MITIGATION – RISK REDUCTION DIVISION

- Michael Grimm – Director, Risk Reduction
- Kayed Lakhia – Deputy Director, Risk Reduction
- David Stearrett – Chief, Floodplain Management
- John Ingargiola – Sr. Engineer, Building Sciences
- Dan Bass – Architect, Building Sciences
HMGP UNOBLIGATED AMOUNTS

![Graph showing cumulative obligated amounts over fiscal years with specific events and year-by-year data points.

Key Data Points:
- Cumulative obligated amount: $11.9B
- Cumulative federal share obligated amount: $8.4B
- Unliquidated obligations: $1.98B

Events:
- Midwest Floods
- Katrina, Rita, Wilma
- Gustav, Ike
- Tornadoes
- Sandy

Fiscal Years:
- 1989 - 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014

Rate Increases:
- Increase from 7.5% to 15%

Program Development and Costs Incurred:
- Increase in obligated amounts

In Process:
- Unliquidated obligations
## HMGP UNOBLIGATED AMOUNTS

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Disasters</th>
<th>Locked In Ceiling Amount</th>
<th>Federal Share Obligated</th>
<th>Obligation Rate</th>
<th>Un-liquidated Obligations</th>
<th>Un-liquidated Federal Share Obligated</th>
</tr>
</thead>
<tbody>
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<td>127</td>
<td>$229,140,876</td>
<td>$120,989,893</td>
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<td>44%</td>
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<td>132</td>
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<td>Region</td>
<td>F M A</td>
<td>P D M</td>
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<td></td>
<td>TOTAL FY13 SELECTED + Actual Mgmt Costs</td>
<td>Prior FMA, RFC, SRL Selected - Not Obligated</td>
<td>Total Flood Grants by State and Region (05-J117)</td>
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<td></td>
<td>TOTAL FY13 SELECTED + Actual Mgmt Costs</td>
<td>Prior PDM Selected - Not Obligated</td>
<td>Total PDM Grants by State and Region (69-K112)</td>
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</table>
HMA Unified Guidance and SRIA Updates

- Sandy Recovery Improvement Act
  - HMGP Streamlining
  - Advance Assistance
  - Program Administration by States

- Benefit Cost Analysis Enhancements
  - Ecosystem Benefits
  - Pre-calculated Benefits
  - Incorporating Sea Level Rise
  - BCA v5.0 Release

- Continued improvement of the HMA webpage
  - Improve usability
  - Ensure currency of information
## Stakeholder Engagement

<table>
<thead>
<tr>
<th>Question #</th>
<th>% Aware &amp; Understand</th>
<th>% Aware &amp; Need More Info</th>
<th>% Not Aware</th>
<th>Strength or Opportunity for Improvement (OFI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge of Sandy Recovery Improvement Act 2013 Pilot Initiatives</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1. Advance Assistance</td>
<td>55.2%</td>
<td>34.5%</td>
<td>10.3%</td>
<td>OFI</td>
</tr>
<tr>
<td>2. Program Administration by States (PAS)</td>
<td>58.6%</td>
<td>34.5%</td>
<td>6.9%</td>
<td>OFI</td>
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<tr>
<td><strong>Knowledge of Programmatic Changes in the updated HMA Unified Guidance</strong></td>
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<tr>
<td>3. BW-12 changes</td>
<td>60.7%</td>
<td>28.6%</td>
<td>10.7%</td>
<td>--</td>
</tr>
<tr>
<td>4. Minimum criteria for applications</td>
<td>71.4%</td>
<td>21.4%</td>
<td>7.1%</td>
<td>--</td>
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<tr>
<td>5. Industry cost guides and design and construction standards</td>
<td>51.9%</td>
<td>37.0%</td>
<td>11.1%</td>
<td>OFI</td>
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<tr>
<td>6. Pre-calculated benefits</td>
<td>50.0%</td>
<td>28.6%</td>
<td>21.4%</td>
<td>OFI</td>
</tr>
<tr>
<td>7. Request for Information (RFI) process</td>
<td>78.6%</td>
<td>14.3%</td>
<td>7.1%</td>
<td>Strength</td>
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<tr>
<td>8. HMA grant period of performance</td>
<td>85.7%</td>
<td>14.3%</td>
<td>0.0%</td>
<td>Strength</td>
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<tr>
<td>9. HMGP lock-in</td>
<td>78.6%</td>
<td>17.9%</td>
<td>3.6%</td>
<td>Strength</td>
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<tr>
<td>10. Strategic fund management</td>
<td>44.4%</td>
<td>48.1%</td>
<td>7.4%</td>
<td>OFI</td>
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<tr>
<td>11. Extraordinary circumstances waiver</td>
<td>77.8%</td>
<td>11.1%</td>
<td>11.1%</td>
<td>Strength</td>
</tr>
<tr>
<td>12. MT planning-related activities for HMGP</td>
<td>64.3%</td>
<td>17.9%</td>
<td>17.9%</td>
<td>OFI</td>
</tr>
</tbody>
</table>
FY 2013 PDM and HMA Grant Cycle

- Lessons learnt from 2013 cycle:
  - A short application cycle (90-Days) still yields sufficient number of applications
  - Limiting sub-applications under the PDM program reduced review time
  - Regions may need more technical assistance during reviews
  - Regional review time (4 weeks) was adequate for most regions
  - 24-Month and 36-Month POP from Notification letter

- FY14 FMA & PDM application period opened April 21
  - PDM $23 M + $40 M = $63 M
  - FMA $89 M
FY 2014 PDM and HMA Grant Cycle

Key Dates:
- Application Start Date: 4/21/2014
- Anticipated Funding Selection Date: 9/30/2014
- (Anticipated) Award Date: 12/30/2014

PDM Priorities:
- All 50 States, D.C., federally recognized tribal governments, & territories will receive a base amount of 1 percent of the total appropriated PDM funding, or $250,000.
- $5 million will be set aside for federally recognized tribal governments to receive up to $250,000 per tribe.
- The balance of PDM program funds will be distributed on a competitive basis.

