

Many plans and models assume follow-on events do not have significant impacts: Many major incidents result in significant after-effects or cascading events, but the consequences of these events are often not included in impact estimates. For example, aftershocks often accompany major earthquakes, and these follow-on events can cause weakened buildings to collapse or cause landslides. These events

inevitably result in additional impacts, such as more fatalities or increased mass care demands. It is very difficult to model the impacts of cascading effects; as a result, models frequently focus only on what they can measure, which is typically the initial impact. These modeling limitations often trickle down into planning assumptions. The impact data from the plans and models that inform the New Madrid earthquake scenario in the *2019 National THIRA* do not factor in additional impacts from successive aftershocks.

Understanding the realistic impacts of an incident and the timing of those cascading events is critical for both preparedness and operations. Underestimated impacts can lead to under-developed capabilities and plans, which can then lead to ineffective decision-making.

As another example, hurricane plans and models may not account for follow-on hurricane or flooding activity, which may result in greater impacts and slow response operations. In 2017, Hurricanes Irma and Maria struck Puerto Rico and the U.S. Virgin Islands within two weeks of each other. In addition, Hurricane Jose complicated response operations by slowing transport of food and water. This series of hurricanes provided challenges that would not be accounted for in a model that viewed only one hurricane occurring in isolation.

The National THIRA provides a framework for FEMA to review the data that drives planning and modeling efforts across the Nation. Standardized targets and impacts allow FEMA to break down each reviewed plan, model, and real-world incident into concrete, measurable pieces. FEMA can then compare across incidents, helping to expose outdated assumptions, data gaps, and other areas for improvement.

Many plans and models assume that major, complex incidents occur in isolation: Many plans and models assume that all existing resources are available to manage a single incident. In practice, these resources may be unavailable due to another incident or other circumstances. This requires FEMA and its partners to stretch capabilities across multiple ongoing incidents, reducing the ability to respond to any one incident.

This assumption tested the Nation's preparedness capabilities during 2017, when three major hurricanes made landfall in the continental United States and its Caribbean territories within a one-month timeframe. FEMA coordinated deployment of over 31,000 personnel in support of these incidents and several major wildfires in California, covering 270,000 square miles. This unparalleled demand for resources across multiple complex incidents demonstrated to FEMA the need for capacity-building beyond what a single, worst-case incident would require.

FEMA applied the lessons of the 2017 hurricane season to the *2019 National THIRA* by introducing and incorporating the Plausible Concurrent Operations into its impact estimates. By combining the impacts of several major incidents and a National THIRA scenario, FEMA can produce demanding, but realistic, capability targets for response and recovery operations. Few plans and models, if any, have accounted for the additional demands that consume critical resources. To ensure swift delivery of core capabilities, future planning products and models should include these types of concurrent demands in their planning assumptions.

The National THIRA is a new initiative that will be rolled out over multiple years

The THIRA process requires the insights and knowledge of SMEs to develop scenarios and targets and identify models to estimate impacts. While SMEs from 43 Federal offices and programs and the

National Labs contributed input and feedback to the *2019 National THIRA* process, FEMA was unable to engage with some relevant offices and members of academia. As a result, the *2019 National THIRA* may not include some key information that could have improved the scenarios, impacts, or targets. FEMA will continue to engage with its partners for future iterations of the National THIRA to ensure it uses the best possible data to develop scenarios, impacts, and targets.

The National THIRA scenarios are not an exhaustive list of all risks to the Nation

To ensure a focused research agenda for the *2019 National THIRA*, FEMA identified the fewest number of scenarios necessary to most challenge the Nation's Cross-Cutting, Response, and Recovery core capabilities. Doing so allowed FEMA to engage in greater depth with stakeholders and interagency partners and define the tasks and capabilities required to support national all-hazard preparedness.¹³ Consequently, FEMA may have excluded scenarios from the *2019 National THIRA* that could just as plausibly challenge the core capabilities. By focusing on building and sustaining broadly applicable capabilities, the Nation can help to ensure it is prepared to address the impacts of a wide range of threats and hazards.

The National THIRA does not limit impact analysis to the most likely threats or hazards

The threats or hazards in the *2019 National THIRA* are not those most likely to occur, but rather those that could both realistically occur and challenge the core capabilities of the Nation.¹⁴ FEMA used conventional risk assessments¹⁵ as a major source of data for the *2019 National THIRA*, and supplemented them with other sources and SME expertise to translate scenarios into capability targets that identify the level of preparedness the Nation must achieve to address its risk. Other risk assessments often balance threat or hazard likelihood and the potential consequences to determine which threats and hazards to include in the assessment. In contrast, the THIRA methodology puts an emphasis on potential consequences that would challenge capabilities and expose gaps.

FEMA did not require the selected threat and hazard scenarios to meet a specific likelihood or frequency threshold to be included in the *2019 National THIRA*. Rather, FEMA relied upon expert opinion and stakeholder feedback to determine whether the threats and hazards selected struck an appropriate balance between likelihood and consequence. FEMA made this choice, in part, because many realistic and challenging scenarios lack authoritative or widely available likelihood information. For example, the likelihood of a human-caused incident within a major city is difficult to determine, but historically speaking, far less common than many natural incidents, such as flooding or tornado outbreaks. Despite the relatively high likelihood of the natural incidents, some human-caused incidents

¹³ See section 645(b)(2) of the Post-Katrina Emergency Management Reform Act of 2006 (6 USC §745(b)(2)).

¹⁴ CPG 201, 3rd ed., 12.

¹⁵ Such as reports provided by and developed in coordination with the DHS Office of Cyber and Infrastructure Analysis (OCIA).

are still considered by interagency experts as a realistic threat to the Nation, and would pose a more serious challenge to many core capabilities.

By not limiting its scope to only the most likely threats and hazards, the *2019 National THIRA* provides a unique and important perspective on the scope of the risks faced by the Nation and the capabilities required to meet the challenges they pose. The National THIRA provides a foundation for FEMA to better understand what will be required of the Nation in the face of catastrophe, translating realistic, high-consequence risks into a series of defined, quantifiable targets. These targets can then guide FEMA's planning, assessments, and investments,¹⁶ and help determine over time whether the Nation's capability is growing to meet the most challenging circumstances it might face in the future.

