Joe Manous, PE, Ph.D, D.WRE
Director, Institute for Water Resources
U.S. Army Corps of Engineers
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Title:
Resiliency – “A Continuum of Opportunities”
RESILIENCE

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

Webster’s New Collegiate Dictionary, 2nd, 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
President 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.
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

- Hazard Avoidance
- Implement Solutions
- Emergency Response Activities
- Recovery Operations

- Non-Engineered Solutions
- Engineered Solutions
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
All stakeholders contribute to reducing risk!
IMPLEMENT SOLUTIONS
RISK CHARACTERIZATION BY FAILURE MODE

Risk = f(Hazard, Performance, Consequences)

- Breach Prior to Overtopping
- Overtopping with Breach
- Malfunction of Levee System Components
- Overtopping Without Breach
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
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
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
NEW 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
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
  - Commercial facilities
  - IT
  - Defense Industrial Base
  - Healthcare and Public Health
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
<table>
<thead>
<tr>
<th>INFRASTRUCTURE SPECIFIC AGENCY</th>
<th>AND KEY RESOURCES SECTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department of Homeland Security</strong></td>
<td><strong>Office of Infrastructure Protection</strong></td>
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<tr>
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<td><strong>Office of Infrastructure Protection</strong></td>
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<td><strong>Office of Infrastructure Protection</strong></td>
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<td><strong>Office of Infrastructure Protection</strong></td>
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<td><strong>Office of Infrastructure Protection</strong></td>
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<tr>
<td>Nuclear Reactors, Materials and Waste</td>
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<tr>
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<td><strong>Office of Cyber Security &amp; Communications</strong></td>
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<td><strong>Office of Cyber Security &amp; Communications</strong></td>
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<td></td>
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<td><strong>Transportation Security Administration/U.S. Coast Guard</strong></td>
</tr>
<tr>
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</tr>
<tr>
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<td><strong>Office of Infrastructure Protection</strong></td>
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<tr>
<td>Government Facilities</td>
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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
Figure 1. Recovery Continuum — Description of Activities by Phase

- **Pre-Disaster Preparedness**: Examples include:
  - Pre-disaster recovery planning
  - Mitigation planning and implementation
  - Community capacity- and resilience-building
  - Conducting disaster preparedness exercises
  - Partnership building
  - Articulating protocols in disaster plans for services to meet the emotional and health care needs of adults and children

- **Disaster**
  - Short-term recovery:
    - Examples include:
      - Mass Care/Sheltering
      - Provide integrated mass care and emergency services
      - Debris
      - Clear primary transportation routes
      - Business
      - Establish temporary or interim infrastructure to support business reopenings
      - Reestablish cash flow
      - Emotional/Psychological
      - Identify adults and children who benefit from counseling or behavioral health services and begin treatment
      - Public Health and Health Care
      - Provide emergency and temporary medical care and establish appropriate surveillance protocols
      - Mitigation Activities
      - Assess and understand risks and vulnerabilities
  - Intermediate recovery:
    - Examples include:
      - Housing
      - Provide accessible interim housing solutions
      - Debris/Infrastructure
      - Initiate debris removal
      - Plan immediate infrastructure repair and restoration
      - Business
      - Support reestablishment of businesses where appropriate
      - Support the establishment of business recovery one-stop centers
      - Emotional/Psychological
      - Engage support networks for ongoing care
      - Public Health and Health Care
      - Ensure continuity of care through temporary facilities
      - Mitigation Activities
      - Inform community members of opportunities to build back stronger
  - Long-term recovery:
    - Examples include:
      - Housing
      - Develop permanent housing solutions
      - Infrastructure
      - Rebuild infrastructure to meet future community needs
      - Business
      - Implement economic revitalization strategies
      - Facilitate funding to business rebuilding
      - Emotional/Psychological
      - Follow-up for ongoing counseling, behavioral health, and case management services
      - Public Health and Health Care
      - Reestablishment of disrupted health care facilities
      - Mitigation Activities
      - Implement mitigation strategies

- **National Response Framework (NRF)**

- **National Disaster Recovery Framework (NDRF)**
RESILIENCY RESPONSE CONTINUUM

Hazard Avoidance | Implement Solutions | Emergency Response Activities | Recovery Operations

Non-Engineered Solutions | Engineered Solutions
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?