Threat and Hazard Identification and Risk Assessment

Background/Overview and Process Briefing

Homeland Security Preparedness
Technical Assistance Program

May 2012

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PPD-8 Background

- A linking together of the national efforts, organized around key elements:
  - Ends we wish to achieve (National Preparedness Goal)
  - Means to achieve (National Preparedness System)
  - Reporting progress (Annual National Preparedness Report)
  - Sustained engagement, building and sustaining preparedness (Whole Community Initiative)

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National Preparedness System Description - Components

The National Preparedness System description is comprised of six major components

- Identifying and Assessing Risk
- Estimating Capability Requirements
- Building and Sustaining Capabilities
- Planning to Deliver Capabilities
- Validating Capabilities
- Reviewing and Updating

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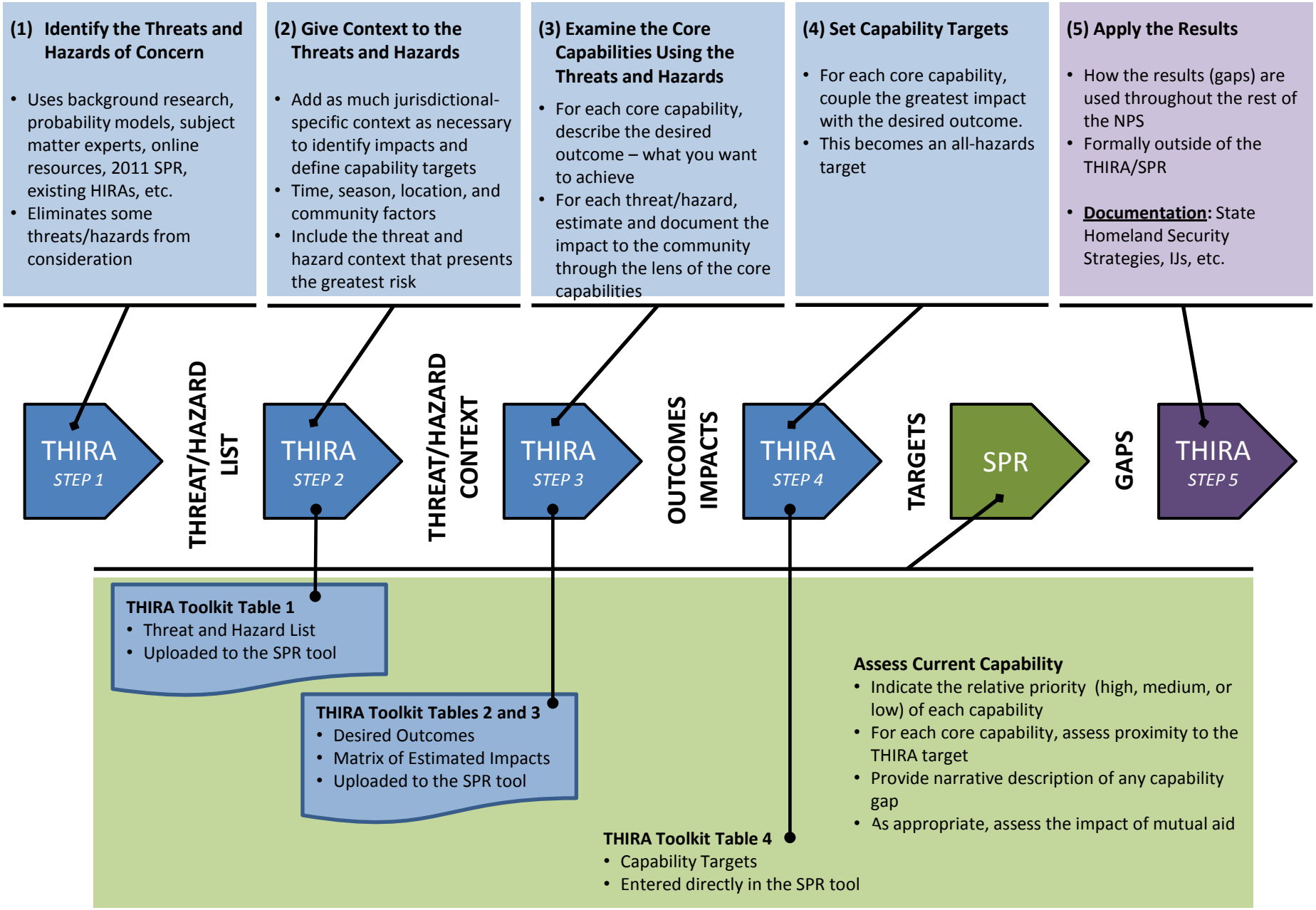
(1) Identify the Threats and Hazards of Concern
• Uses background research, probability models, subject matter experts, online resources, 2011 SPR, existing HIRAs, etc.
• Eliminates some threats/hazards from consideration
(2) Give Context to the Threats and Hazards
• Add as much jurisdictional-specific context as necessary to identify impacts and define capability targets
