

Resiliency

“A Continuum of Opportunities”

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Resilience

- **Elasticity; hence, capability of a strained body to recover its size and shape after deformation**

Webster's New Collegiate Dictionary, 2^{ed}, 1953

- **Ability to bounce or spring back into shape, position, etc. after being pressed or stretched; elasticity**

Webster's New World Dictionary, 1968

- **An ability to recover from or adjust easily to misfortune or change**

Webster's 9th New Collegiate Dictionary, 1986

- **Ability to recover readily from illness, depression, adversity, or the like; buoyancy**

Dictionary.com, 2018

Federal Guidance

Presidential Policy Directive (PPD) 8 – National Preparedness

... strengthening the security and resilience of the US through systematic preparation for the threats that pose the greatest risk to the security of the Nation, including acts of terrorism, cyber attacks, pandemics, and catastrophic natural disasters.

Definitions

(c) The term "resilience" refers to the

ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.

Federal Guidance (Cont)

Presidential Policy Directive (PPD) 21

– **Critical Infrastructure Security and Resilience**

... seek to reduce vulnerabilities, minimize consequences, identify and disrupt threats, and hasten response and recovery efforts related to critical infrastructure.

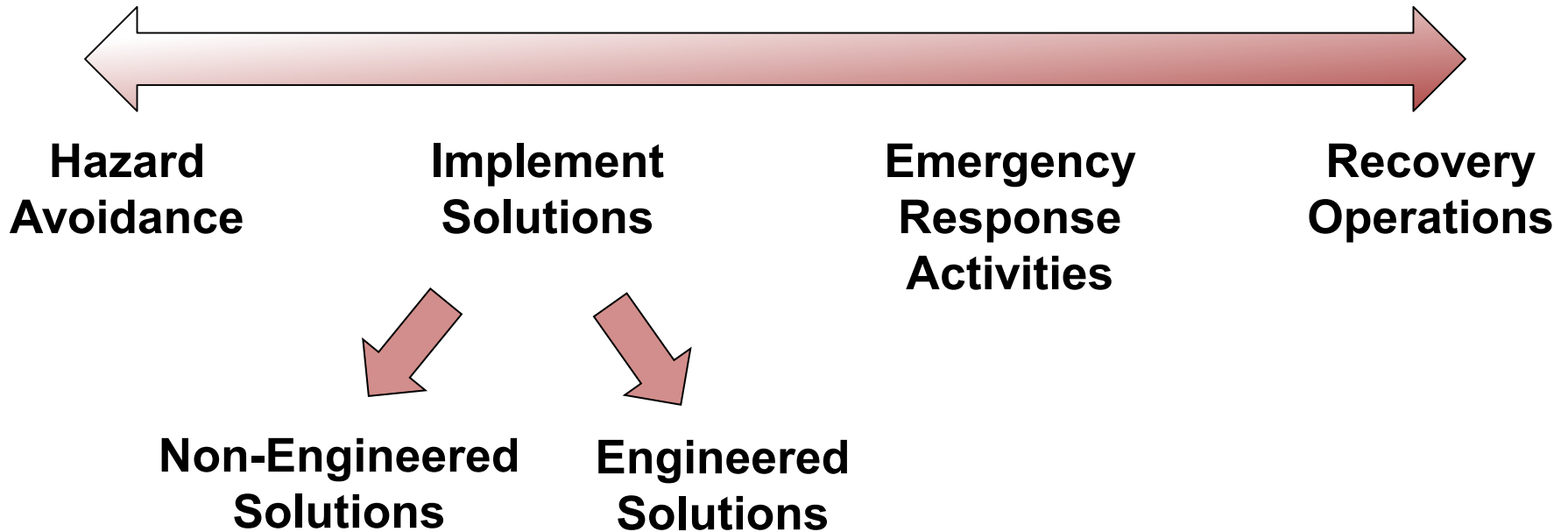
Definitions

The term "resilience" means the;

ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions.

Resilience includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents.