The National THIRA considers immediate local impacts

The plans and modeling data used to inform the *2019 National THIRA* did not take into account the national cascading effects of the scenarios. Only challenges faced locally as a result of the Plausible Concurrent Operations and National THIRA incidents are included in this report. Therefore, cascading effects that the Nation would likely face as a result of the threats and hazards in the *2019 National THIRA*, such as national supply chain disruptions, resource scarcity, and psychological impacts, among others, are not accounted for in the report's findings.

Future National THIRAs will seek to identify and incorporate new authoritative data sources

Future versions of the National THIRA will seek to remedy data limitations by identifying additional data products and conducting new primary research to provide FEMA with a larger pool of data to choose from. This will ensure capability targets can be better informed by the best possible data. FEMA plans to engage the interagency in a discussion on how to develop new models to determine threat and hazard impacts to fill the data gaps identified during the development of the *2019 National THIRA*. FEMA also plans to use the standardized impact and target language developed as part of the National THIRA to assist in prioritizing and standardizing modeling and data requests across the interagency.

The National THIRA does not incorporate Continuity of Government Concepts

Resiliency is particularly important for critical services and essential functions of Federal and SLTT governments, as well as for non-governmental organizations across the whole community. Continuity planning improves community preparedness and the ability to perform these critical services and essential functions under any circumstance. The *2019 National THIRA* does not contain continuity of government concepts in its assessment; however, FEMA will consider incorporating continuity doctrine into the National SPR.

The elements of the Plausible Concurrent Operations were selected in part to offset data gaps

As mentioned above, the primary motivation for incorporating the set of Plausible Concurrent Operations was to provide a more realistic picture of the complexity of response and recovery

¹⁶ While not included in this assessment, probability of an incident does play a role in understanding how best to prioritize investments in closing gaps. Future analysis will, to the extent possible, consider how often a capability will be used when making investment recommendations.

operations. Essentially, FEMA wished to account for the likelihood that national capabilities will be partially deployed due to ongoing operations at the time of an incident. However, the specific incidents comprising the Plausible Concurrent Operations do not represent the demands of a “typical year.” Rather, they were chosen in part to adjust for data gaps that are likely to under-represent the impacts of the *2019 National THIRA* scenarios.

There are two primary categories of data gaps, which in FEMA’s view, may lead to an underestimation of impacts in the National THIRA scenarios.

- **Incomplete data:** Both the baseline and National THIRA scenarios are missing standardized impact data points. While the Plausible Concurrent Operations include eight incidents, they will, in most cases, only include impact data from a smaller number of those incidents. Some *2019 National THIRA* scenarios are also missing data for standardized impacts that would likely occur as a result of the scenario.
- **Incomplete scenarios:** The modeling for many of the National THIRA scenarios does not include cascading and future incidents. For example, earthquake scenario models typically do not include aftershocks or the resulting impacts, while hurricane models typically only report impacts to one city or state. Not including follow-on incidents like these is likely to result in underestimation of some impacts, and others may be unaccounted for or unmeasured.

FEMA only combined response and recovery impacts from the Plausible Concurrent Operations to a *2019 National THIRA* scenario if they occurred during the same timeframe (see **Appendix D: Scenario Chronology**). This means that depending on when a National THIRA scenario occurs, it may include impacts from many or few of the incidents comprising the Plausible Concurrent Operations.

While the *2019 National THIRA* does not assess the simultaneous occurrence of threats and hazards, the grouping of incidents in the Plausible Concurrent Operations reflects the reality that individual incidents are not evenly distributed during the year. For example, incidents that occur during the peak of hurricane season are more likely to be accompanied by other ongoing incidents. Because of this, scenarios that occur during the height of hurricane season are significantly more likely to include multiple Plausible Concurrent Operations incidents. Future iterations of the Plausible Concurrent Operations will better reflect natural co-occurrence.

Appendix B: Scenario Context Descriptions

Plausible Concurrent Operations

The Plausible Concurrent Operations for the *2019 National THIRA* draw impacts from response and recovery operations for the following real-world incidents. Several of these incidents represent ongoing disasters that FEMA was already supporting during 2017, and do not represent an average year:

- Colorado Flooding, 2013 (DR-4145)
- South Carolina Flooding, 2015 (DR-4241)
- West Virginia Flooding, 2016 (DR-4273)
- Texas Flooding, 2016 (DR-4269)
- Louisiana Flooding, 2016 (DR-4277)
- Hurricane Harvey, 2017 (DR-4332 (Texas) and DR-4345 (Louisiana))
- Hurricane Irma, 2017 (DR-4337 (Florida), DR-4338 (Georgia), and DR-4346 (South Carolina))
- Hurricane Maria, 2017 (DR-4340 [U.S. Virgin Islands] and DR-4339 [Puerto Rico])
- California Wildfires, 2017 (DR-4344)

Cascadia and San Andreas Earthquake Scenario

On a weekday morning in early February, the 700-mile-long Cascadia subduction zone fault, located in Washington, Oregon, and northern California, experiences a complete rupture, resulting in a 9.0 magnitude earthquake. The impact of the initial earthquake results in numerous fatalities and injuries. Hundreds of thousands of people are evacuated from areas at risk of a potential tsunami triggered by the earthquake, and many individuals seek emergency shelter. Search and rescue teams are deployed immediately. Broken gas lines ignite fires in many damaged buildings, possibly adding to the number of fatalities and injuries. In addition to the ground shaking from the earthquake and after-shocks, second-order impacts of sinkholes and landslides remain hazards. Across the region, there are damaged potable water facilities, wastewater facilities, electric power facilities, and telecommunications facilities. Millions of tons of debris need to be cleared in order for first responders to reach the disaster zones. A few months later in April, there is a related incident of a 7.8 earthquake along the Northern San Andreas fault line in California, causing thousands of fatalities, billions in economic loss, and major damage to critical infrastructure.

