



FEMA

# Hurricane Matthew – Finding the Silver Lining through Mitigation and Disaster Recovery

**Robbie Coates**, Grants Manager, Disaster Programs, Virginia Department of Emergency Management

**Charlie Baker**, Floodplain Management Specialist, Mitigation Division, FEMA Region III

**Mari Radford**, Senior Community Planner, Mitigation Division, FEMA Region III

**Michelle Diamond**, Recovery Executive Officer, Recovery Division, FEMA Region III

**Kevin Snyder**, Federal Disaster Recovery Coordinator, FEMA Region III

# Today's Discussion

---

## **Setting the Stage – Hurricane Matthew Response**

Robbie Coates, Grants Manager, Disaster Programs, VDEM

## **Disaster Impacts and Implications**

Charlie Baker, Floodplain Management Specialist, Mitigation Division, FEMA

## **Tools, Incentives, and Partnerships**

Mari Radford, Senior Community Planner, Mitigation Division, FEMA

## **Recovery Planning and Resources**

Michelle Diamond, Recovery Executive Officer, Recovery Division, FEMA

Kevin Snyder, Federal Disaster Recovery Coordinator, FEMA



**FEMA**

# Today's Discussion

---

## Setting the Stage – Hurricane Matthew Response

**Robbie Coates, Grants Manager, Disaster Programs, VDEM**

## Disaster Impacts and Implications

Charlie Baker, Floodplain Management Specialist, Mitigation Division, FEMA

## Tools, Incentives, and Partnerships

Mari Radford, Senior Community Planner, Mitigation Division, FEMA

## Recovery Planning and Resources

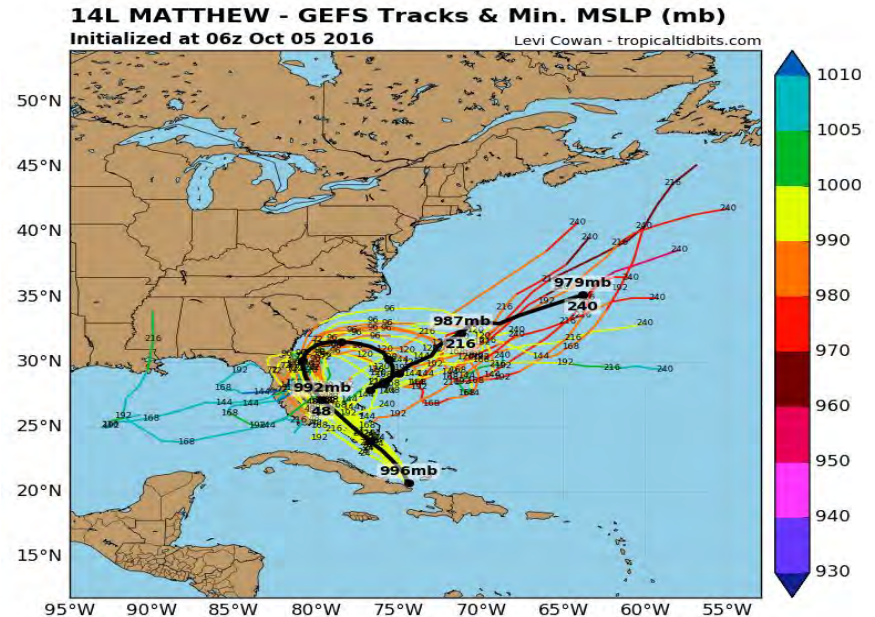
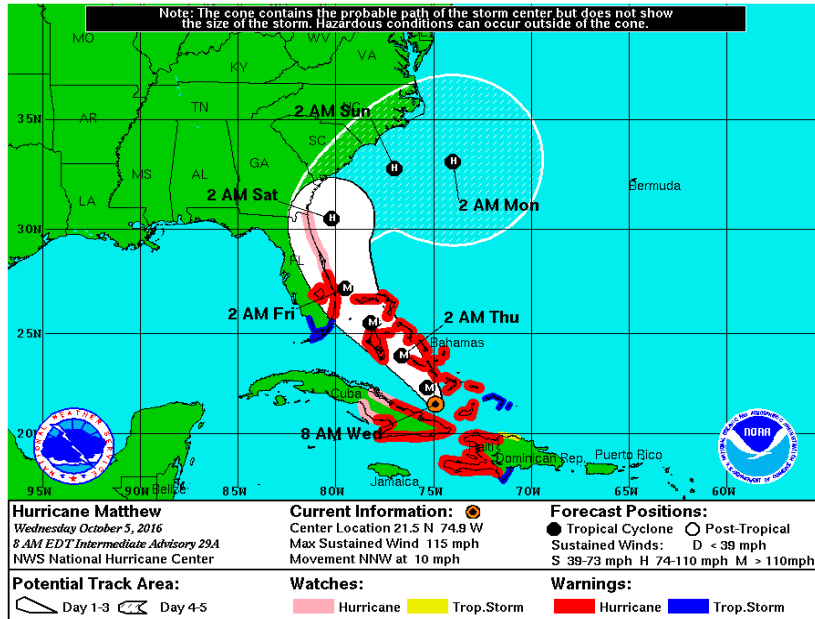
Michelle Diamond, Recovery Executive Officer, Recovery Division, FEMA

Kevin Snyder, Federal Disaster Recovery Coordinator, FEMA



**FEMA**

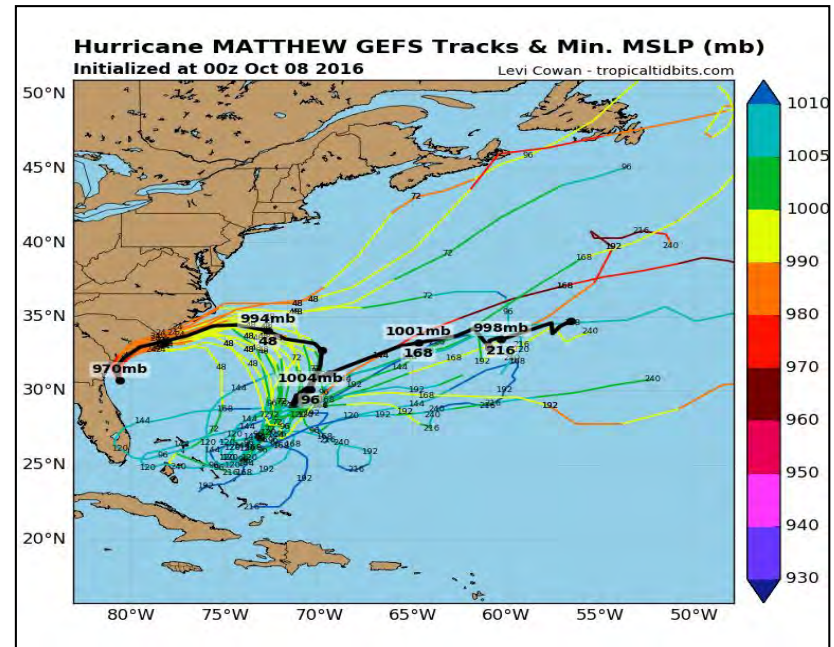
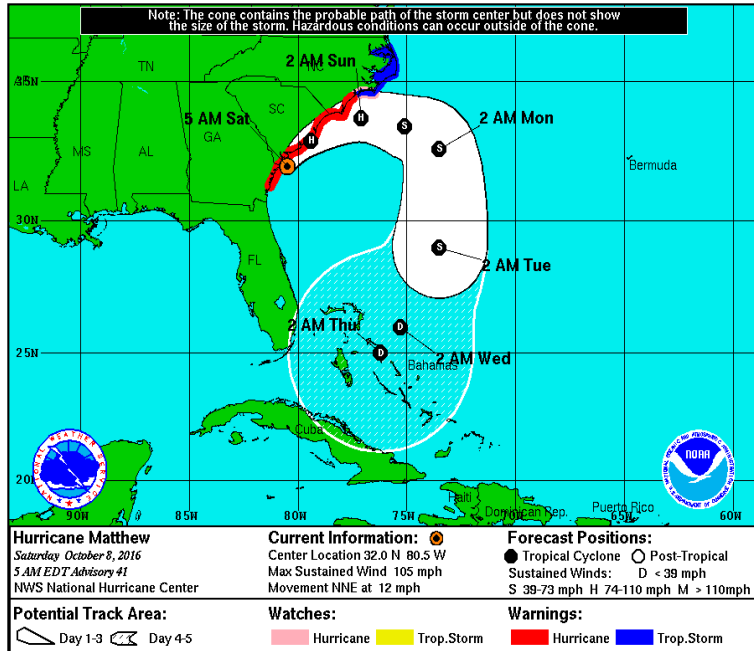
# October 4, 2016 - Hurricane Matthew Forecast



FEMA



# October 8, 2016 – Hurricane Matthew Forecast



FEMA

# October 8, 6pm update

---

A dangerous situation is potentially unfolding across extreme SE VA and NE NC with heavy rain expected through the night. With 3 – 6” inches of rain already fallen across the Tidewater of VA and NE NC and an additional 3 – 7” possible overnight, **significant flooding** is possible.

Numerous flood warnings are already in effect through the night for much of SE VA/NE NC. It is possible that the flooding in some locations will be similar to that of Hurricane Floyd.