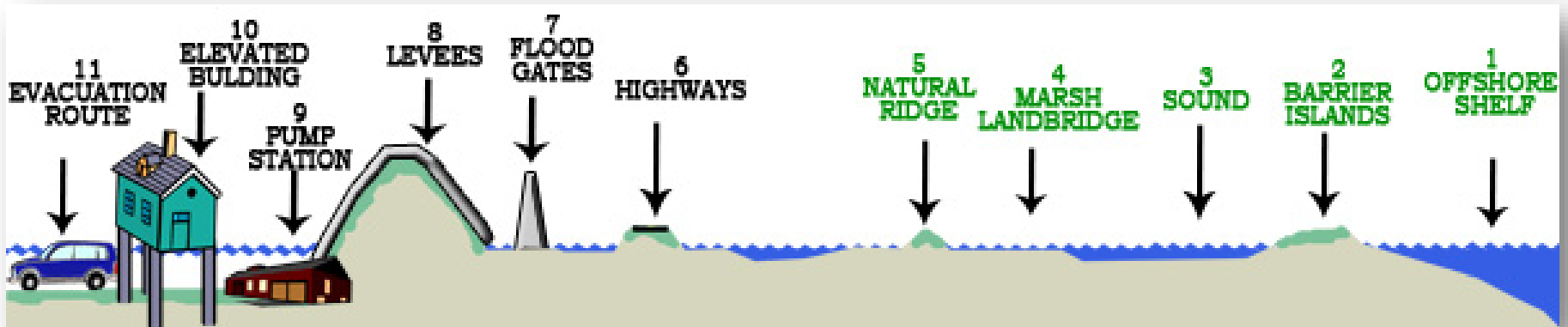
Resilience Response Continuum



Implement Solutions

Multiple Lines of Defense or Resilience

- Multiple lines of defense and combinations of measures improve resilience and drive down risk
- Resilience includes adapting, which may require shifting between measures over time as conditions change



Graphic from ww.mfods.org

Implement Solutions Systems Approach



All stakeholders contribute to reducing risk!