New Madrid Earthquake Scenario

In the early morning hours of a weekday in early February, a 7.7 magnitude earthquake occurs along all three segments of the New Madrid Seismic Zone, with an epicenter on the Arkansas-Tennessee border. This earthquake results in serious damage to the built environment¹⁷ across eight states. Most people are in their homes at the time of the earthquake, so there are thousands of fatalities and many individuals need medical care. Millions of individuals require short-term shelter and a larger number are displaced from their homes. Infrastructure services—such as emergency services, hospitals, and mortuaries—are damaged at a time when they are most needed, and damage to key infrastructure sectors results in

¹⁷ The built environment refers to the buildings and structures constructed by human beings.

cascading impacts in other infrastructure sectors, resulting in degradation of infrastructure services across the region. There is significant damage to transportation infrastructure in the area, including damage to airports and port facilities along the Mississippi River, causing delays in both response-related resources reaching the impacted area and cross-country ground transportation.

Texas Hurricane Scenario

On a weekday in mid-September, a Category 5 hurricane makes landfall near Galveston, Texas and continues northward into the Midwest. The hurricane has maximum sustained winds of 157 mph and a storm surge of 25 feet. High-speed winds knock over trees, affecting power lines, especially as the ground becomes inundated from heavy rainfall. Galveston and Houston experience widespread power outages that extend into Texas, Louisiana, and parts of the Midwest as the hurricane moves north. The affected area measures in the hundreds of thousands of square miles—damaging critical infrastructure facilities and hazardous materials holding and refining facilities. Significant damage to port facilities and rail networks from storm surge slow transport of goods into and out of the area. The hurricane results in billions in direct and indirect economic losses.

Florida Hurricane Scenario

In the early morning hours on a weekday in mid-September, a Category 5 hurricane makes landfall over Fort Lauderdale on the southern coast of Florida and continues northwest across the State, exiting into the Gulf of Mexico before making landfall again over Mobile, Alabama. The hurricane has maximum sustained winds of 165 mph and is accompanied by a storm surge of 21 feet. Before landfall, the governors of Florida and Alabama issue evacuation notices for the millions of people in the expected impact zone. The hurricane results in direct and indirect economic losses in the billions of dollars. Miami experiences the greatest damage. Debris and flooding make many major interstate and state highways impassible, and they will need to be cleared before residents can return home and businesses can reopen.

Hawaii Hurricane Scenario

In late August, a Category 4 hurricane approaches Hawaii from the southeast and moves northward at a slow rate (approximately 10 mph) toward the largest island of Hawaii. The storm then changes course westward, impacting the entire State over a period of 36 to 48 hours. Wind gusts up to 160 mph cause some homes to lose roofs and exterior walls, resulting in the displacement of hundreds of thousands of people and forcing a substantial number of them to seek shelter. Fallen trees, power lines, and debris isolate residential areas and hinder movement of response personnel. Critical infrastructure facilities—to include power, water, wastewater, and telecommunications—are damaged and will take considerable time to repair given inaccessibility of facilities and a limited supply of repair parts in the State. Numerous ports and airports sustain significant damage and are rendered inoperable, impacting the supply chain and delaying the arrival of response and recovery-related resources from Federal agencies and other partners based in the continental United States.

Pandemic Scenario

In early October, the Centers for Disease Control and Prevention (CDC) reports a new (novel) strain of influenza virus in the National Capital Region. Less than two weeks after the first confirmed case is identified at a local hospital, the illness causes hundreds of fatalities and thousands of people seeking

medical attention. As the virus spreads, approximately 30 percent of the population across the United States and other countries becomes severely ill. Conventional flu vaccines are ineffective against the current strain, and the CDC estimates that a new vaccine could be months away from mass production. Because of the pandemic, social distancing is in widespread effect. Utilities, police, fire, government, and other essential services are disrupted due to social distancing and employee absenteeism. Businesses close, resulting in a large-scale loss of services across the region (e.g. banking, food stores, gas stations). There is a shortage of medical supplies, equipment, beds, and healthcare workers as hospitals are quickly overwhelmed, with up to millions of individuals seeking outpatient medical care and millions more requiring hospitalization. Civil disorder contributes to the high rate of absenteeism and the overcrowding of hospitals and medical centers.

Space Weather Scenario

In the last week of August, NOAA's Space Weather Prediction Center issues an alert due to a large coronal mass ejection approaching Earth's magnetic field, with 15 hours' notice of a severe magnetic storm making impact. In the early morning hours of the next day, transmission systems at substations in major metropolitan areas fail due to a surge of solar activity, causing power grids to go down. Subsequent system imbalances and overloads cause numerous transformers and lines to fail or disconnect. Most of the continental United States is affected by the massive power outage, leaving nearly half of the population in the dark. The space weather causes power system voltage irregularities and triggers false alarms on some protection devices. Critical-asset owners and operators are coordinating to temporarily restore power despite the power disruption caused by the magnetic storm. Radiation from the magnetic storm overwhelms satellite capacity and telecommunications networks, compounding the challenges emergency management personnel face in determining critical needs.

Appendix C: Standardized Impacts

The standardized impact language represents metrics estimated by FEMA across multiple threats and hazards. This document provides guidance for how FEMA interpreted the standardized impacts (**Table 4**) while completing the National THIRA. The standardized impacts represent key quantifiable consequences associated with major threats and hazards used to inform capability targets. In Step 2 of the National THIRA, FEMA indicates the context used to interpret the standardized impacts. The estimated impacts from Step 2 provide the basis for creating capability target statements in Step 3 of the THIRA process.