• Time, season, location, and community factors
• Include the threat and hazard context that presents the greatest risk
(3) Examine the Core Capabilities Using the Threats and Hazards
• For each core capability, describe the desired outcome – what you want to achieve
• For each threat/hazard, estimate and document the impact to the community through the lens of the core capabilities
(4) Set Capability Targets
• For each core capability, couple the greatest impact with the desired outcome.
• This becomes an all-hazards target
(5) Apply the Results
• How the results (gaps) are used throughout the rest of the NPS
• Formally outside of the THIRA/SPR
• Documentation: State Homeland Security Strategies, IJs, etc.
THIRA STEP 1
THREAT/HAZARD LIST
THIRA STEP 2
THREAT/HAZARD CONTEXT
THIRA STEP 3
OUTCOMES IMPACTS
THIRA STEP 4
TARGETS
SPR
GAPS
THIRA STEP 5
THIRA Toolkit Table 1
• Threat and Hazard List
• Uploaded to the SPR tool
THIRA Toolkit Tables 2 and 3
• Desired Outcomes
• Matrix of Estimated Impacts
• Uploaded to the SPR tool
THIRA Toolkit Table 4
• Capability Targets
• Entered directly in the SPR tool
Assess Current Capability
• Indicate the relative priority (high, medium, or low) of each capability
• For each core capability, assess proximity to the THIRA target
• Provide narrative description of any capability gap
• As appropriate, assess the impact of mutual aid