Implement Solutions

Risk Characterization by Failure Mode

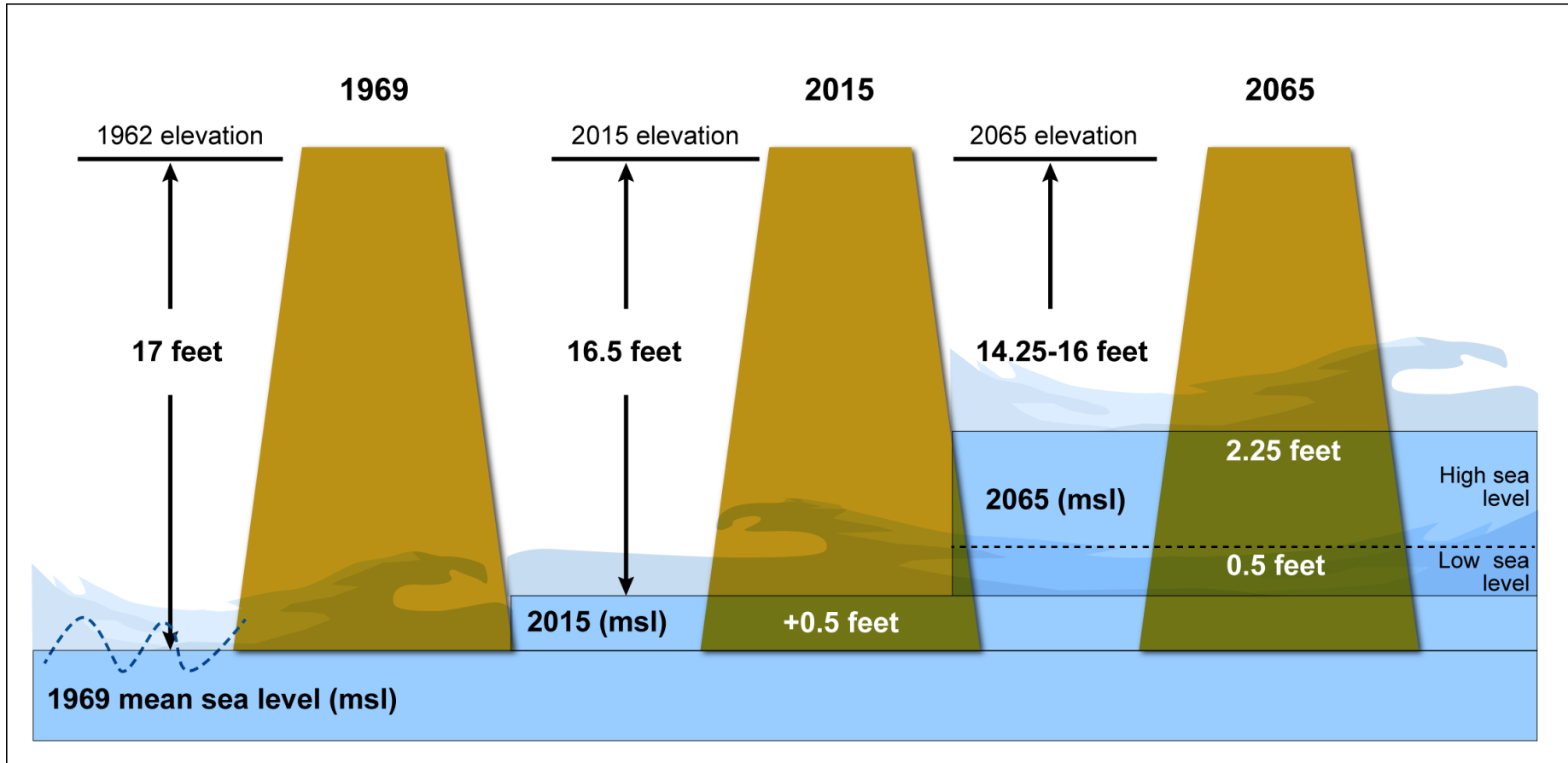


Risk = f(Hazard, Performance, Consequences)



Implement Solutions

