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 Area[3]

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.

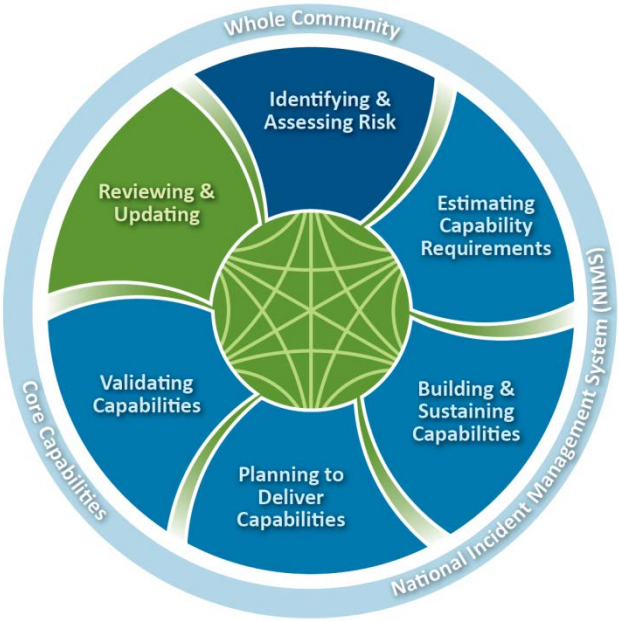


Figure 2: Components of the National Preparedness System

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**.

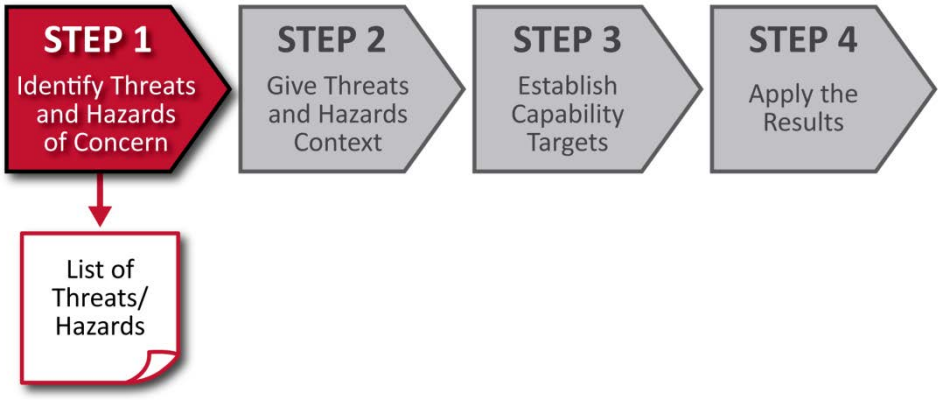


Figure 3: Step 1 of the THIRA Process

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
▪ Avalanche ▪ Animal disease outbreak ▪ Drought ▪ Earthquake ▪ Epidemic ▪ Flood ▪ Hurricane ▪ Landslide ▪ Pandemic ▪ Tornado ▪ Tsunami ▪ Volcanic eruption ▪ Wildfire ▪ Winter storm	▪ Airplane crash ▪ Dam failure ▪ Levee failure ▪ Mine accident ▪ Hazardous materials release ▪ Power failure ▪ Radiological release ▪ Train derailment ▪ Urban conflagration	▪ 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/slrviewer)
- 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).

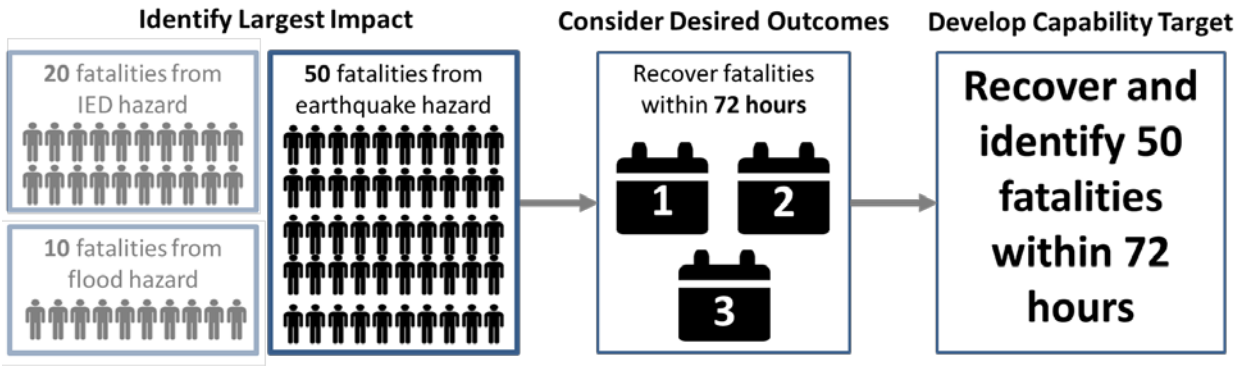


Figure 6: Straightforward Example of Developing Capability Targets

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.