Table 4: Definitions of Standardized Impacts

Standardized Impact	Definition
(#) people requiring evacuation	<p>The total number of individuals that may need to be evacuated because of the incident.¹⁸</p> <p>Note: This number should include the number of people with access and functional needs that require evacuation.</p>
(#) people with access and functional needs (requiring evacuation)	<p>The number of individuals with access and functional needs that may need to be evacuated because of the incident.</p> <p>Note: This impact represents a subset of the total population and should always be smaller than (#) people requiring evacuation.</p>
(#) miles of road affected	The miles of road that vehicles cannot drive on due to debris or damage resulting from the incident.
(#) businesses closed due to the incident	The number of business—regardless of size—whose operations are interrupted as a result of the incident. This does not include businesses that are damaged but remain largely operational or those that voluntarily close while the incident is ongoing but reopen immediately after.
(#) hazmat release sites	The number of individual sites within their borders that could potentially experience a release of hazardous materials—or require assessment and/or containment efforts—due to the incident. If the impacts to a single facility result in multiple releases within that same site, communities can still consider that one release site. Communities can define hazardous materials according to their own policies and regulations.
(#) fatalities	The number of individuals that lose their lives as a direct result of the incident.
(#) structure fires	The number of individual structure fires that occur as a direct result of the incident. For this purpose, “structures” may include buildings, open platforms, bridges, roof assemblies over open storage or process areas, tents, air-supported and grandstands. ¹⁹ This impact should only include fires that require fire management or suppression services to extinguish or control.

¹⁸ All references to impacts caused as a result of “the incident” also include any cascading events caused by the incident. This applies to all standardized impacts in this guidance document.

¹⁹ Definition obtained from the National Fire Protection Association.

Standardized Impact	Definition
(#[#]) affected healthcare facilities and social service organizations	<p>The number of healthcare facilities and social service organizations that are unable, or limited in their ability, to provide healthcare and social service functions as a result of the incident.</p> <p>Communities can determine which facilities they would like to count as healthcare and social service facilities for the purposes of this standardized impact, but they should consider the capabilities and networks required to promote the resilience, independence, health (including behavioral health), and well-being of the whole community in the aftermath of an incident.</p> <p>Some examples of healthcare facilities include:</p> <ul style="list-style-type: none"> ▪ Hospitals ▪ Urgent Care Facilities ▪ Dialysis Centers, etc. <p>Some examples of social service facilities may include:</p> <ul style="list-style-type: none"> ▪ Social Security and Benefit Offices ▪ Job Centers ▪ Community Centers ▪ Shelters and Meal Centers, etc.
(#[#]) people requiring long-term housing	<p>The total number of individuals who require long-term housing as a result of the incident. Communities can base this on the number of individuals that would be eligible for their own long-term housing program, or the number that would be eligible for long-term housing assistance from FEMA, in addition to taking renters and homeless populations into account.</p> <p>Note: This number should include the number of individuals with access and functional needs that require accessible long-term housing.</p>
(#[#]) people with access and functional needs (requiring accessible long-term housing)	<p>The total number of individuals with access and functional needs who require accessible long-term housing.</p> <p>Note: This impact represents a subset of the total population and should always be smaller than (#[#]) people requiring long-term housing.</p>
(#[#]) customers (without water service)	<p>The number of homes or businesses (i.e. individual meters) that lose water service because of the incident. This can include instances where the home or business loses all water service or where the water provided to a residency is not potable due to contamination. Communities do not need to consider instances where service loss is very short-term and requires no significant effort to restore.</p>
(#[#]) customers (without wastewater service)	<p>The number of homes or businesses (i.e. individual meters) that lose wastewater service because of the incident. Communities do not need to consider instances where service loss is very short-term and requires no significant effort to restore.</p>

Standardized Impact	Definition
(#[#] customers (without communication service)	The number of homes, businesses, and individual wireless devices ²⁰ that lose communication services because of the incident. This can include a variety of communication services, including but not limited to landline phone service, cellular service, and the internet. Communities do not need to consider instances where service loss is very short-term and requires no significant effort to restore.
(#[#] customers (without power service)	The number of homes and businesses (i.e. individual meters) that lose power because of the incident. Even if a home or business has a back-up generator, communities should still consider them to be without power, as their power will still need to be restored. Communities do not need to consider instances where power loss is very short-term and requires no significant effort to restore.
(#[#] people requiring shelter	<p>The number of individuals that require sheltering in the aftermath of an incident. This number should be the peak number of individuals that require sheltering at the same time, not the total number of individuals that might require shelter over the entire course of disaster response and recovery.</p> <p>Note: This should include the number of individuals with access and functional needs that require shelter.</p>
(#[#] people with access and functional needs (requiring accessible shelter)	<p>The number of individuals with access and functional needs that require sheltering in the aftermath of an incident. This number should be the peak number of individuals with access and functional needs that require sheltering at the same time, not the total number of people that might require shelter over the entire course of disaster response and recovery.</p> <p>Note: This impact represents a subset of the total population and should always be smaller than <i>(#[#] people requiring shelter</i>.</p>
(#[#] people requiring food and water	<p>The total number of individuals that require food and water services from fixed distribution sites (including shelters) and through mobile feeding units, because of the incident. Feeding services include:</p> <ul style="list-style-type: none"> ▪ Hot or shelf-stable meals ▪ Infant formula ▪ Baby food ▪ Snacks ▪ Beverages ▪ Food packages, including options for diverse dietary and cultural needs (e.g., low sodium, low fat, vegetarian/vegan, halal, kosher) <p>Note: This number should include the number of individuals with access and functional needs requiring food and water services.</p>

²⁰ To be consistent with the other Infrastructure Systems impacts, each impacted customer should be counted once even if they lose more than one communications service, or if one interrupted communications service is used by more than one person. If a jurisdiction is also interested in knowing how many people are without service, they can multiply homes by 2.6 (the average household size in the U.S.) and exclude businesses.