Risk Characterization by Loading Change



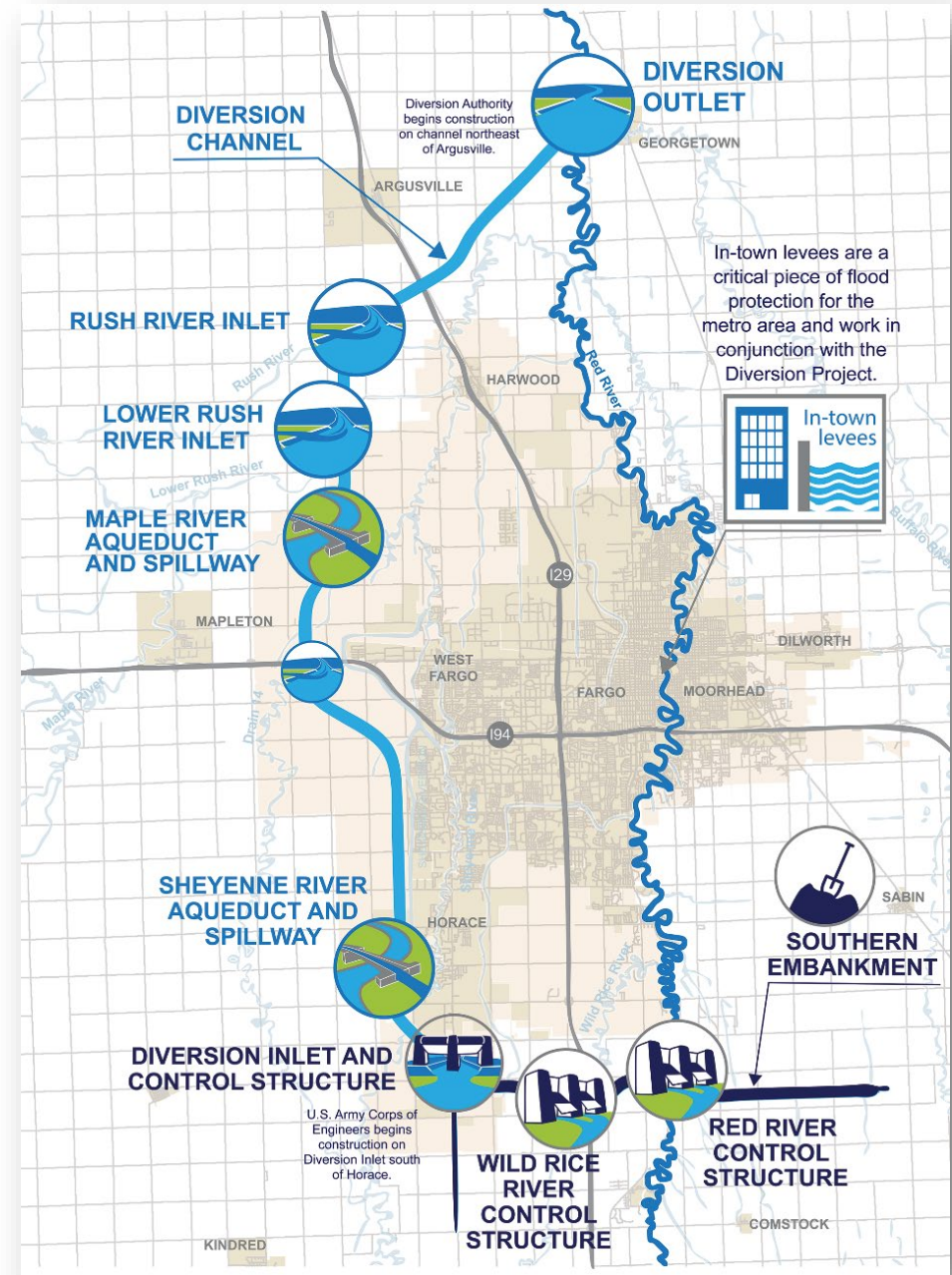
Source: GAO representation of U.S. Army Corps of Engineers data. | GAO-15-660