In addition, moderate coastal flooding, high surf and coastal/beach erosion is expected tonight into Sunday, as well as wind gusts to 45-55 mph near the coast.



FEMA

# Hurricane Floyd....REALLY??

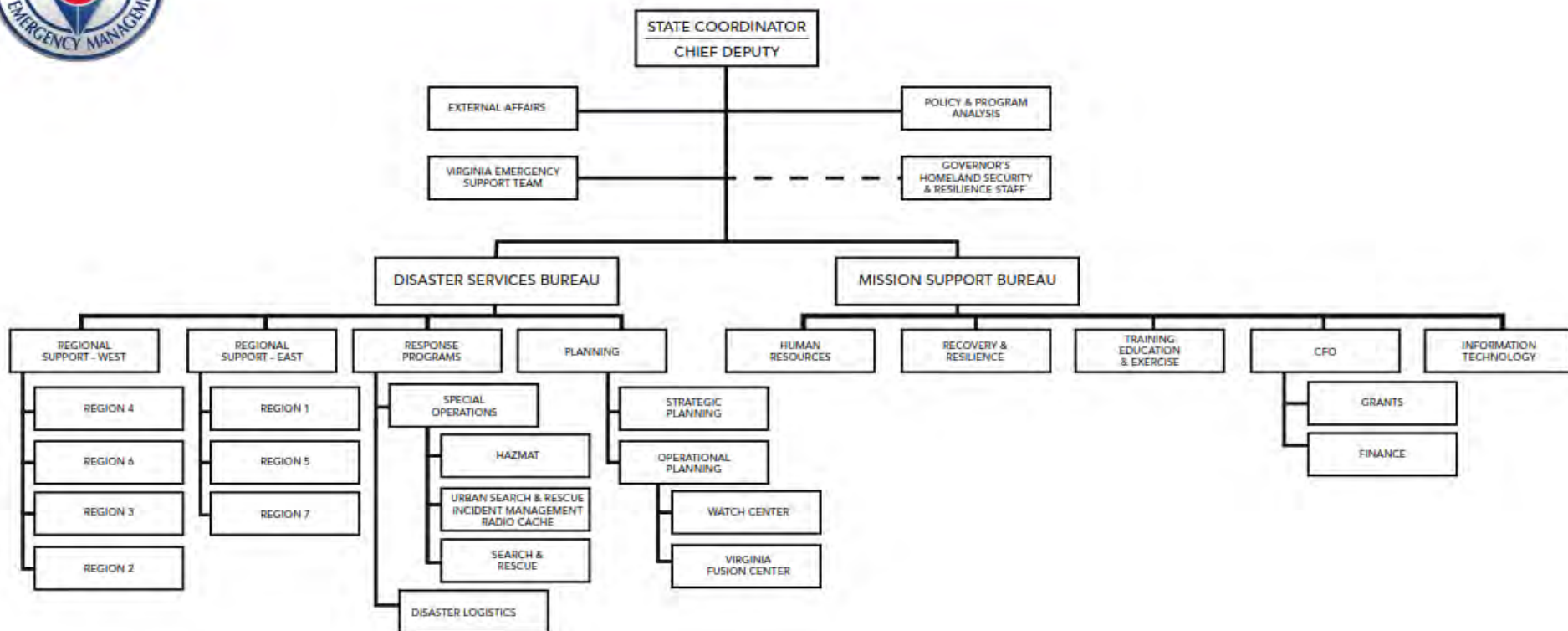
---



**FEMA**



# Virginia Department of Emergency Management Re-organization and Recovery



FEMA



# Damage Assessment

---

VDEM sent out damage assessment teams concurrently for Individual Assistance and Public Assistance

- VDEM staff from each division were sent out in the field
- Preliminary Damage Assessments were completed within 14 days from the disaster – validation took a few more days
- Recovery and Resilience Division Director was on a blackhawk helicopter with the Governor on his second day on the job.



FEMA

# Joint Field Office (JFO) Operations

---

VDEM utilized Hurricane Matthew, due to its size to build capacity

- History of relying on surging of contractors on the front end
- Once VDEM established the workload, it was determined that in-house staff could handle the workload
- Utilized both Public Assistance (2 new staff) and Hazard Mitigation (3 staff) grant administrators to support the Public Assistance Officer
- VDEM's CFO ran the Individual Assistance Program
- New Recovery and Resilience Division Director
- VDEM Regional Support Staff assisted with JFO operations as well as staffing the disaster recovery centers open in each IA declared locality
- Staff from each division were rotated in 1 week assignments through the JFO doing planning, grants, logistics, and external messaging.



FEMA

# Hazard Mitigation Strategy

There was an emphasis on utilizing mitigation measures during repairs through the public assistance program (aka 406 mitigation)

Disaster	Total PA	Total 406 Mitigation	Percentage
Hurricane Irene	\$57.2M	\$123,877	.002%
Mineral Earthquake	\$43.5M	\$21,286	.00004%
Tropical Storm Lee	\$5.8M	\$382,962	.06%
Derecho	\$21.9M	\$7,692	.0003%
Hurricane Sandy	\$10.5M	\$209,687	.02%
Hurricane Matthew	\$14.2M	\$424,949	.03%

**For every \$1 PA dollar spent, national average is for 406 is \$0.03 cents per dollar.**



**FEMA**

# Non-Insured Structures and Mitigation

---

- The flooding associated with Hurricane Matthew brought awareness to Virginia localities regarding the flooding from non-traditional sources (i.e., rivers, streams, and coastlines).
- There is substantial risk outside of these areas
- Hurricane Harvey, on a much larger magnitude, was of the same principle
- Risk communication needs to continue to improve, which will hopefully lead to an uptick in flood insurance purchases.



FEMA



# Hazard Mitigation Grant Program Challenges

---

- Substantial Damage Determination
  - Not in a floodplain, cannot take advantage of the cost effectiveness waiver for acquisition/demolition
- Risk is difficult to determine
  - Likely no record of previous flooding through claims data, difficult to justify cost effectiveness
- Voluntary Program
  - This applies to both the homeowner and the locality.
- Timing of Federal Assistance
  - HMGP applications are not due until one year after the declaration
  - PA hazard mitigation opportunities are typically identified within the first 3-6 months. Hard to synch up efforts.



FEMA

# Today's Discussion

---

## Setting the Stage – Hurricane Matthew Response

Robbie Coates, Grants Manager, Disaster Programs, VDEM

## Disaster Impacts and Implications

**Charlie Baker, Floodplain Management Specialist, Mitigation Division, FEMA**

## Tools, Incentives, and Partnerships

Mari Radford, Senior Community Planner, Mitigation Division, FEMA

## Recovery Planning and Resources

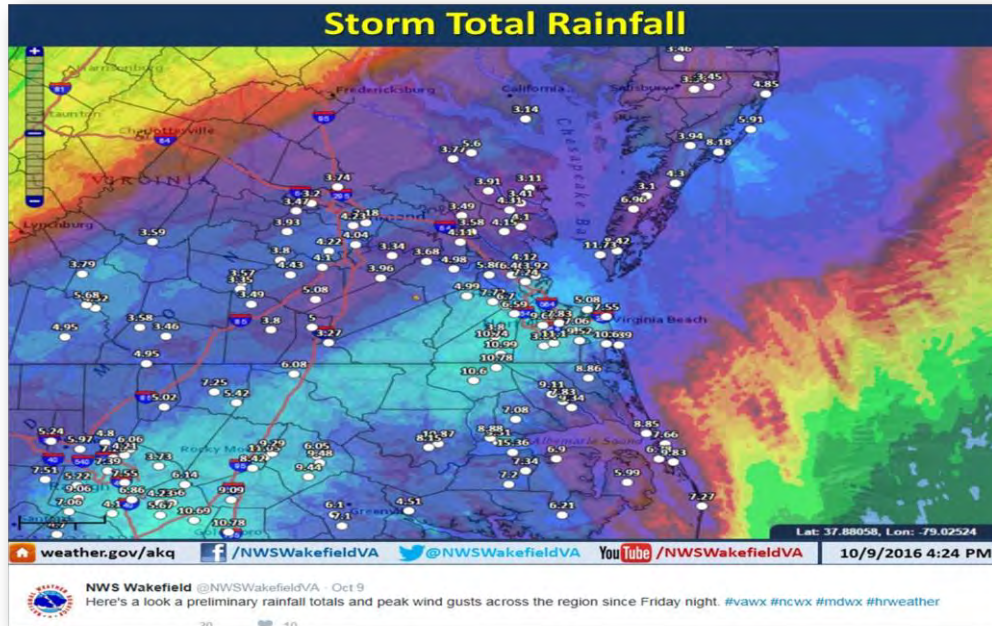
Michelle Diamond, Recovery Executive Officer, Recovery Division, FEMA

Kevin Snyder, Federal Disaster Recovery Coordinator, FEMA



**FEMA**

# Hurricane Matthew – Rainfall Totals



- Rainfall totals in the Hampton Roads area ranged from 3 to 14" inches over 34 hours
- The populated areas of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach were the heaviest hit
- The National Weather Service at Wakefield reported 10 or more inches of rain in a band from Rocky Mount, North Carolina through the Virginia Beach area (<https://twitter.com/NWSWakefieldVA>, October 9, 2016).