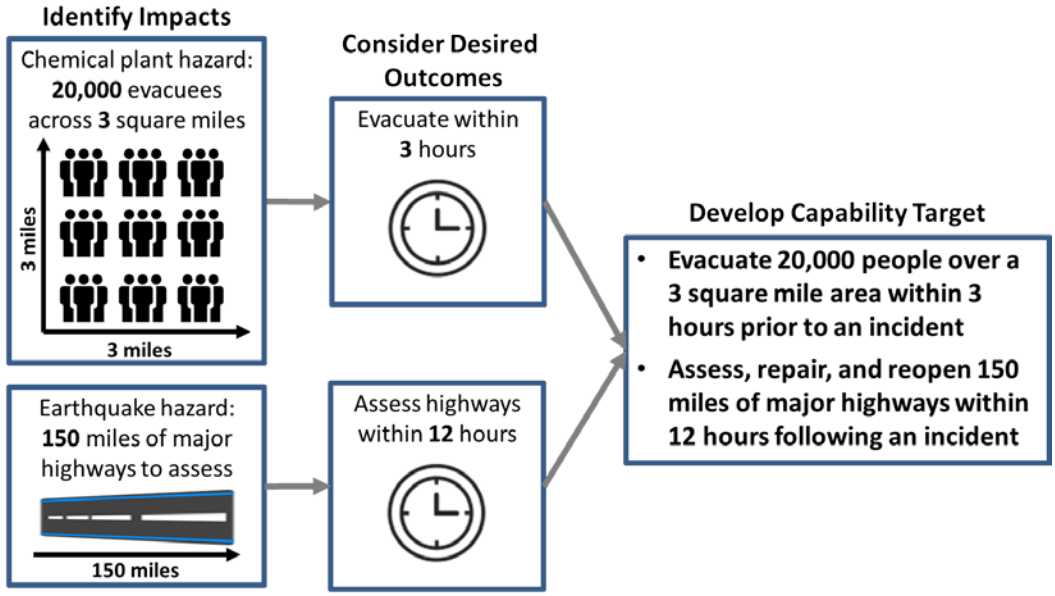


Figure 7: Complex Example of Developing Capability Targets

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	Within 72 hours, rescue: ▪ 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**.

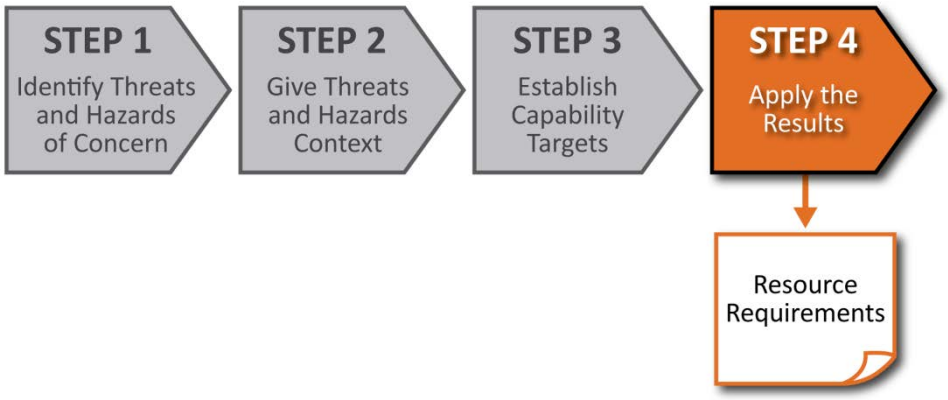


Figure 8: Step 4 of the THIRA Process

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

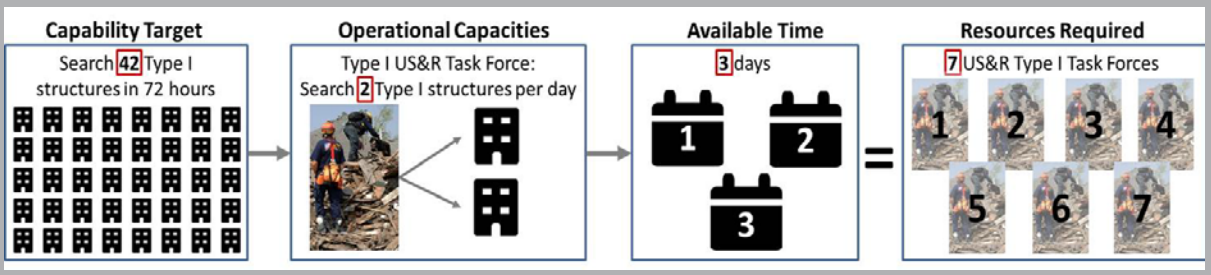
Consider a community trying to estimate the number of Urban Search and Rescue (US&R) Task Forces needed for its Mass Search and Rescue Operations resource requirement. The community should first consider the types of buildings located within the affected area (e.g., high-rise buildings, non-combustible, 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	Within 72 hours, rescue: ▪ 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.

Threat/Hazard				
Context Description				
Core Capability				
Capability Target				
Resource Requirement				
Resources	**Number Required**			

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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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