Standardized Impact	Definition
(#[#] people with access and functional needs (requiring food and water))	<p>The number of individuals with access and functional needs that require food and water services at fixed distribution sites (including shelters) and through mobile feeding units, because of the incident. Feeding services include:</p> <ul style="list-style-type: none"> ▪ Hot or shelf-stable meals ▪ Infant formula ▪ Baby food ▪ Snacks ▪ Beverages ▪ Food packages, including options for diverse dietary and cultural needs (e.g., low sodium, low fat, vegetarian/vegan, halal, kosher) <p>Communities should consider the number of individuals with special dietary needs, the number of individuals requiring special equipment, the number of individuals requiring feeding assistance, and the number of individuals requiring food delivery.</p> <p>Note: This impact represents a subset of the total population and should always be smaller than (#[#] people requiring food and water).</p>
(#[#] animals requiring shelter, food, and water)	The number of animals that require sheltering, food, and water in the aftermath of an incident.
(#[#] people requiring rescue)	The number of individuals that require any type of search and rescue operations because of the incident. Communities can consider whichever type of search and rescue operations (e.g., urban, inland, waterborne, etc.) are relevant to their community and/or the threat or hazard they are considering.
(#[#] people requiring temporary, non-congregate housing)	<p>The number of individuals requiring temporary lodging after shelters have already closed, or reasonably should have closed, because of the incident. Communities can define how long a person can stay in congregate housing before they are moved to non-congregate housing.</p> <p>Note: This number should include the number of individuals with access and functional needs that require temporary, non-congregate housing.</p>
(#[#] people with access and functional needs (requiring accessible, temporary, non-congregate housing))	<p>The number of individuals with access and functional needs requiring accessible temporary lodging after shelters have already closed, or reasonably should have closed, because of the incident. Communities can define how long a person can stay in congregate housing before they are moved to non-congregate housing.</p> <p>Note: This impact represents a subset of the total population and should always be smaller than (#[#] people requiring temporary, non-congregate housing).</p>

Standardized Impact	Definition
(#[#] damaged natural and cultural resources and historic properties registered in the jurisdiction	<p>The number of natural and cultural resources that are damaged due to the incident. A resource can be considered “damaged” if it requires basic or significant restoration.</p> <p>Natural and cultural resources include, but are not limited to:</p> <ul style="list-style-type: none"> ▪ Historic properties ▪ Historic sites ▪ Designated wildlife and park lands ▪ Public beaches ▪ Facilities and landmarks of cultural importance ▪ Houses of worship ▪ Museums, etc. <p>At a minimum, communities should consider those cultural and historic resources that they have formally registered as such, through a Federal, state, or local registry. Communities may also include any other natural or cultural resource, regardless of whether it has been registered.</p>
(#[#) people affected	<p>The total number of individuals that are negatively affected within the incident area. This could include, but is not limited to, people experiencing:</p> <ul style="list-style-type: none"> ▪ Direct physical damage to their property ▪ Injuries or other medical impacts ▪ The loss of utilities or other services ▪ The loss of access to work <p>The individuals affected—whether as a direct result of the incident or any cascading events caused by the incident—do not have to be affected equally, and can include residents, commuters, and visitors.</p> <p>Note: This number should include the number of individuals with access and functional needs that are affected, as well as the number of individuals with limited English proficiency.</p>
(#[#) people with access and functional needs (affected)	<p>The total number of individuals with access and functional needs that are negatively affected within the incident area. The individuals do not have to be affected equally. This could include, but is not limited to, people experiencing:</p> <ul style="list-style-type: none"> ▪ Direct physical damage to their property ▪ Injuries or other medical impacts ▪ The loss of utilities or other services ▪ The loss of access to work <p>Note: This impact represents a subset of the total population and should always be smaller than (#[#) people affected.</p>

Standardized Impact	Definition
(#[#] people with limited English proficiency affected	<p>The total number of individuals with limited English proficiency that are negatively affected within the incident area. The individuals do not have to be affected equally. This could include, but is not limited to, people experiencing:</p> <ul style="list-style-type: none"> ▪ Direct physical damage to their property ▪ Injuries or other medical impacts ▪ The loss of utilities or other services ▪ The loss of access to work <p>Communities can define limited English proficiency according to their own policies and regulations.</p> <p>Note: This impact represents a subset of the total population and should always be smaller than (#[#] people affected).</p>
(#[#] jurisdictions affected	<p>The number of jurisdictions that are negatively affected, whether as a direct result of the incident or any cascading events caused by the incident. The jurisdictions do not have to be affected equally and should include those in which some form of response or recovery operations is required. These operations could address:</p> <ul style="list-style-type: none"> ▪ Direct impacts, such as physical damage to infrastructure and resources, injuries or other medical impacts to people within the community, or the loss of utilities or other services. ▪ Indirect impacts, such as the loss of employees or employment, the loss of mobility, etc. <p>This number should also include any jurisdiction that provides support or aid to an impacted jurisdiction.</p>
(#[#] partner organizations involved in incident management	<p>The number of public, private, or non-profit organizations involved in performing, planning, advising, or supporting prevention, protection, mitigation, response, and/or recovery efforts. The different partner organizations do not need to be involved equally, and communities can determine how they wish to count the involvement of different offices within one agency. In addition, the set of relevant partner organizations may change depending on the context of the target.</p>
(#[#] people requiring medical care	<p>The number of individuals that require medical care for injuries, illnesses, or other medical concerns. This includes both individuals that require medical treatment as a result of the incident and individuals that require medical treatment entirely unrelated to the incident. Communities should limit this to the number of individuals requiring care from a medical professional, and do not need to include individuals who could treat themselves for very minor injuries or conditions.</p>

Appendix D: Scenario Chronology

The following figure (**Figure 12**) visualizes the timelines of the Plausible Concurrent Operations incidents as well as the scenarios used in the *2019 National THIRA*. For the purposes of this figure, “incident period” is the estimated period where all the agencies involved are engaged in response activities, including efforts to save lives, protect property, and meet basic human needs. The capability targets only include baseline impacts if the *2019 National THIRA* scenario occurred while there was an active response or recovery phase for the incident. For example, the impacts of the Cascadia/San Andreas and New Madrid earthquakes combined with only a few impacts from the Plausible Concurrent Operations, while the Hawaii hurricane impacts combine with several. Dates for the National THIRA scenarios were selected in the following order of preference:

1. A specific date was identified in the modeling FEMA used to estimate impacts.
2. A specific date was not identified in the modeling FEMA used to estimate impacts but was included in a response plan or Regional THIRA scenario.
3. A time when the incident is most likely to occur (e.g., peak hurricane season).
4. A time when the incident is likely to be the most stressful.