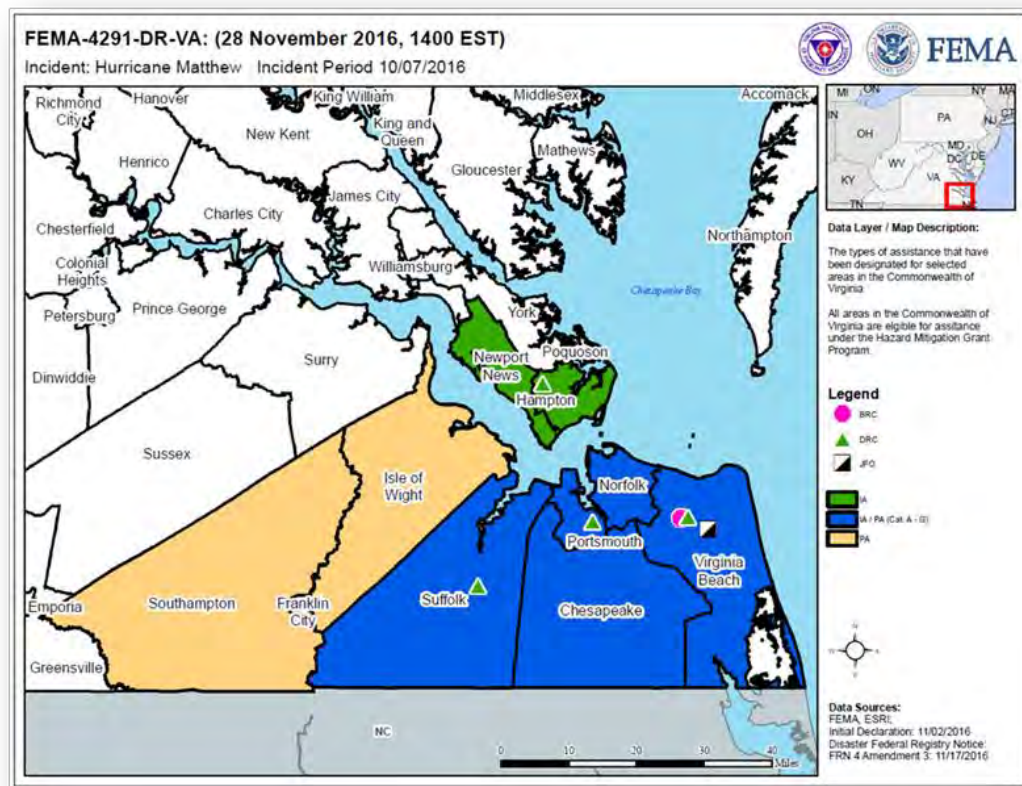
FEMA



# Virginia Hurricane Matthew Major Disaster Declaration (FEMA-4291-DR-VA)

Incident Period: October 7, 2016 – October 15, 2016

Major Disaster Declaration declared on November 2, 2016



Individual Assistance applications approved: **2,261**

Total Individual & Households Program dollars approved: **\$10,194,952.36**

Total Public Assistance Grants dollars obligated: **\$15,439,985.26**

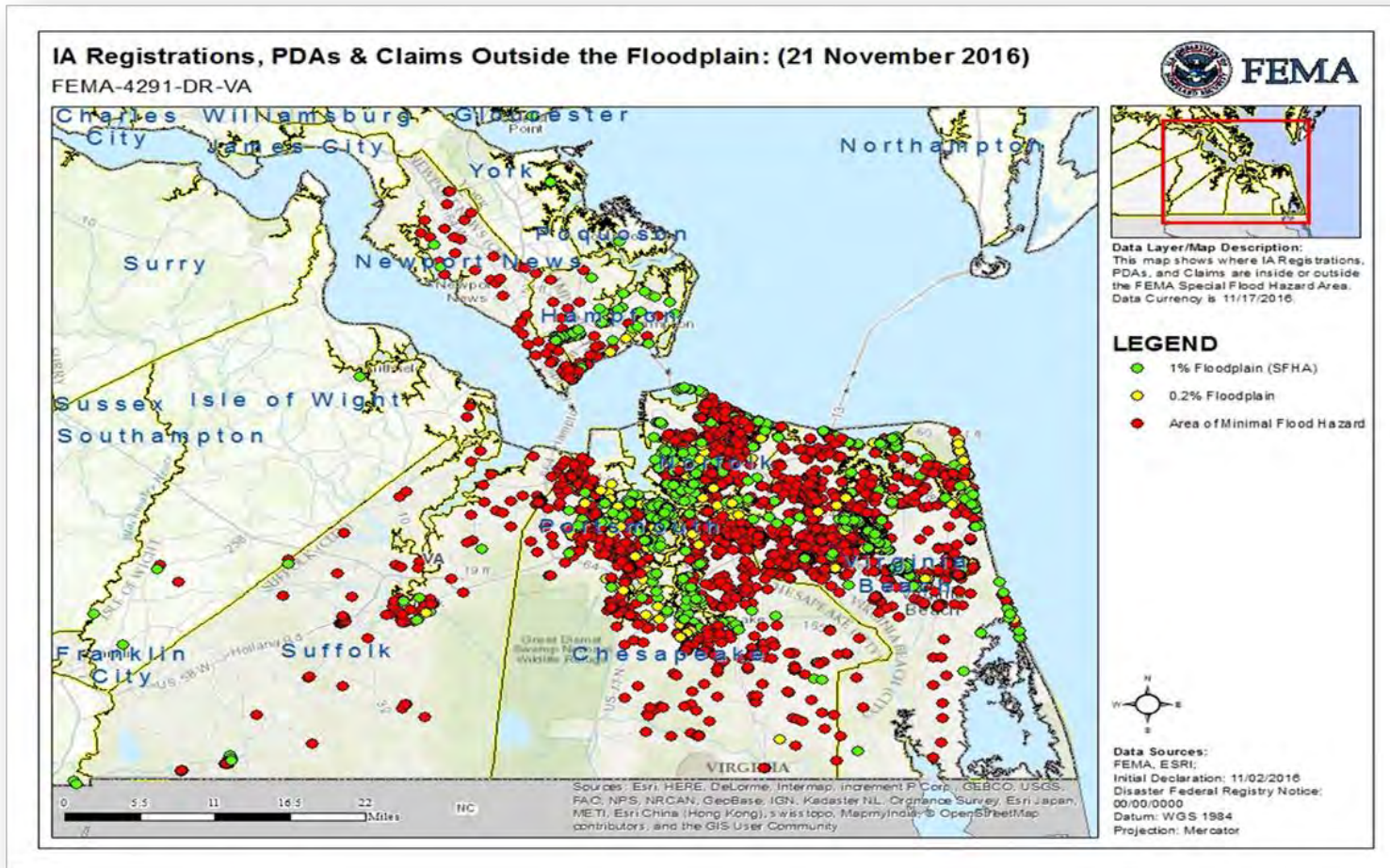
Designated Counties  
(Individual Assistance):  
Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Suffolk, Virginia Beach



**FEMA**



# Impacted Structures!



FEMA

# Individual Assistance Registrations in Relation to the Floodplain

Roughly **70%** of all Individual Assistance (IA) registrations are for owners of structures outside the FEMA mapped floodplain.

Within the 1% Annual Chance (100-yr) Flood Hazard Area? (SFHA)	Number of IA Applications with Damage (as of 11/21/2016)	Percentage of Total
<b>YES</b>	<b>898</b>	<b>30%</b>
<b>NO</b>	<b>2,078</b>	<b>70%</b>



**FEMA**

# Preliminary Damage Assessments in Relationship to the FEMA Floodplain

Similar to IA registrations, roughly 71% of all Preliminary Damage Assessments (PDAs) occurred at structures outside the FEMA mapped floodplain.

Within the 1% Annual Chance (100-yr) Flood Hazard Area? (SFHA)	Number of Preliminary Damage Assessments	Percentage of Total
<b>YES</b>	<b>363</b>	<b>29%</b>
<b>NO</b>	<b>895</b>	<b>71%</b>



**FEMA**

# Coastal Gage Analysis

---

- Comparison of Mapped Base Flood Elevation (BFE) and Stillwater Elevation in FIS to a nearby USGS Gage or Sensor
- Coastal gage storm surge elevations in the declared jurisdictions were analyzed against the FEMA Flood Insurance Study report Stillwater Elevation table and FIRMs for each jurisdiction.
- In all but two of the 8 gages analyzed, the Hurricane Matthew storm surge elevation was below or roughly equivalent to the **10% (10-year) event flood heights**, indicating a higher-frequency, but lower risk event.
- Two gages, Eastern Branch Elizabeth River in Virginia Beach, and Nansemond River in Suffolk, were either between the 10% and 2% (50-year) or roughly equivalent to the 2% annual chance flood hazard event.