Core Capabilities List

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

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THIRA Process

- Step 1 – Identify the Threats and Hazards of Concern
- Step 2 – Give Threats and Hazards Context
- Step 3 – Examine the Core Capabilities Using the Threats and Hazards
- Step 4 – Set Capability Targets
- Step 5 – Apply the Results

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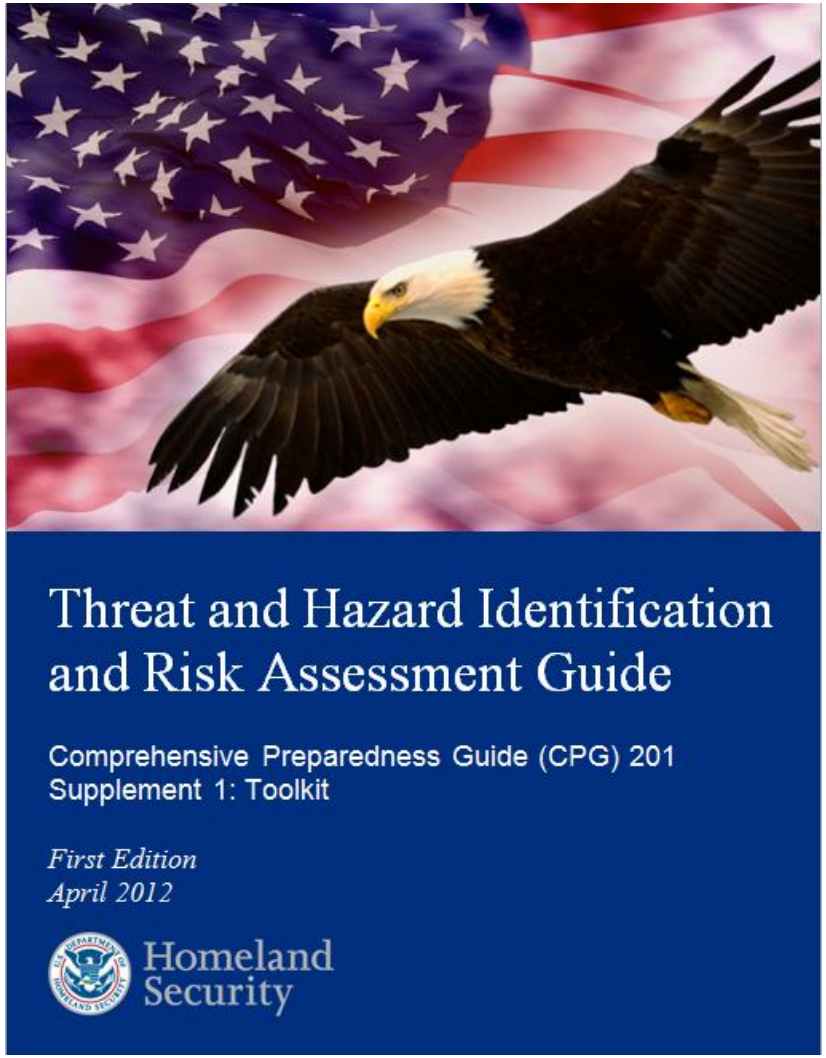
THIRA Toolkit Overview

- The toolkit includes:
  - Bibliography
  - Threat/Hazard Description Statements Template
  - Desired Outcomes Template
  - Estimated Impacts Template
  - Core Capability Targets Template



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Toolkit Bibliography

- The bibliography is broken down into the following categories:
  - FEMA documents
  - Presidential documents
  - Federal statutes and regulations
  - Human-caused incidents
  - Technological incidents
  - Data sources

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THIRA Steps

1. **Identify threats and hazards of concern**
2. Give the threats and hazards context
3. Examine the core capabilities using the threats and hazards
4. Set capability targets
5. Apply the results

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Step 1: Threat and Hazard Types

Three types of threats/hazards:

1. Natural: Acts of nature, such as hurricanes, tornados, earthquakes, and disease outbreaks and epidemics
2. Technological: Hazards resulting from accidents or failures of systems and structures, such as hazardous materials spills or dam failures
3. Threats or human-caused: Intentional actions of an adversary, such as a threatened or actual chemical or biological attack or cyber event

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Step 1: Example Threats and Hazards of Concern

Natural	Technological	Human-caused
Resulting from acts of nature	Involves accidents or the failures of systems and structures	Caused by the intentional actions of an adversary
▪ Avalanche ▪ Disease outbreak ▪ Drought ▪ Earthquake ▪ Epidemic ▪ Flood ▪ Hurricane ▪ Landslide ▪ Tornado ▪ Tsunami ▪ Volcanic eruption ▪ Wildfire ▪ Winter storm	▪ Airplane crash ▪ Dam/levee failure ▪ Hazardous materials release ▪ Power failure ▪ Radiological release ▪ Train derailment ▪ Urban conflagration	▪ Civil disturbance ▪ Cyber incidents ▪ Sabotage ▪ School violence ▪ Terrorist acts

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Step 1: Identify Potential Threats and Hazards

Information on potential hazards and threats can come from:

- Existing threat and hazard assessments (Hazard Identification and Risk Assessment)
- Previous incidents
- Review other current plans, policies and procedures (e.g., Catastrophic Planning Initiative, Emergency Operations Plans and annexes)
- Local, regional and neighboring jurisdictions' THIRAs
- Analysis of critical infrastructure and key resources
- Online data sources from the U.S. Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), and the Department of Homeland Security (DHS)