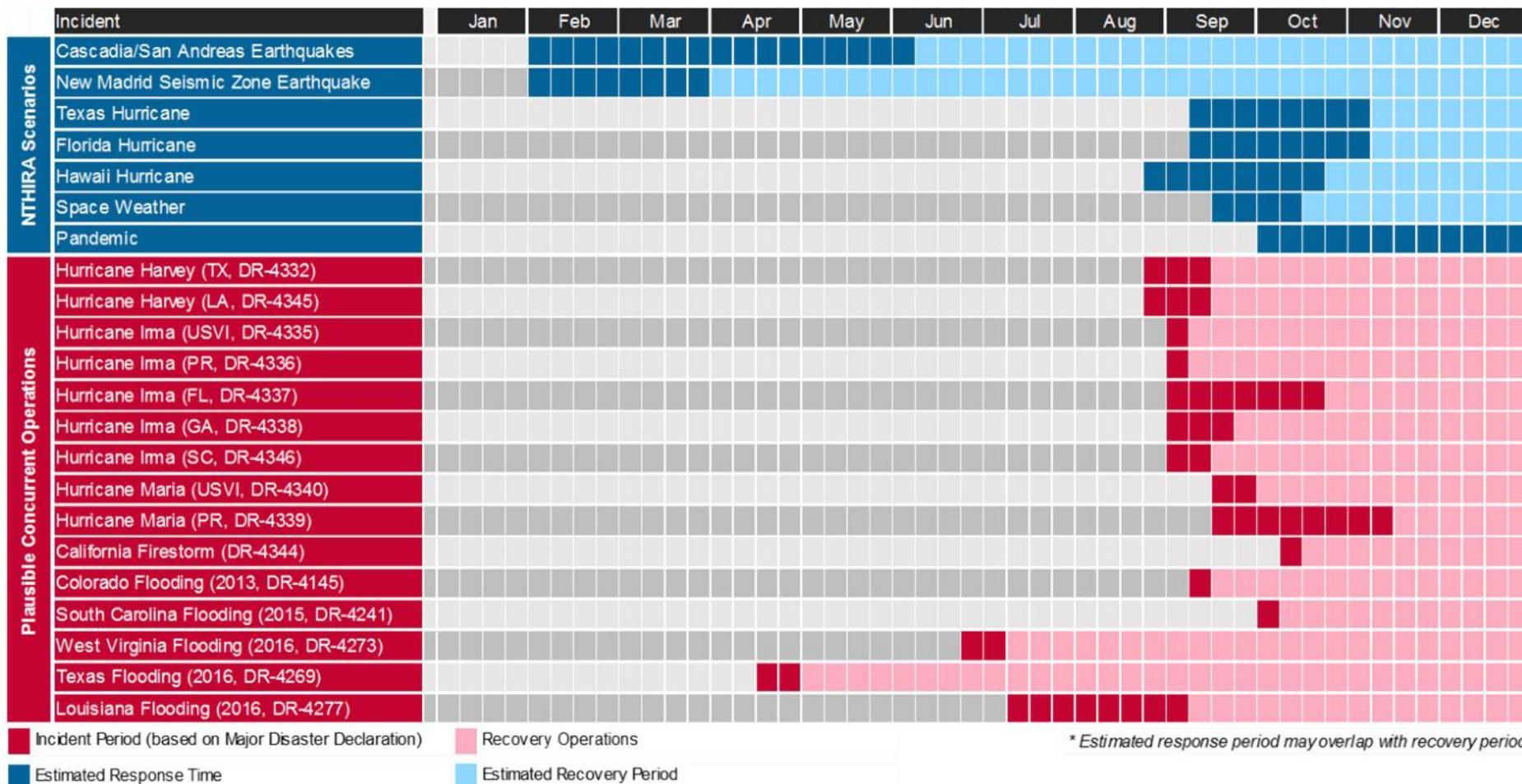


Figure 12: Timelines of Plausible Concurrent Operations incidents.

Appendix E: Standardized Targets

Cross-Cutting Standardized Targets

The three Cross-Cutting core capabilities (**Table 5**) are necessary to the success of the other 29 core capabilities. **Planning** allows emergency managers to identify strategic-, operational-, and tactical-level approaches to deliver each core capability, which are then implemented under **Operational Coordination** to ensure that actions are carried out in an organized fashion. Through **Public Information and Warning**, officials deliver clear, actionable, and accessible information about relevant actions being taken to prevent, protect against, mitigate the effects of, respond to, and recover from threats and hazards.

Table 5: Cross-Cutting Standardized Targets

Cross-Cutting Standardized Targets	
Public Information and Warning	
PUBL-1	Within (#) (time) notice of an incident, deliver reliable and actionable information to (#) people affected, including (#) people with access and functional needs (affected) and (#) people with limited English proficiency (affected).
Operational Coordination	
COOR-1	Within (#) (time) of a potential or actual incident, establish and maintain a unified and coordinated operational structure and process across (#) jurisdictions affected and with (#) partner organizations involved in incident management. Maintain for (#) (time).

Response Mission Area Standardized Targets

The Response mission area encompasses many of the steps necessary to save lives, protect property and the environment, and meet basic human needs immediately after an incident. The *National Response Framework* lists 15 core capabilities that work together to meet this goal (**Table 6**).

Critical Transportation operations include clearing debris from roads, airports, ports, and other transportation nodes to allow survivors to evacuate and response personnel to enter an affected area. After an incident, personnel deliver traditional and atypical **Mass Search and Rescue Operations** to save the greatest number of endangered lives in the shortest time possible. During mass fatality incidents, **Fatality Management Services** provide remains recovery, victim identification, and bereavement counseling. **On-scene Security, Protection, and Law Enforcement, Environmental Response/ Health and Safety, and Fire Management and Suppression** efforts all work to protect responders, survivors, and the environment. Throughout the response, officials use **Operational Communications** and **Situational Assessment** to share information and make informed decisions.