FEMA

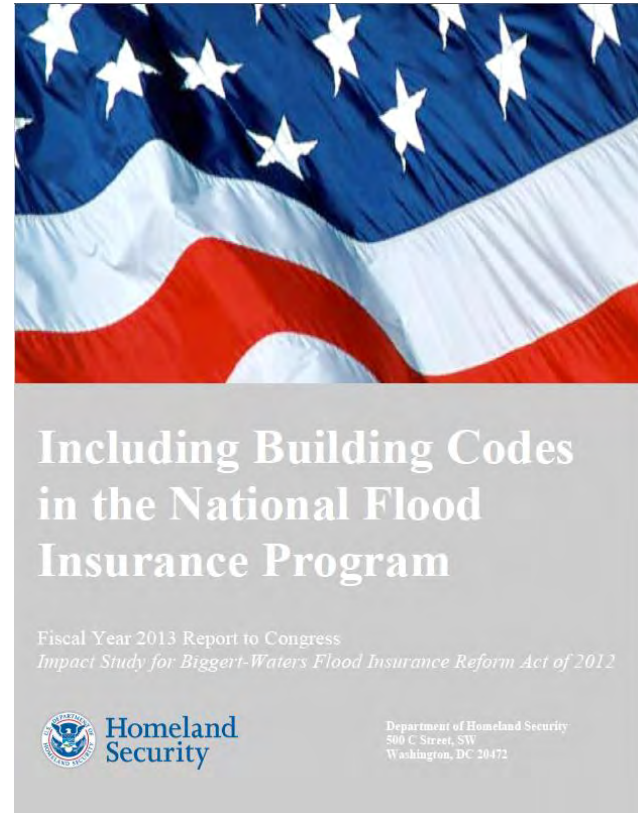


# Quick Facts: NFIP and I-Codes

In 2013, Congress requested a study on the impact, effectiveness and feasibility of including building codes in the NFIP.

- **Conclusion:** Including building codes in the NFIP would have an overall positive impact in reducing physical flood losses and other hazard losses

The 2015, 2012, and 2009 I-Code flood provisions meet or exceed the National Flood Insurance Program (NFIP) requirements for buildings and structures

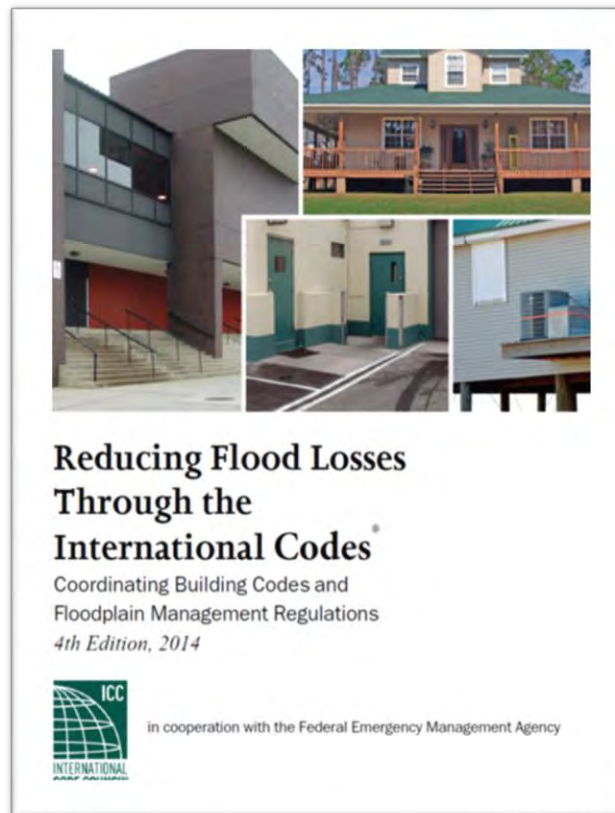
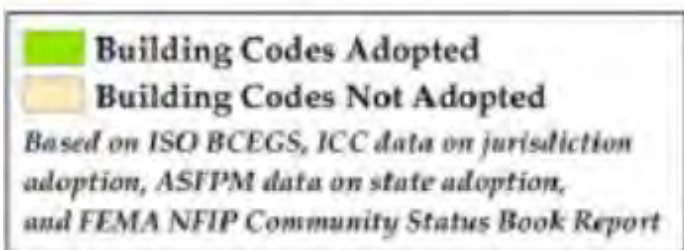


<https://www.fema.gov/media-library/assets/documents/85960>



FEMA

# U.S. Counties that Have Adopted Building Codes and Counties in Which Municipalities Have Adopted Building Codes

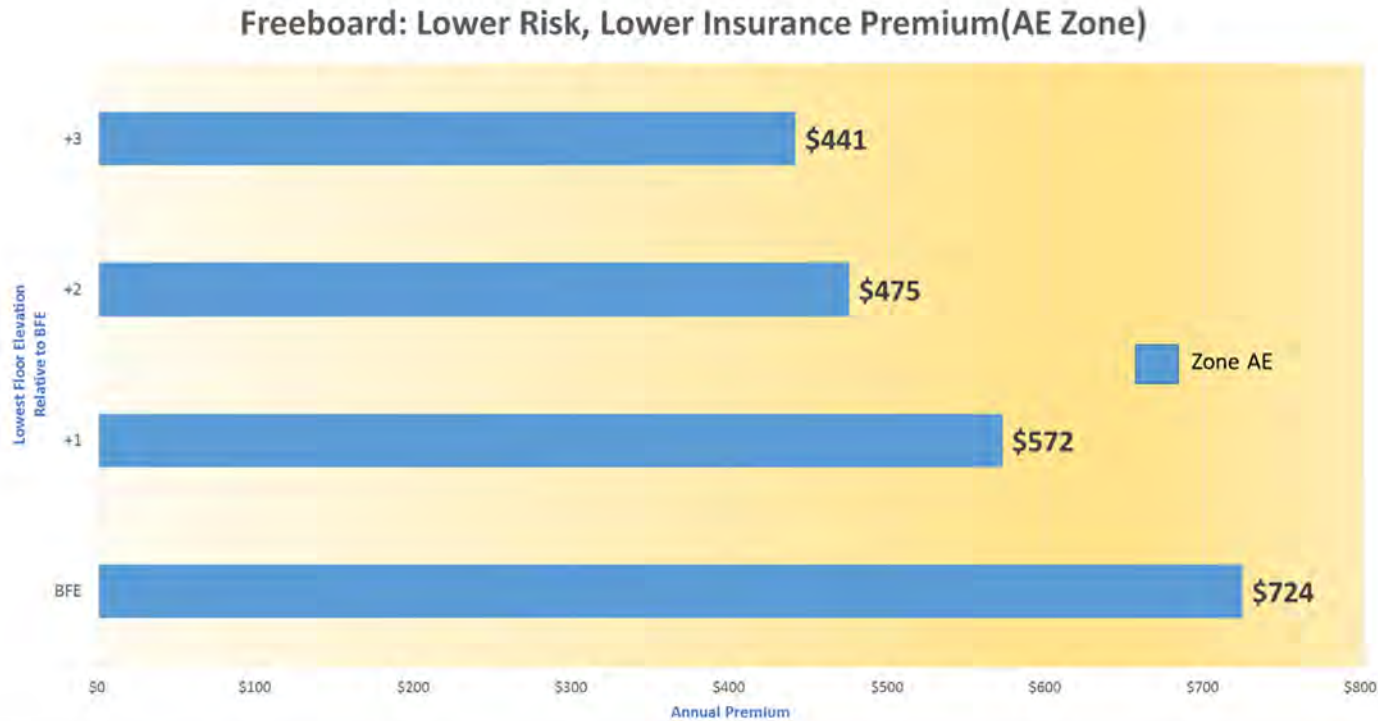


<https://www.fema.gov/media-library/assets/documents/96634>



FEMA

# AE Zone



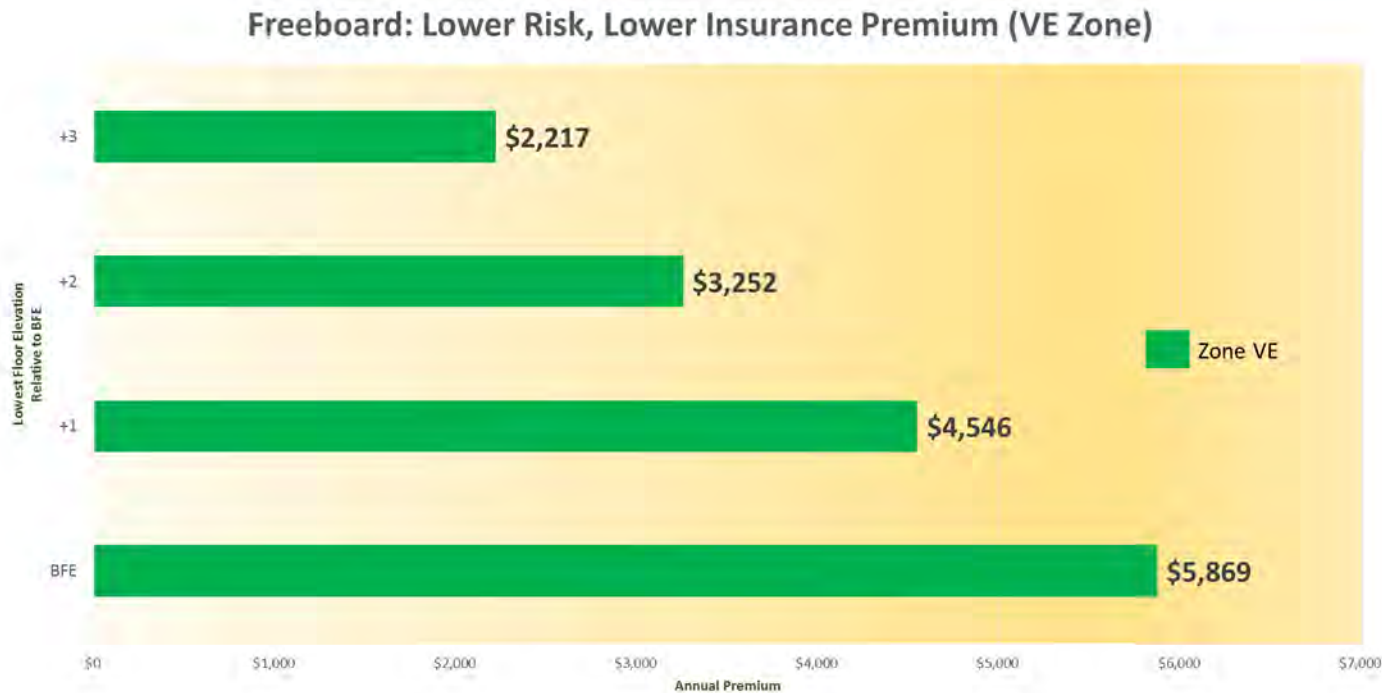
Note: Annual premiums estimates calculated using the NFIP Flood Insurance Manual, October 1, 2017 for a two-story, single-family primary residence with no basement and a properly-vented enclosure. Premiums are based on the maximum available coverage of \$250,000 for the building, using the standard \$1000 deductible.