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Step 1: Identify Potential Threats and Hazards

Gathering data on threats/hazards requires research from:

- Hazard Mitigation Plans / HIRA
- After -action reports from previous incidents
- Subject matter experts in various threat/hazard types
  - Local universities who do hazard analysis
  - Federal agencies such as NOAA, USGS and DHS
  - Law enforcement agencies and fusion centers
  - Local historical societies
  - Other jurisdictions of similar size and composition facing the same hazard

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THIRA Steps

1. Identify threats and hazards of concern
2. **Give the threats and hazards context**
3. Examine the core capabilities using the threats and hazards
4. Set capability targets
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Step 2: Give the Threats and Hazards Context

- Jurisdictions should refine and reduce their list of threats and hazards to those of greatest concern
- This process can be completed by:
  - Planning efforts (catastrophic planning and hazard mitigation planning)
  - Subject Matter Experts
  - Analysis
  - Policy
  - Historical Data

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Step 2: Give the Threats and Hazards Context

- Focused on hazards and threats of greatest concern
- Continues this idea by showing how a threat or hazard can affect your jurisdiction
  - The following should be considered:
    - When might a threat/hazard occur (time of day/season)?
    - Where might a threat/hazard occur (populated areas, coastal zones, industrial areas, etc.)?
  - What are the conditions that would escalate the level of greatest concern in the jurisdiction?
- Multiple threats or hazards occurring at the same time
- Cascading effects of a threat or hazard

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THIRA Steps

1. Identify threats and hazards of concern
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3. **Examine the core capabilities using the threats and hazards**
4. Set capability targets
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Step 3: Examine the Core Capabilities Using the Threats and Hazards

- Desired outcomes are established to explain what the jurisdiction wants to achieve for each core capability
- Impacts of the threats and hazards on a community is estimated
  - Impacts are understood through the lens of the core capabilities

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Step 3: Determine the Desired Outcomes

- Desired outcomes should be measurable, for example:
  - Response and Recovery mission areas are usually defined by time (e.g., must be accomplished within 24 hours)
  - Prevention, Protection, and Mitigation mission areas may use percentages (e.g., scanning 25 percent of cargo containers)

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Step 3: Desired Outcomes

Core Capability	Desired Outcome
Screening, Search, and Detection	Screen 100% of targeted cargo, conveyances, mail, baggage, and people associated with an imminent terrorist threat or act using technical, non-technical, intrusive, or non-intrusive means
Access Control and Identity Verification	Ensure 100% verification of identity to authorize, grant, or deny physical and cyber access to specific locations, information, and networks
Long-term Vulnerability Reduction	Achieve a measurable decrease in the long-term vulnerability of critical infrastructure and systems
Fatality Management Services	During the first 72 hours of an incident, conduct operations to recover fatalities
Infrastructure Systems	Within 15 days of an incident, restore and sustain essential services (public and private) to maintain community functionality

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Step 3: Estimate Impacts

- For each threat and hazard, determine the impacts on the community through the lens of the core capabilities
  - Some of the core capabilities may not apply for a threat or hazard.
  - For example, the prevention capabilities only apply to terrorism threats
- Consider impacts related to the mission areas
  - For example, in prevention and protection, think about what actions you would take to

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Step 3: Estimate Impacts

- These impacts may include:
  - Displaced households
  - Fatalities
  - Injuries/illnesses
  - Direct economic impacts
  - Disruption to infrastructure
  - Intelligence requirements and needs
  - Supply chain disruption
- Coordinate with whole community partners to review and validate impacts

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Step 3: Estimated Impacts Example