Implement Solutions

Risk Reduction through Financing

Public-Private Partnership

Fargo-Moorehead Diversion
Project, ND, MN



EMBED SUSTAINABILITY & RESILIENCE

4 Principles of Resilience

Prepare - Absorb - Recover - Adapt



**Efficient use of
natural & financial
resources**

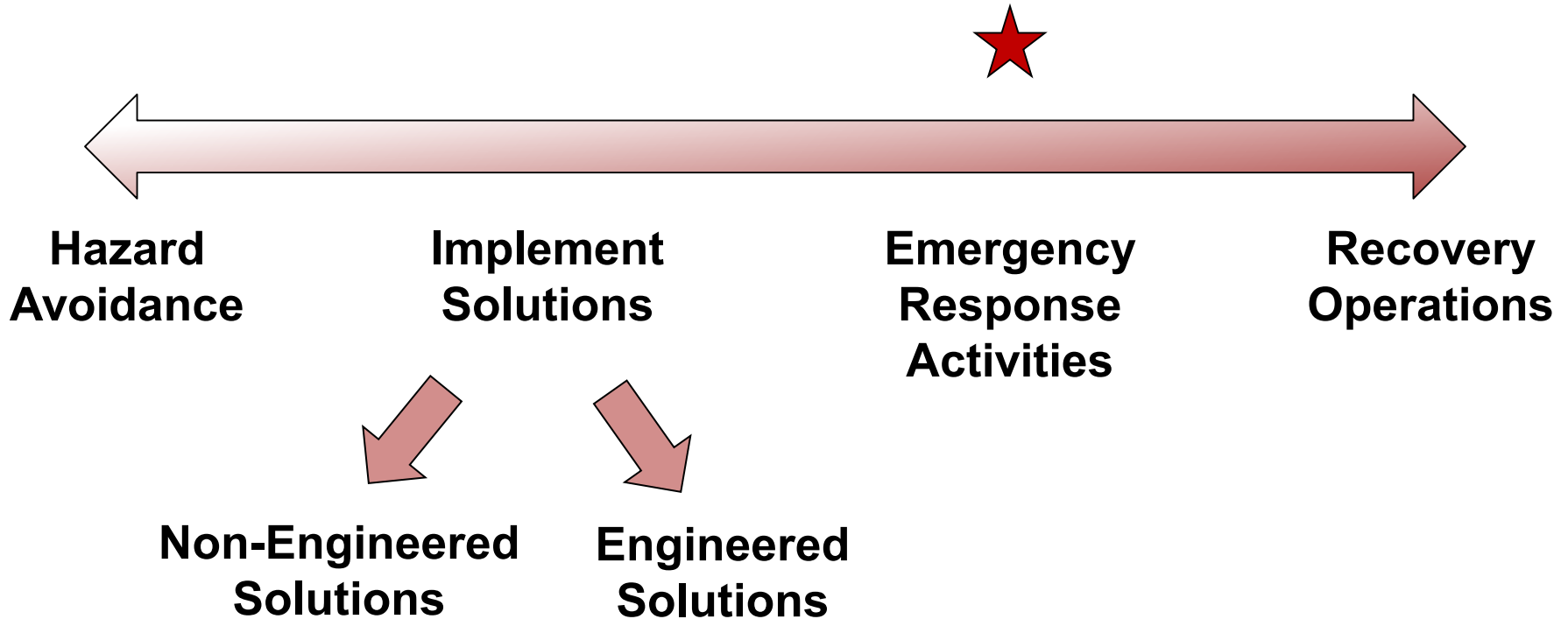


**Resilience to natural &
human-caused
hazards**



**Holistic master
planning**

Resilience Response Continuum



National Disaster Recovery Framework

- The NDRF is a **companion document to the National Response Framework (NRF)**
 - Deals with immediate disaster response (“**Triage**”)
 - Supported by on-going development of detailed operational, management, field guidance, and training tools for dealing specifically with the Recovery efforts (“**Physical Therapy**”) short, immediate, and long term.
- A **guide** to promote effective **Recovery**
 - particularly incidents that are large-scale or catastrophic
- NDRF applies to all Presidentially declared major disasters
 - invokes the Stafford Act

NDRF Core Recovery Principles

- 1) Individual and Family Empowerment**
- 2) Leadership and Local Primacy**
- 3) Pre-Disaster Recovery Planning**
- 4) Partnerships and Inclusiveness**
- 5) Public Information**
- 6) Unity of Effort**
- 7) Timeliness and Flexibility**
- 8) Resilience and Sustainability**
- 9) Psychological and Emotional Recovery**

Newer Concepts Under NDRF

- 1) **Federal Disaster Recovery Coordinator (FDRC)**
- 2) **State or Tribal Disaster Recovery Coordinator (SDRC or TDRC)**
- 3) **Local Disaster Recovery Manager (LDRM)**
- 4) **Recovery Support Functions (RSFs)**
 - **Community Planning and Capacity Building**
 - **Economic**
 - **Health and Social Services**
 - **Housing**
 - **Infrastructure Systems**
 - **Natural and Cultural Resources**

Infrastructure Systems under the NDRF

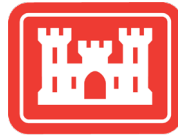
Recovery Support Function (RSF) Scope includes

- **Infrastructure Sector and Subsectors defined through the [NIPP – National Infrastructure Protection Plan](#)**
 - **16 Sectors defined in PPD21 (Critical Infrastructure Security and Resilience)**
 - Energy
 - Water/waste water
 - Dams
 - Manufacturing
 - Communications
 - Transportation
 - Agricultural
 - Financial Services
 - Chemical
 - Nuclear reactors
 - Emergency services
 - Gov't facilities
 - IT
 - Commercial facilities
 - Defense Industrial Base
 - Healthcare and Public Health
- **Two former sectors: National Monuments and Icons fall under Government Facilities; Postal and Shipping falls under the Transportation Systems**

Infrastructure Systems Recovery Support Function

Agencies and their roles

COORDINATING AGENCY



PRIMARY AGENCIES



SUPPORTING AGENCIES



Infrastructure Specific Agency and Key Resources Sectors



Department of Agriculture
Department of Health and Human Services
Agriculture and Food



Department of Defense
Defense and Industrial Base



Department of Energy
Energy



Department of Health and Human Services
Public Health and Healthcare



Department of Homeland Security
Critical Manufacturing Sector



Department of the Treasury
Banking and Finance



Environmental Protection Agency
Drinking Water and Water Treatment Systems

Infrastructure Specific Agency and Key Resources Sectors



**Department of Homeland Security
Office of Infrastructure Protection**
Chemical



**Department of Homeland Security
Office of Cyber Security & Communications**
Information Technology



**Department of Homeland Security
Office of Infrastructure Protection**
Commercial Facilities



**Department of Homeland Security
Office of Cyber Security & Communications**
Communications



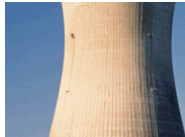
**Department of Homeland Security
Office of Infrastructure Protection**
Dams



**Department of Homeland Security
Transportation Security Administration/
U.S. Coast Guard**
Transportation Systems



**Department of Homeland Security
Office of Infrastructure Protection**
Emergency Services



**Department of Homeland Security
Office of Infrastructure Protection**
Nuclear Reactors, Materials and Waste



**Department of Homeland Security
Office of Infrastructure Protection**
Government Facilities

RSF & Capabilities

Goal of infrastructure systems recovery process is to

match the capacity of all infrastructure systems to a community's current and projected demand

on its built and virtual environment

- **RSF's pursue this course of action to the extent allowable by available resources and program authorities**
- **End-state occurs when infrastructure systems recovery goals are met**

OR

- **RSF member agencies' existing programs and authorities are exhausted and/or external funding is no longer available**