FEMA



# VE Zone



Note: Annual premiums estimates calculated using the NFIP Flood Insurance Manual, October 1, 2017 for single-family primary residence with a \$250,000 replacement cost and having no enclosure. These calculations are based on the maximum available coverage of \$250,000 for the building, using the standard \$1000 deductible.



FEMA



# Conclusions

---

- We need to better prepare for higher intensity storms that do not meet the threshold of the 1% storm.
  - Evident in the number of structures impacted with smaller drainage areas and outside the SFHA. The existing storm drainage network cannot handle 50% of the annual rainfall amount in 1 month, and 25% in one day.
- Areas outside the high risk areas of A, AE, V, and VE zones are areas still at risk of flooding.
  - These areas need to protect interests by purchasing flood insurance.
  - Higher regulatory standards may prevent future losses: Community identified Special Flood Hazard Areas may be one example.



FEMA

# Today's Discussion

---

## Setting the Stage – Hurricane Matthew Response

Robbie Coates, Grants Manager, Disaster Programs, VDEM

## Disaster Impacts and Implications

Charlie Baker, Floodplain Management Specialist, Mitigation Division, FEMA

## Tools, Incentives, and Partnerships

**Mari Radford, Senior Community Planner, Mitigation Division, FEMA**

## Recovery Planning and Resources

Michelle Diamond, Recovery Executive Officer, Recovery Division, FEMA

Kevin Snyder, Federal Disaster Recovery Coordinator, FEMA




**FEMA**

# Tools, Incentives and Partnerships:

## *Rebuilding with a mitigation focus*

Natural Hazard Mitigation Saves



**Benefits of Mitigating Riverine Flooding**


For riverine flood mitigation, federal grants provide **\$7 benefit for each \$1 invested**

**Riverine Flood**

**\$5:1** Beyond Code Requirements

**\$7:1** Federally-Funded

Disaster resilience for floods in this study can be achieved by building new buildings higher above the 100-year flood elevation.




Benefit-cost ratios for building above the Base Flood Elevation (BFE) are variable by community. This image is intended to only be a guide. Contact a professional for solutions specific to your community.

This historic home in Freeport, New York has been elevated to reduce risks from future flooding.

By building beyond code requirements, structures located near rivers can **save up to \$5 in future disaster costs** for every \$1 spent on hazard mitigation. This includes elevating structures above 100-year-projected flood level heights.

In cases where FEMA and other federal agencies fund the hazard mitigation grant, **savings increase to \$7** for every \$1 spent.

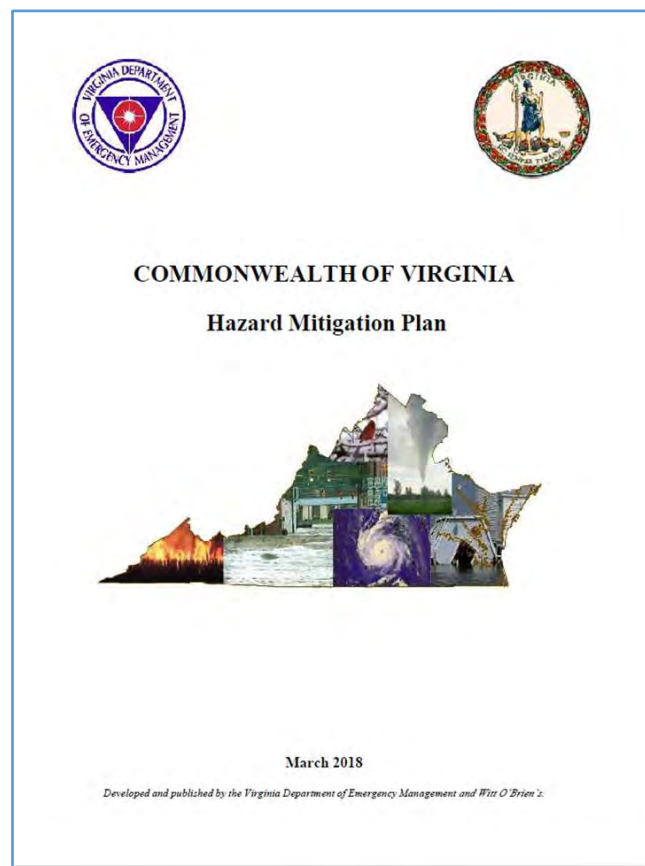
 **FEMA**



**FEMA**

# State Hazard Mitigation Plans

State Hazard Mitigation Plans are updated every five years

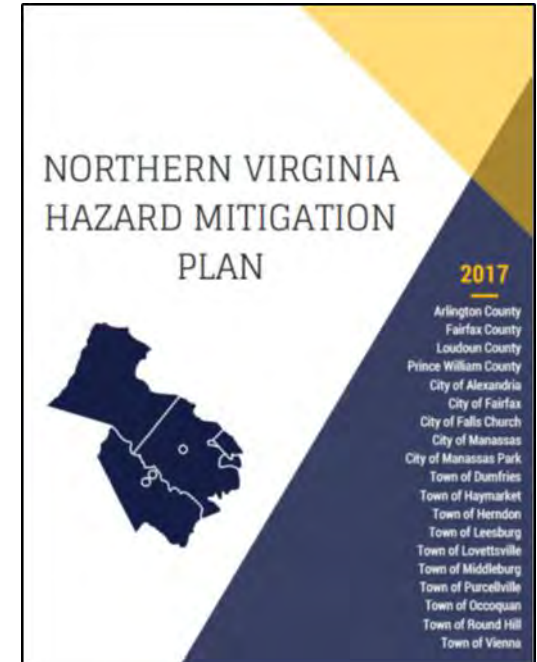
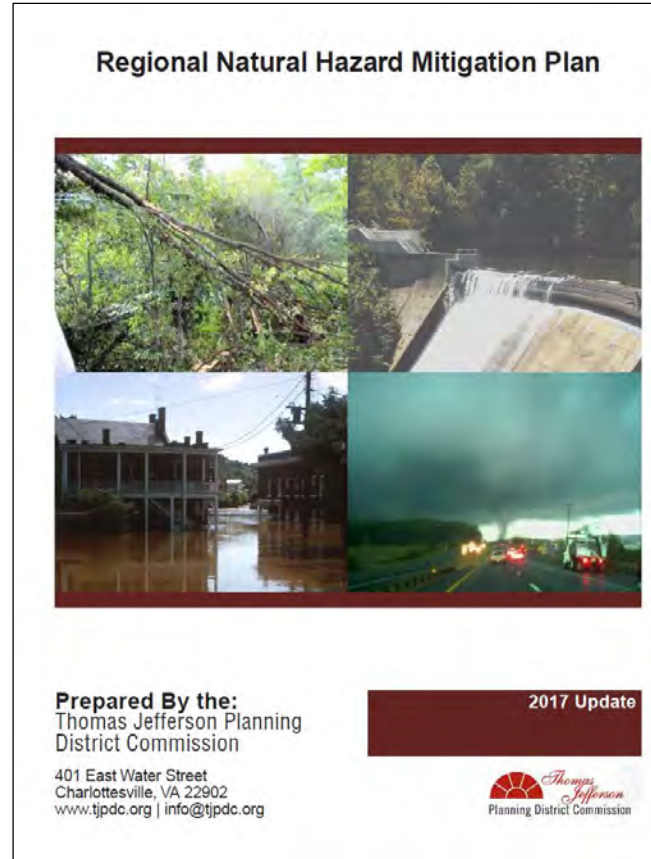


FEMA



# Local Hazard Mitigation Plans

Most Virginia communities participate in a multi-jurisdictional Hazard Mitigation Plan sponsored by the PDC



FEMA

# What's In a Local Hazard Mitigation Plan?

## Hazard Mitigation Categories

### Local Plans and Regulations

Government authorities, policies, or codes that influence the way land and buildings are developed