	Prevention	Protection	Mitigation	Response		Recovery	
	Screening, Search, and Detection	Access Control and Identity Verification	Long-term Vulnerability Reduction	Fatality Management Services	Public Health and Medical Services	Infrastructure Systems	Economic Recovery
IED Attack: A lone actor deploys an improvised explosive device (IED) in an indoor concourse of a stadium during a sporting event	**67,500 spectators 2,500 vendors and employees**	**2,500 vendors and employees**	Reinforce 500 concrete support columns in stadium concourse	52 fatalities	350 casualties	N/A	$14 million of direct economic loss (ticket sales, hotel stays, parking, food, and souvenirs)
Accidental Chemical Material Release: A nighttime accident in the rail yard results in the release of a toxic inhalation hazard (TIH) in a densely populated residential area	N/A	350 rail yard employees and first responders	**Reroute 100% of rail carrying TIH around densely populated areas**	4 fatalities	75 casualties	Damage and contamination to 3 lines at the rail yard	$11 million of direct economic loss (loss of the chemical, physical damage to train, damage to rail yard)
Earthquake: A magnitude 7.2 earthquake centered near an urban area occurs during mid-afternoon in March	N/A	N/A	Undertake seismic retrofit measures at all public stadiums	**375 fatalities**	**8,400 casualties**	**350,000 customers without power**	**$8.4 billion of direct economic loss**

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THIRA Steps

1. Identify threats and hazards of concern
2. Give the threats and hazards context
3. Examine the core capabilities using the threats and hazards
4. **Set capability targets**
5. Apply the results

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Step 4: Set Capability Targets

- Capability targets are based on the greatest estimated impact coupled with the desired outcomes
  - For example, if a train derailment kills 100 people and the desired outcome is to have all remains recovered within 72 hours, then the target capability is to recover 100 remains within 72 hours
- The output of this step is have a target for each of the Core Capabilities
- Jurisdictions may have more than one capability target for each Core Capability
- These targets will serve as the basis for the State Preparedness Report capability assessment

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Step 4: Set Capability Targets

Core Capability	Desired Outcome
Screening, Search, and Detection	Screen 100% of targeted cargo, conveyances, mail, baggage, and people associated with an imminent terrorist threat or act using technical, non-technical, intrusive, or non-intrusive means
Capability Target: *Screen 67,500 people* associated with an imminent terrorist threat or act using technical, non-technical, intrusive, or non-intrusive means	
Access Control and Identity Verification	Ensure 100% verification of identity to authorize, grant, or deny physical and cyber access to specific locations, information, and networks
Capability Target: *Verify 2,500 identities* to authorize, grant, or deny physical and cyber access	
Long-term Vulnerability Reduction	Achieve a measurable decrease in the long-term vulnerability of critical infrastructure and systems
Capability Target: Achieve a measurable decrease in the long-term vulnerability by *rerouting 100% of rail containing toxic inhalation chemicals around densely populated areas*	
Fatality Management Services	During the first 72 hours of an incident, conduct operations to recover fatalities
Capability Target: During the first 72 hours of an incident, conduct operations to *recover 375 fatalities*	
Infrastructure Systems	Within 15 days of an incident, restore and sustain essential services (public and private) to maintain community functionality
Capability Target: Within 15 days of an incident, *restore power to 350,000 customers*	

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THIRA Steps

1. Identify threats and hazards of concern
2. Give the threats and hazards context
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5. **Apply the results**

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Step 5: Apply THIRA Results

- After THIRA is completed, apply results to the community's risk management efforts
  - One of the ways to apply the results is to use the Capability Targets as part of an assessment; for example, in the development of the SPR
- A jurisdiction may find it simply needs to sustain existing capabilities, or it may identify a resource shortfall or capability gap

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Step 5: Apply THIRA Results

- Preparedness efforts that can also be enhanced by a THIRA include:
  - Emergency operations plan production
  - Hazard mitigation plans
  - Strategic planning for prioritizing assets
  - Equipment purchases and personnel hiring
  - Public awareness campaigns
  - Exercises
  - Training

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Questions?

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