After an incident, public, private, and non-profit organizations provide **Mass Care Services** and **Public Health, Healthcare, and Emergency Medical Services** to address the basic needs of survivors. **Logistics and Supply Chain Management** ensure that essential commodities, equipment, and services reach affected communities and assist owners and operators of **Infrastructure Systems** in restoring systems and services for the community while transitioning to the recovery phase. A number of these

infrastructure systems are referred to as community lifelines. Lifelines provide indispensable services that enable continuous operation of critical functions and would risk human health and safety or national economic security if compromised or not promptly restored. The four Infrastructure Systems targets focus on major lifelines, such as electrical power, communications, water service, and wastewater service.

Table 6: Response Mission Area Standardized Targets

Response Mission Area Standardized Targets	
Infrastructure Systems	
INFR-1	Within (#) (time) of an incident, restore service to (#) customers (without water service) .
INFR-2	Within (#) (time) of an incident, restore service to (#) customers (without wastewater service) .
INFR-3	Within (#) (time) of an incident, restore service to (#) customers (without communication service) .
INFR-4	Within (#) (time) of an incident, restore service to (#) customers (without power service) .
Critical Transportation	
TRAN-1	Within (#) (time) notice of an impending incident, complete the evacuation of (#) people requiring evacuation , including (#) people with access and functional needs (requiring evacuation).
TRAN-2	Within (#) (time) of an incident, clear (#) miles of road affected , to enable access for emergency responders, including private and non-profit.
Environmental Response/Health and Safety	
ENVI-1	Within (#) (time) of an incident, assess, contain, and begin cleaning up hazardous material releases from (#) hazmat release sites .
Fatality Management Services	
FATA-1	Within (#) (time) of an incident, complete the recovery, identification, and mortuary services, including temporary storage services, for (#) fatalities .
Fire Management and Suppression	
FIRE-1	Within (#) (time) of an incident, conduct firefighting operations to suppress and extinguish (#) structure fires .

Response Mission Area Standardized Targets	
Logistics and Supply Chain Management	
LOGI-1	Within (#) (time) of an incident, identify and mobilize life-sustaining commodities, resources, and services to (#) people requiring shelter and (#) people requiring food and water . Maintain distribution system for (#) (time).
Mass Care Services	
CARE-1	Within (#) (time) of an incident, provide emergency sheltering, food, and water for (#) people requiring shelter and (#) people requiring food and water , including (#) people with access and functional needs (requiring accessible shelter) and (#) people with access and functional needs (requiring food and water), and (#) animals requiring shelter, food, and water . Maintain for (#) (time).
CARE-2	Within (#) (time) of an incident, move (#) people requiring temporary, non-congregate housing , including (#) people with access and functional needs (requiring accessible, temporary, non-congregate housing), from congregate care to temporary housing.
Mass Search and Rescue Operations	
SEAR-1	Within (#) (time) of an incident, conduct search and rescue operations for (#) people requiring rescue .
On-scene Security, Protection, and Law Enforcement	
SECU-1	Within (#) (time) of an incident, provide security and law enforcement services to protect emergency responders and (#) people affected .
Operational Communications	
COMM-1	Within (#) (time) of an incident, establish interoperable communications across (#) jurisdictions affected and with (#) partner organizations involved in incident management. Maintain for (#) (time).
Public Health, Healthcare, and Emergency Medical Services	
HEAL-1	Within (#) (time) of an incident, complete triage, begin definitive medical treatment, and transfer to an appropriate facility (#) people requiring medical care .

Recovery Mission Area Standardized Targets

The Recovery mission area has eight core capabilities that work together to repair and restore infrastructure and services needed to support the physical, emotional, and financial well-being of survivors and disaster areas (**Table 7**).

The repair and restoration of **Infrastructure Systems** reestablishes essential community services and minimizes health and safety threats. In turn, re-establishing **Health and Social Services** allows for the restoration of healthcare facilities and networks to promote the resilience, independence, health (including behavioral health), and well-being of the whole community. Implementing temporary and permanent **Housing** solutions for displaced residents moves survivors out of emergency shelters and transitions them into long-term recovery. Experts work with the community to preserve, conserve,

rehabilitate, and restore **Natural and Cultural Resources**. In the long-term, communities lead **Economic Recovery** programs to return economic and business activities, including food and agriculture, to a healthy state.

Table 7: Recovery Mission Area Standardized Targets

Recovery Mission Area Standardized Targets	
Economic Recovery	
ECON-1	Within (#) (time) of an incident, reopen (#) businesses closed due to the incident .
Health and Social Services	
SOCI-1	Within (#) (time) of an incident, restore functions at (#) affected healthcare facilities and social service organizations .
Housing	
HOUS-1	Within (#) (time) of an incident, (#) people requiring long-term housing , including (#) people with access and functional needs requiring accessible long-term housing, find and secure long-term housing.
Natural and Cultural Resources	
NATU-1	Within (#) (time) of an incident, restore (#) damaged natural and cultural resources and historic properties registered in the jurisdiction .

73 ~~are ambitious. These are not targets for any single jurisdiction or agency; achieving these~~
 74 ~~targets will require a national effort involving the whole community. Each mission area relies on~~
 75 ~~the whole community to ensure success. This includes children,⁺ individuals with disabilities and~~
 76 ~~others with access and functional needs, diverse communities, and people with limited English~~
 77 ~~proficiency.~~

78 Three core capabilities span all five mission areas: Planning, Public Information and Warning,
 79 and Operational Coordination. These common core capabilities serve to unify the mission areas
 80 and, in many ways, are necessary for the success of the remaining core capabilities. Additionally,
 81 a number of core capabilities directly involve more than one mission area and are listed in each
 82 mission area as appropriate.