### Structure and Infrastructure Projects

Modifying existing structures or infrastructure to remove them from a hazard area or construction of new structures to reduce the impacts of hazards



### Natural Systems Protection

Actions that minimize damage and losses and also preserve or restore the functions of natural systems



### Education and Awareness Programs

Sustained programs to educate the public and decision makers about hazard risks and community mitigation programs



FEMA

41

RiskMAP  
Increasing Resilience Together



FEMA

# Community Rating System

## Community Rating System (CRS)

Flood **insurance premium rates discounted** to reward communities who:

- Reduce flood losses
- Facilitate accurate insurance ratings
- Promote the awareness of flood insurance

### Information About CRS

- Voluntary program
- Recognizes good floodplain management **above and beyond the minimum requirements of the NFIP**
- Aligns with mitigation action and projects
- Comprehensive approach to floodplain management
- Activities build resilience

Nineteen possible **activities** to earn credit including:

- Open space and protected floodplains
- Higher regulatory standards
- Stormwater best practices
- Public outreach



31



# FEMA

31



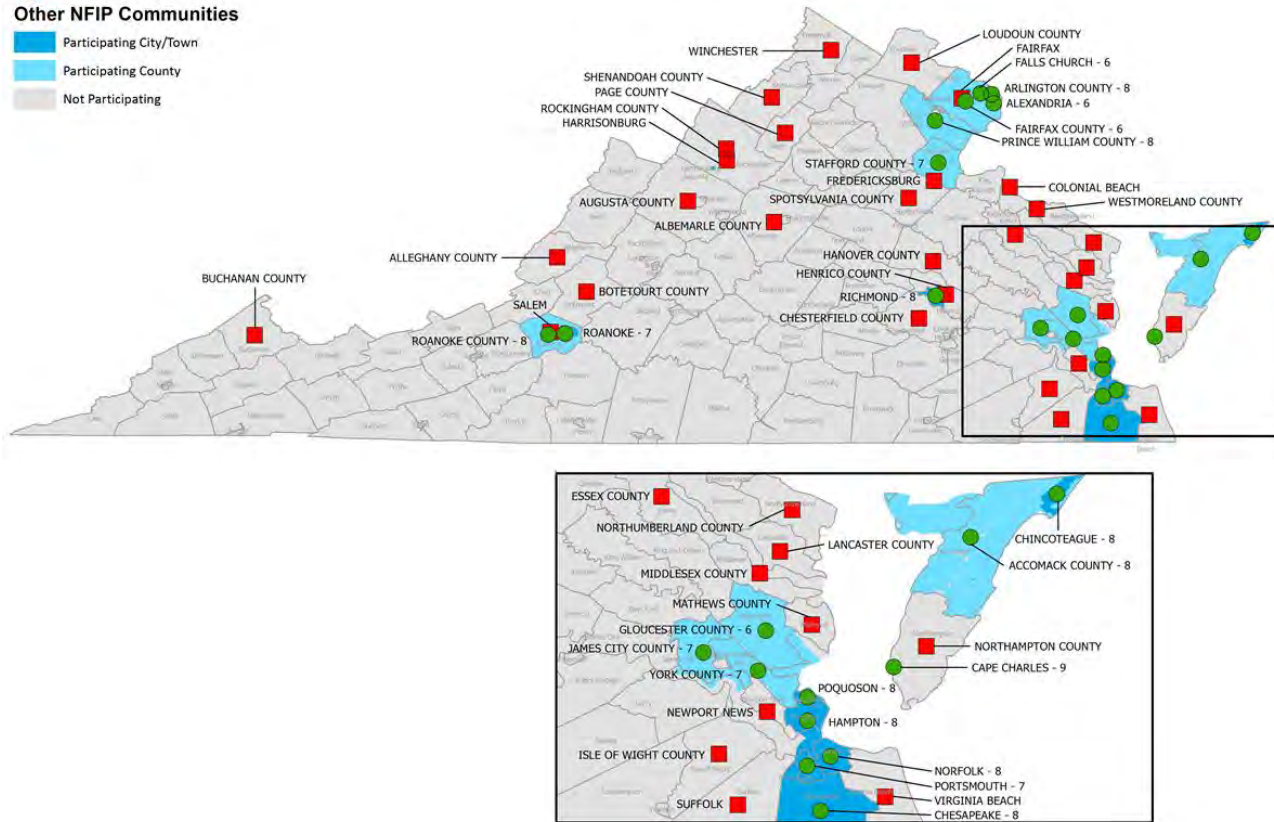
# Current CRS Participation in Virginia

## Top 50 NFIP Communities

- Participating in CRS
- Not Participating in CRS

## Other NFIP Communities

- Participating City/Town
- Participating County
- Not Participating



FEMA



# The Virginia Silver Jackets: Many Agencies, One Solution



**FEMA**

# Resources

---

- <https://www.fema.gov/hazard-mitigation-planning-resources>
- Virginia Silver Jackets: <http://www.nfrmp.us/state/factVirginia.cfm>
- <https://crsresources.org>

Mari Radford, Community Planning Lead 215/931-2880

[Mari.Radford@fema.dhs.gov](mailto:Mari.Radford@fema.dhs.gov)



**FEMA**

# Today's Discussion

---

## Setting the Stage – Hurricane Matthew Response

Robbie Coates, Grants Manager, Disaster Programs, VDEM

## Disaster Impacts and Implications

Charlie Baker, Floodplain Management Specialist, Mitigation Division, FEMA

## Best Practices or Whatever

Mari Radford, Senior Community Planner, Mitigation Division, FEMA

## Recovery Planning and Resources

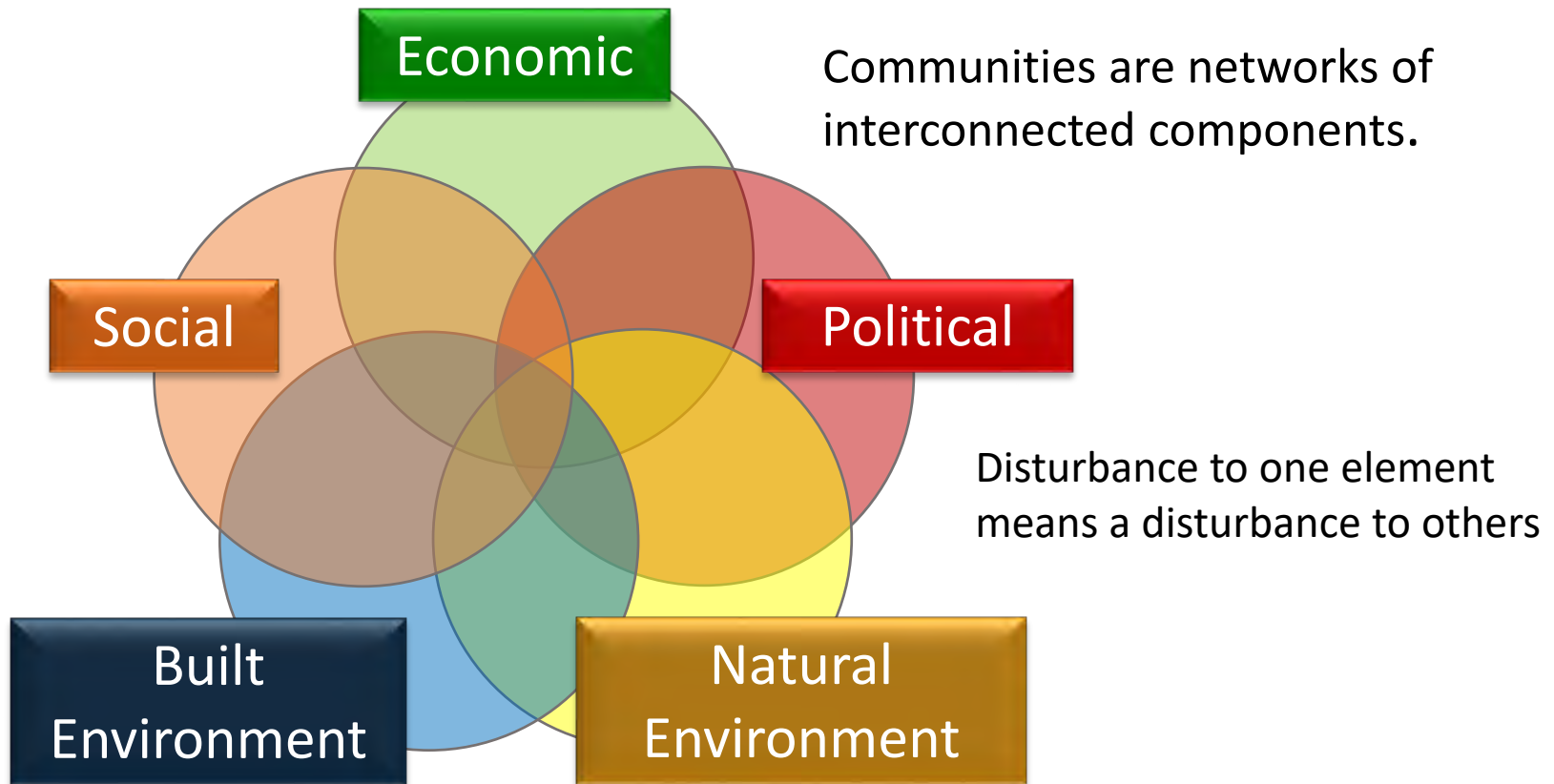
**Michelle Diamond, Recovery Executive Officer, Recovery Division, FEMA**