Pre-Disaster: Infrastructure RSF

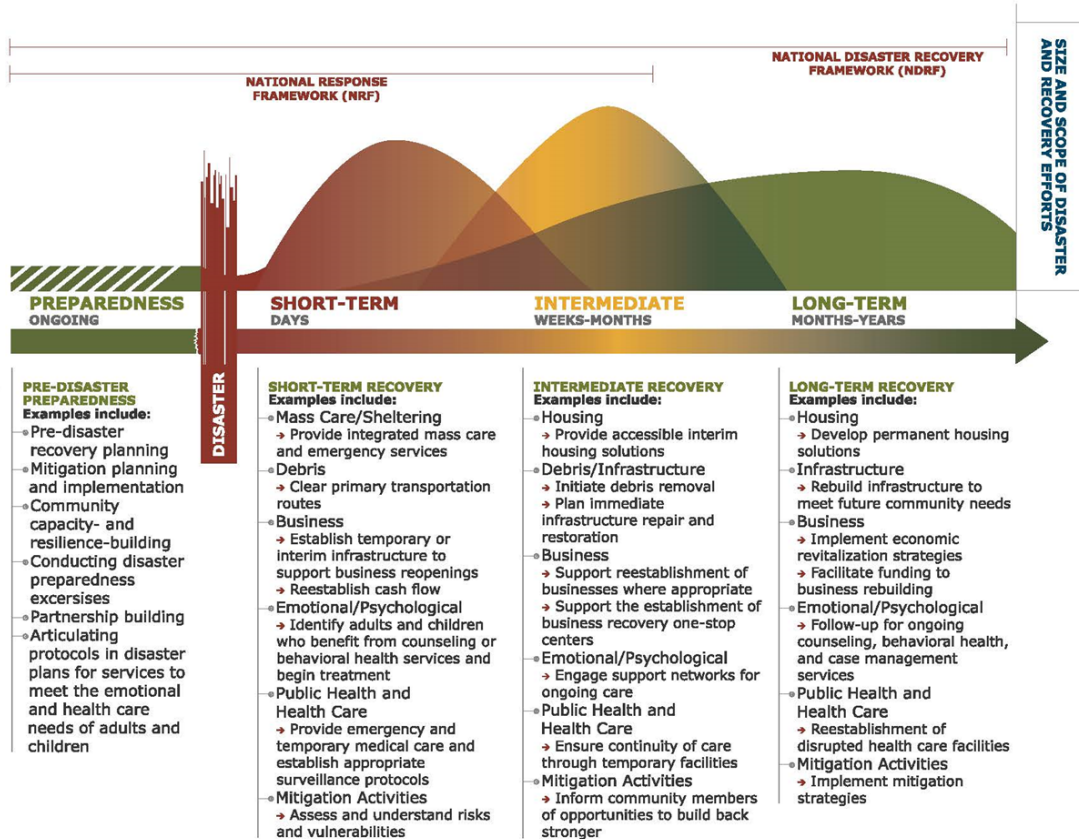
- Develops **guidance and standard procedures** for rapid activation of RSF capabilities
- **Identifies relevant statutory and/or regulatory programs**, potential capabilities and/or limiting factors pertaining to recovery support
- **Provides a forum** for interagency coordination, information sharing, and exchange of best practices
- **Supports planning**, preparedness, education, and training
- **Works with partners** to identify critical facilities and ensure considerations are made to reduce risk pre- and post-disaster

Post-Disaster: Infrastructure RSF

- When activated by the FDRC – **deploy**
 - Supports the **recovery** of infrastructure systems, dependent on the nature and scope of the disaster
 - Participates in the **national-level coordination** of damage and community needs assessments
 - **Deploys RSF resources**, as required by the specific disaster situation
 - Helps **resolve conflicts**, including those across jurisdictional lines
 - **Sets schedules** and sequenced time structure for future infrastructure recovery projects
 - Works with RSF partners to **leverage available financial and technical assistance**, both from governmental and nongovernmental sources
-