83 ~~The core~~^{Core} capabilities ~~and targets~~, like the risks we face, are not static. They will be vetted
 84 and refined, taking into consideration the risk and resource requirements ~~as requirements evolve,~~
 85 ~~during the planning process established through PPD-8.~~

86 Risk and the Core Capabilities

87 Understanding the greatest risks to the Nation's security and resilience is a critical step in
 88 identifying the core capabilities ~~and capability targets~~. All levels of government and the whole
 89 community should present and assess risk in a similar manner to provide a common
 90 understanding of the threats and hazards confronting our Nation. The information gathered
 91 during a risk assessment also enables a prioritization of preparedness efforts and an ability to
 92 identify our capability requirements across the whole community.

93 ~~A Strategic National Risk Assessment (SNRA) was conducted in 2011.² A review of those~~
 94 ~~findings is currently underway. Initial results of the review indicate that a wide range of threats~~
 95 ~~and hazards continue to pose a significant risk to the Nation, affirming the need for an all-~~
 96 ~~hazards, capability-based approach to preparedness planning. Key findings include:~~

- 97 ▪ Natural hazards, including hurricanes, earthquakes, tornadoes, wildfires, and floods, present a
 98 significant and varied risk across the country. ~~Weather-related hazards also present~~
 99 ~~potentially more severe consequences due to future impacts of climate change.~~
- 100 ▪ A virulent strain of pandemic influenza could kill hundreds of thousands of Americans, affect
 101 millions more, and result in economic loss. Additional human and animal infectious diseases,
 102 including those previously undiscovered, may present significant risks.
- 103 ▪ Technological and accidental hazards, such as dam failures, ~~oil~~ or chemical substance spills
 104 or releases, have the potential to cause extensive fatalities and severe economic impacts, and
 105 the likelihood of occurrence may increase due to aging infrastructure.
- 106 ▪ Terrorist organizations or affiliates may seek to acquire, build, and use weapons of mass
 107 destruction (WMD). Conventional terrorist attacks, including those by "lone actors"
 108 employing explosives and armed attacks, present a continued risk to the Nation.

Comment [A]: Caution against putting anything time-specific in here to avoid unnecessarily dating the doc down the line.

Comment [A]: Recommend deleting "was conducted... review", and adding an "s" to indicate

⁺ Children require a unique set of considerations across the core capabilities and capability targets contained within this document. It is strongly encouraged that this be taken into consideration as part of any integrated planning effort.

² The complete results of the Strategic National Risk Assessment are classified. For an unclassified summary, see <http://www.fema.gov/ppd8>.

72 The core capabilities, like the risks we face, are not static. They will be vetted and refined, taking
 73 into consideration the risk and resource requirements as requirements evolve.

74 **Risk and the Core Capabilities**

75 Understanding the greatest risks to the Nation's security and resilience is a critical step in
 76 identifying the core capabilities. All levels of government and the whole community should
 77 ~~present and assess and present~~ risk in a similar manner to provide a common understanding of
 78 the threats and hazards confronting our Nation. The information gathered during a risk
 79 assessment also enables a prioritization of preparedness efforts and an ability to identify our
 80 capability requirements across the whole community.

81 The Strategic National Risk Assessment (SNRA) indicates that a wide range of threats and
 82 hazards continue to pose a significant risk to the Nation, affirming the need for an all-hazards,
 83 capability-based approach to preparedness planning. Key findings include:

- 84 ▪ Natural hazards, including hurricanes, earthquakes, tornadoes, ~~drought~~, wildfires, ~~winter~~
 85 ~~storms~~, and floods, present a significant and varied risk across the country. ~~Climate change~~
 86 ~~has the potential to cause the consequence of weather-related hazards to become more~~
 87 ~~severe~~ Weather related hazards also present potentially more severe consequences due to
 88 ~~future impacts of climate change~~.
- 89 ▪ A virulent strain of pandemic influenza could kill hundreds of thousands of Americans, affect
 90 millions more, and result in economic loss. Additional human and animal infectious diseases,
 91 including those ~~previously~~ undiscovered, may present significant risks.
- 92 ▪ Technological and accidental hazards, such as ~~transportation~~ system failures, dam failures
 93 ~~and~~, oil or chemical ~~substance~~ spills or releases, have the potential to cause extensive
 94 fatalities and severe economic impacts. ~~In addition, these hazards and the likelihood of~~
 95 ~~occurrence~~ may increase due to aging infrastructure.
- 96 ▪ Terrorist organizations or affiliates may seek to acquire, build, and use weapons of mass
 97 destruction (WMD). Conventional terrorist attacks, including those by "lone actors"
 98 employing explosives and armed attacks, present a continued risk to the Nation.
- 99 ▪ Cyber attacks can have ~~their own~~ catastrophic consequences, ~~which in turn, and can~~
 100 ~~lead to~~ other hazards, such as power grid failures or financial system failures. ~~These~~
 101 ~~follow-on hazards increase, which magnify~~ the potential impact of cyber incidents.
- 102 ▪ ~~Some~~ events, such as explosives attacks or earthquakes, generally cause more localized
 103 impacts, while other events, such as human pandemics, may cause impacts that are dispersed
 104 throughout the Nation, thus creating different types of impacts for preparedness planners to
 105 consider.

106 These findings supported the update of the core capabilities. Additionally, the Response and
 107 Recovery mission areas go one step further by focusing on a set of core capabilities based on the
 108 impact of a ~~series of no notice~~, cascading incidents. Such ~~an~~ incidents would likely stress the
 109 abilities of our Nation. A set of planning factors, drawing across three hazards identified by the
 110 Strategic National Risk Assessment (i.e., a large-scale earthquake, a major hurricane, and a
 111 WMD attack), were developed to mimic this cascading incident and identify the necessary core
 112 capabilities.

Comment [A]: 63

Comment [A]: 2015 SNRA Finding
4/16

Comment [A]: 2015 SNRA Finding
4/16

Comment [A]: 118

Comment [A]: 232

Comment [A]: 2015 SNRA Finding
4/16

Comment [A]: 65

Comment [A]: 233

Comment [A]: 119

Comment [A]: 422

Comment [A]: 2015 SNRA Finding
4/16

Comment [A]: 426 (major hurricane
is not no-notice) (b)(6)