**Kevin Snyder, Federal Disaster Recovery Coordinator, FEMA**



**FEMA**

# Why is recovery complex?



FEMA

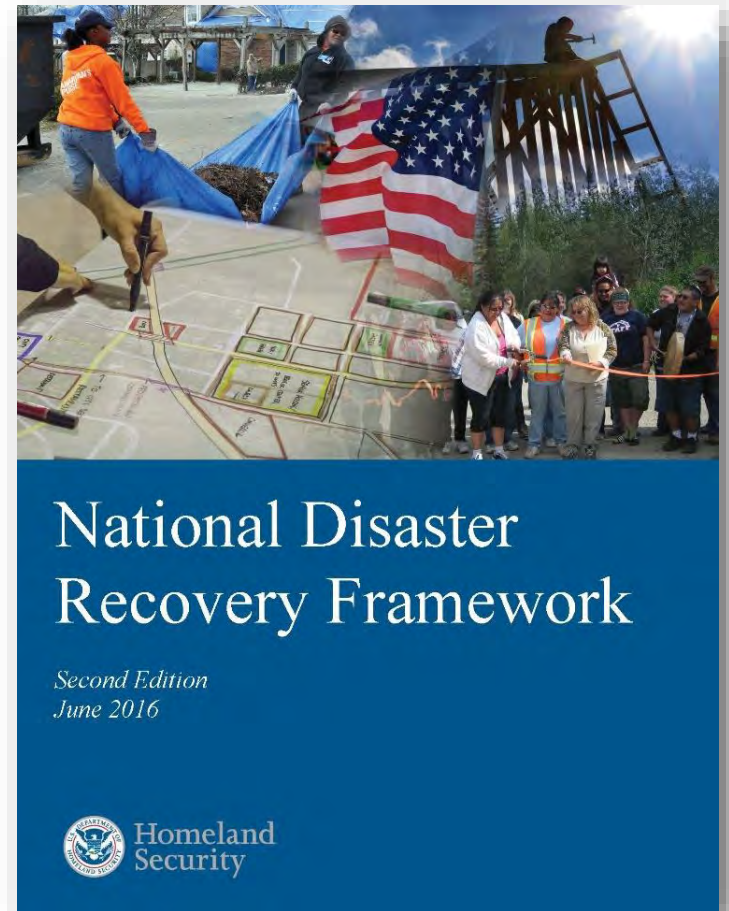


# Complexity Requires Greater Coordination

A disaster that presents multiple challenges and issues requires a high level of coordination across recovery partners.

The **NDRF** provides guidance to help recovery managers coordinate efforts in a unified and collaborative manner.

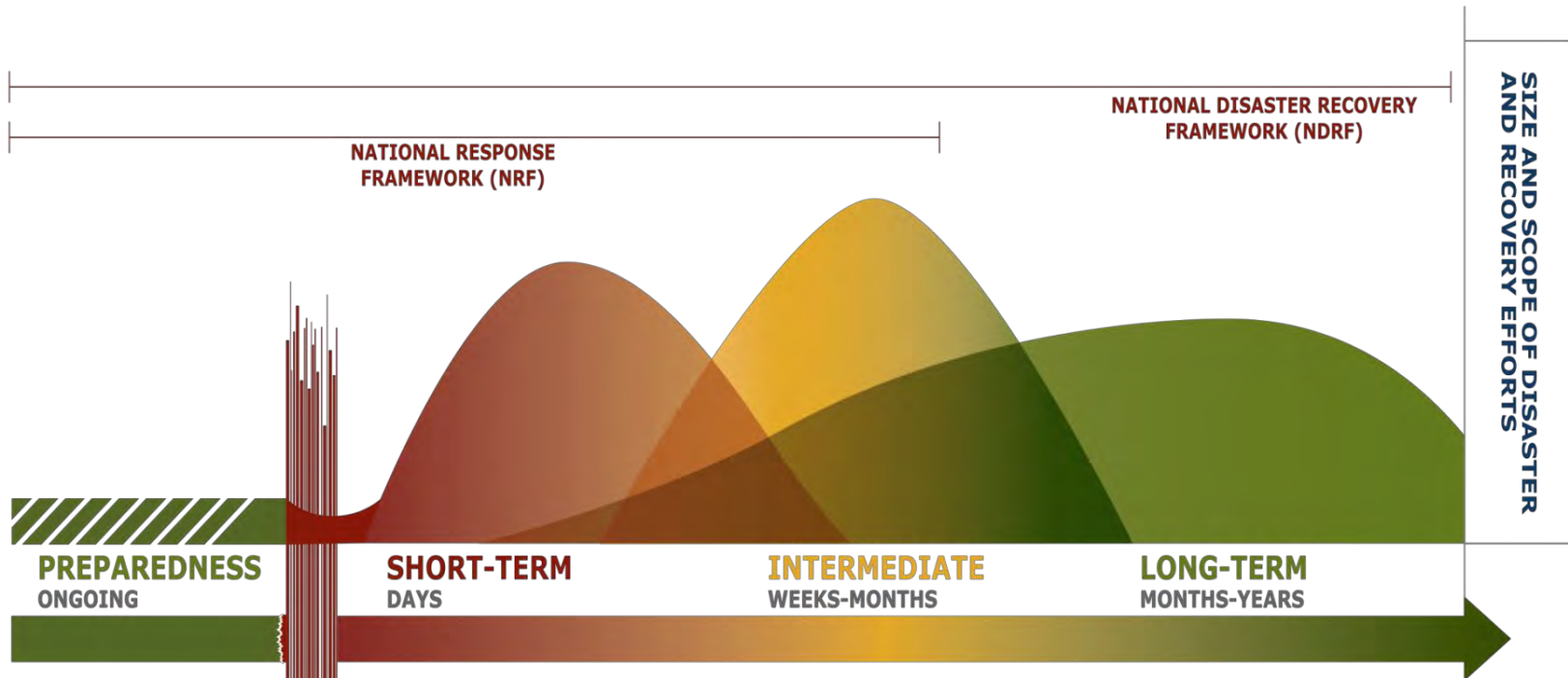
- Guidance/training
- Common doctrine
- Define roles
- Establish structure



FEMA

# Recovery Continuum

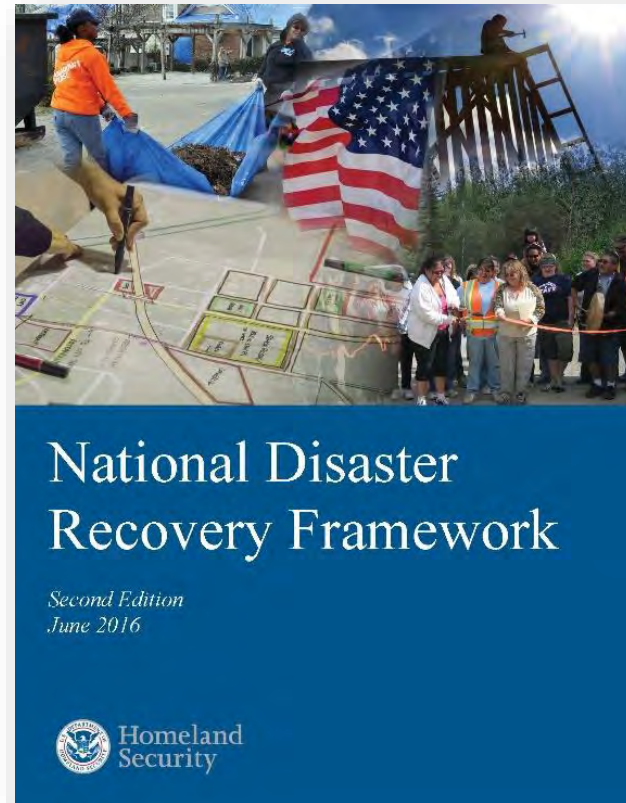
Recovery is best described as a sequence of interdependent and often concurrent activities that progressively advance a community toward its planned recovery outcomes.



**FEMA**

# NDRF Key Concepts (leadership, partnership, planning)

1. Leadership at every level
2. Recovery Support Function coordination structure
3. Preparedness, Resilience and Mitigation through Pre- and Post-Disaster Recovery Planning



[www.fema.gov/national-disaster-recovery-framework](http://www.fema.gov/national-disaster-recovery-framework)



**FEMA**

# Six Recovery Support Functions

## Community Planning and Capacity Building (CPCB)

(Department of Homeland Security/FEMA)



## Economic Recovery (Department of Commerce)



## Health and Social Services

(Department of Health and Human Services)



## Housing (Department of Housing and Urban Development)



## Infrastructure Systems (US Army Corps of Engineers)



## Natural and Cultural Resources (Department of Interior)



FEMA



# Why Prepare a Pre-Disaster Recovery Plan?

---

- Avoid ad hoc processes
- Ensure/improve public engagement
- Establish clear leadership roles pre- and post-disaster, allowing for smooth transition into recovery.
- Speed identification of needs and resources and ultimately reduce costs that result from ad hoc allocation of resources.
- Maximize opportunities to build resilience and risk reduction into all aspects of rebuilding and pro-actively confront recovery
- Improve coordination between local, State, and Federal



FEMA

# Virginia Recovery Annex Project Overview

---

- VDEM engaged more than 60 state agencies and outside organizations to develop the new Recovery Annex to the Commonwealth of Virginia Emergency Operations Plan (COVEOP).
- The new Annex includes specific roles and responsibilities for recovery partners across the Commonwealth.
- The Annex gathered input from members of the whole community.