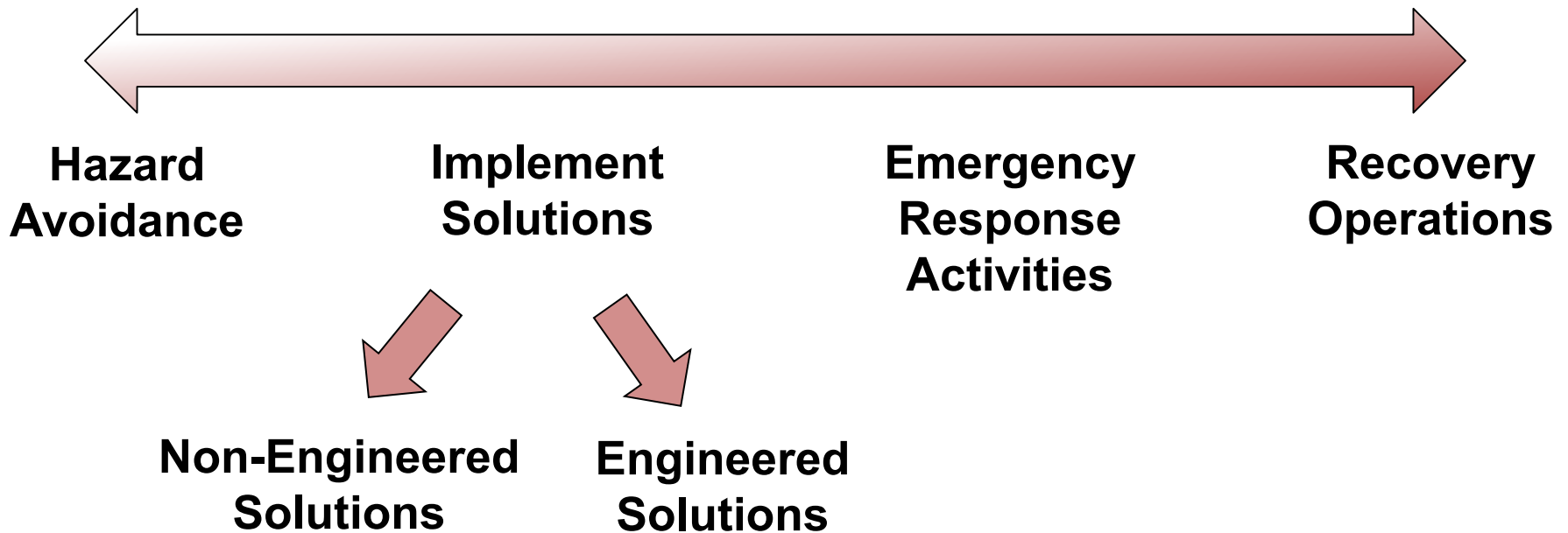
Recovery Continuum

FIGURE 1. RECOVERY CONTINUUM – DESCRIPTION OF ACTIVITIES BY PHASE



This recovery continuum describes overlapping recovery activities by phase.

Resilience Response Continuum



Guiding Principles for the National Critical Infrastructure)

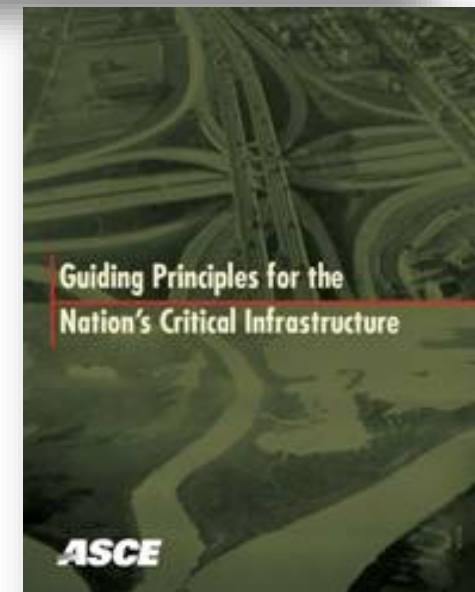
Overarching Principle

Hold paramount the safety, health, and welfare of the public



Guiding Principles

- 1) Quantify, communicate, and manage risk
- 2) Employ an integrated systems approach
- 3) Exercise sound leadership, stewardship in decision-making processes
- 4) Adapt critical infrastructure in response to dynamic conditions and practice



Resilience Strategies

- **Strategy 1: Evolve Standards & Criteria**
 - Risk-informed design integrated across disciplines
 - Greater accounting for uncertainty
 - Ensuring adaptive capacity
- **Strategy 2: Support Community Resilience (CR)**
 - How each mission area can best support CR
 - Work collaboratively (federal, state, regional, community, and other partnerships)
- **Strategy 3 – Focus on Priority Areas**
 - Critical infrastructure
 - Tolerable risk



Questions?

Thank you

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