FEMA

# Recovery Annex Development

---

## Commonwealth of Virginia Emergency Operations Plan (COVEOP)

- Base Plan
  - Recovery and Mitigation Standard Operating Guide
- Emergency Support Functions
  - ESF-14: Long Term Recovery
- Support Annexes
  - Support Annex #2 – Recovery Programs
- Hazard Specific Annexes

Statewide  
Recovery  
Annex



FEMA

# Recovery Annex Development

---

- Core Planning Team
  - July 2017 – March 2018
    - Developed Base Annex
- RSF Workshops
  - October/November 2017
    - Conducted 13 RSF Workshops to draft appendices
  - January/February 2018
    - Conducted 12 RSF Workshops to review and finalize draft appendices



FEMA



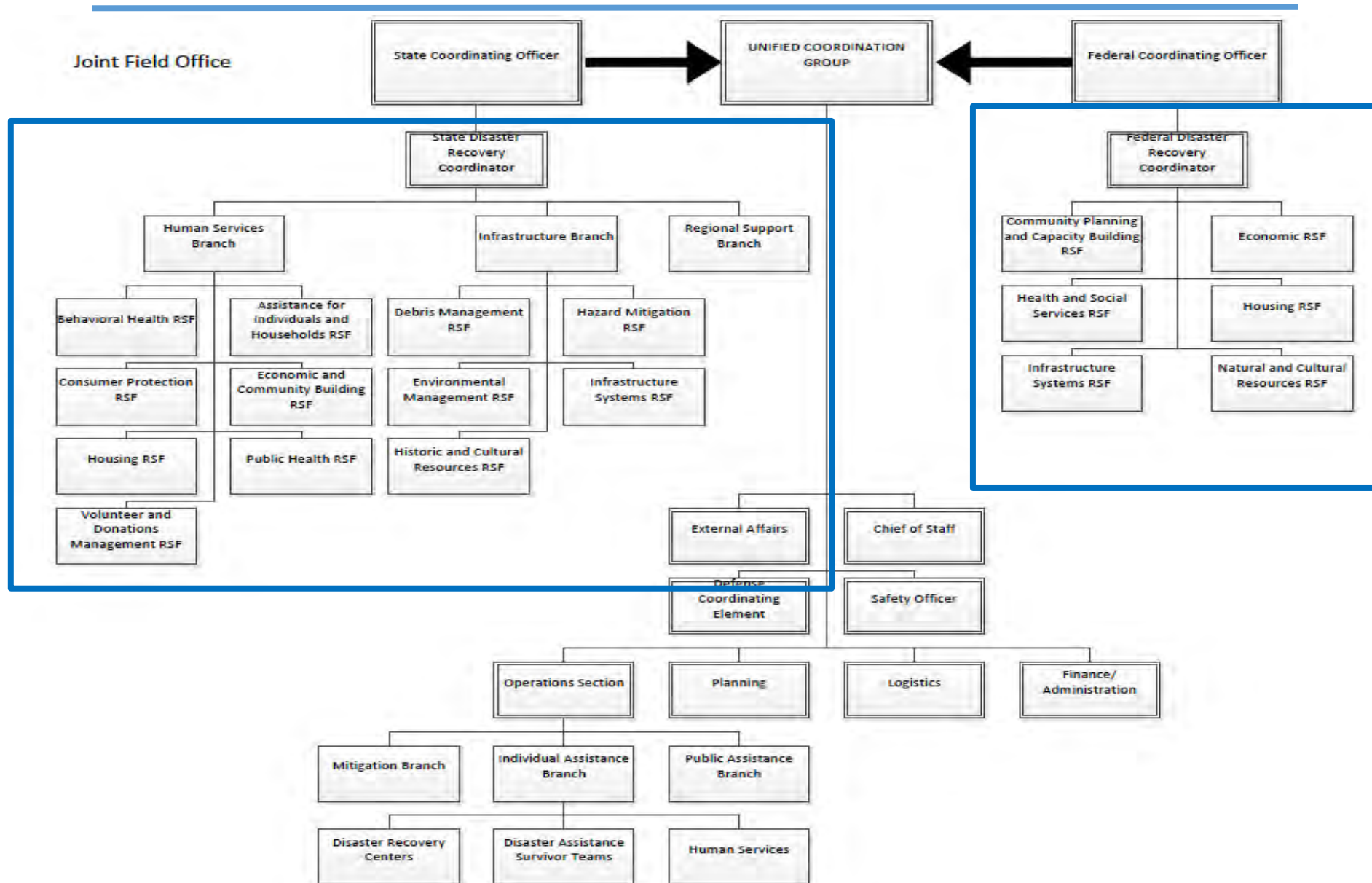
# Virginia RSFs & Federal RSFs

Virginia RSFs	Federal RSFs
Hazard Mitigation Economic and Community Building Consumer Protection Volunteers and Donations Management	Community Planning Capacity Building
Consumer Protection Economic and Community Building	Economic Recovery
Behavioral Health Individual Assistance Volunteer and Donations Management Public Health	Health and Social Services
Housing	Housing
Debris Management Infrastructure Systems	Infrastructure Systems
Environmental Management Historic and Cultural Resources	Natural and Cultural Resources



**FEMA**

# Virginia's Recovery Organizational Structure



# Pre-Disaster Recovery Planning Guidance

**PURPOSE:** to help governments develop recovery plans that include **recovery roles and responsibilities** and **organizational frameworks**



## Pre-Disaster Recovery Planning Guide for Local Governments

*February 2017*



FEMA Publication FD 008-03



## Pre-Disaster Recovery Planning Guide for State Governments

*November 2016*



# FEMA



# Effective Coordination

Outlines best practices for states, tribes and territories to help enable a more effective recovery for local communities after an incident of any size or scale.

Builds on the recovery coordination principles and concepts outlined in the *National Disaster Recovery Framework*.

**Published February 2015**

<http://www.fema.gov/resources-national-disaster-recovery-framework>

<https://www.fema.gov/media-library/assets/documents/101940>



## Effective Coordination of Recovery Resources for State, Tribal, Territorial and Local Incidents

FEBRUARY 2015



# FEMA




# Community Recovery Management Toolkit



## Community Recovery Management Toolkit

 Navigation

 Search

 Languages

National Disaster Recovery Framework

Community Planning and Capacity Building

▼ Community Recovery Management Toolkit

Part 1. Organization

Part 2. Recovery Planning

Part 3. Managing Recovery

Core Capability Specific Resources

Recovery Support Functions

Recovery Lessons Learned & Information  
Sharing



The Community Recovery Management Toolkit is a compilation of guidance, case studies, tools, and training to assist local communities in managing long-term recovery following a disaster. The materials provided in this toolkit are aimed at providing guidance and resources to help local officials and community leaders to lead, organize, plan for, and manage the complex issues of post-disaster recovery. Use the navigation bar on the lefthand side or click on the links below to view the sections of the toolkit.

The [Community Planning and Capacity Building Recovery Support Function](#) (CPCB RSF) coordinates among its partners to identify resources

to assist local communities in recovery efforts. The Community Recovery Management Toolkit provides resources to support a variety of activities that communities will undertake during long-term recovery.

### [Part 1: Organization](#)

This section provides resources for quickly organizing among local leadership and stakeholders, and engaging and communicating with the public.

- Community Recovery Leadership
- Community Engagement and Public Communications

<https://www.fema.gov/national-disaster-recovery-framework/community-recovery-management-toolkit>



FEMA

# Conclusion

---

- ✓ Complex Disaster – who is the ‘right’ person to coordinate recovery for the State?
- ✓ How does the State support localities recovery efforts when recovery is viewed differently regionally ?
- ✓ How do you weigh current development goals with disaster recovery needs (reallocation etc.)?
- ✓ What is your role in building state-wide consensus around recovery priorities?



FEMA

# QUESTIONS?

---

## Setting the Stage – Hurricane Matthew Response

Robbie Coates, Grants Manager, Disaster Programs, VDEM

[robert.coates@vdem.virginia.gov](mailto:robert.coates@vdem.virginia.gov)

## Disaster Impacts and Implications

Charlie Baker, Floodplain Management Specialist, Mitigation Division, FEMA

[charles.baker@fema.dhs.gov](mailto:charles.baker@fema.dhs.gov)

## Tools, Incentives, and Partnerships

Mari Radford, Senior Community Planner, Mitigation Division, FEMA

[Mari.Radford@fema.dhs.gov](mailto:Mari.Radford@fema.dhs.gov)

## Recovery Planning and Resources

Michelle Diamond, Recovery Executive Officer, Recovery Division, FEMA

[Michelle.Diamond@fema.dhs.gov](mailto:Michelle.Diamond@fema.dhs.gov)

Kevin Snyder, Federal Disaster Recovery Coordinator, FEMA

[Kevin.Snyder@fema.dhs.gov](mailto:Kevin.Snyder@fema.dhs.gov)



FEMA