FMA Priorities:
- $50,000 for state plans
- $25,000 for local plans
- Maximum 10 percent by the state EMA for management costs, and a maximum of 5 percent by the local EMA for management costs.
BCA Enhancements

- Pre-calculated benefits for residential safe rooms
- Use of one frequency/event in the damage frequency assessment (DFA) module in the benefit cost toolkit
- Generator policy and how to analyze for cost effectiveness
- Incorporation of Ecosystem Service benefits for acquisitions
- Determination of cost effectiveness for acquisitions and elevations in the 100 year special flood hazard area
- Incorporation of sea level rise estimates into mitigation project design and benefit cost analysis
- Benefit Cost Analysis toolkit version 5.0 (released April 2014)
Ecosystem Services Benefits

- 14 land use types, including types we perform acquisitions in.
- 25 ecosystem services for each land.
- FIMA released a policy for the Consideration of Environmental Benefits in the Evaluation of Acquisition Projects under the Hazard Mitigation Programs.
- These additional benefits are calculated based on the square feet of land being deed restricted.
- Policy restricts inclusion of the ecosystem service benefits.

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Yearly Benefits</th>
<th>1 Acre</th>
<th>½ Acre</th>
<th>27,363 SqFt</th>
<th>16,585 SqFt</th>
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<td>$ 599,843.85</td>
<td>$ 299,921.93</td>
<td>$ 376,802.74</td>
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<td>Green Open</td>
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<td>$ 85,290.96</td>
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<td>Riparian</td>
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<td>$ 551,403.89</td>
<td>$ 275,701.95</td>
<td>$ 346,374.30</td>
<td>$ 209,941.08</td>
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</table>
Pre-Calculated Benefits

- Approved pre-determined cost-effectiveness for acquisition and elevation projects in the 100 year floodplain.
- Applies to riverine and coastal areas
- $175,000 for elevations
- $276,000 for acquisitions
Incorporating Sea Level Rise

- Memo released on December 23, 2013.
- The memo and frequently asked questions (FAQs) include sources of information for sea level rise:
  - NOAA
  - USACE
  - Locally generated studies that have been accepted and adopted by the state or jurisdiction.
- Including sea level rise estimates can substantially increase a project's benefit cost ratio and level of protection, especially for acquisition projects and projects with a useful life of 30 or more years.
Incorporating Sea Level Rise

<table>
<thead>
<tr>
<th>Mitigation Project Type</th>
<th>Location</th>
<th>Mitigation Cost</th>
<th>Calculated Benefits No SLR</th>
<th>BC Ratio No SLR</th>
<th>Sea Level Rise Data Source</th>
<th>Estimated Sea Level Rise in Inches at Location</th>
<th>Mitigation Cost (Increased)</th>
<th>Calculated Benefits with SLR</th>
<th>BC with SLR</th>
<th>Difference Between BCRs</th>
<th>% Increase in Benefits</th>
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<td>100,000</td>
<td>88,309</td>
<td>0.88</td>
<td>NOAA</td>
<td>5.0</td>
<td>108,000</td>
<td>109,345</td>
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<td>121,971</td>
<td>1.03</td>
<td>NOAA</td>
<td>5.0</td>
<td>122,215</td>
<td>173,135</td>
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<td>Elevation</td>
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<td>150,000</td>
<td>96,478</td>
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<td>NOAA</td>
<td>4.6</td>
<td>154,000</td>
<td>144,236</td>
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<td>State Study</td>
<td>3.0</td>
<td>169,000</td>
<td>187,500</td>
<td>1.11</td>
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<td>271,720</td>
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<td>615,811</td>
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<td>300,000</td>
<td>729,188</td>
<td>2.43</td>
<td>0.38</td>
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</table>
Grants Policy – What’s on the Drawing Board?

- **Outreach**
  - Program Digest
  - HMGP Appeals database

- **Policy Analysis**
  - Horizontal Directional Drilling
  - Minor Flood Risk Reduction measures
  - Duplication of Programs

- **The Future**
  - Closer alignment with Planning
  - Supporting and coordinating 404 and 406 mitigation
Floodplain Management Branch Compliance

- High Community Map Adoption Rate – 97%
  - 36 communities suspended
- Communities on NFIP probation:
  - Town of Erwin, NC, Town of Bowers, DE, and West Pittston Borough, PA
- Section 1316s: 12 declarations and 4 rescissions
- Community compliance monitoring:
  - CACs: 1,413 (1,023 by states)
  - CAVs: 567 (410 by states)
- Community Assistance Program-State Support Services Element (CAP-SSSE) – raised in FY-13 to 10.4 million, 4% increase
Further Integration of Floodplain Management with RiskMAP Process

Upgrade Community Information System (CIS) for input of GTA

Promotion of higher floodplain management standards

NFIP Programmatic Environmental Impact Statement (PEIS)

Federal Interagency Floodplain Management Task
Floodplain Management – CRS

- There are 1,296 CRS Communities
- Implement New CRS Manual Changes
  - Result of CRS Weighting Review Forum in 2012
- CRS Class Improvements for Existing CRS Communities
- On-going Post-Sandy CRS support to NJ
- CRS Presence now on FloodSmart website
- 2013 CRS Coordinator’s Manual Approved by OMB
- Renewed interest in CRS nationally
Programmatic Environmental Impact Statement

- NEPA requirement
- Last PEIS published in 1976
- Many changes have occurred to NFIP since—particularly BW-12
  - To implement many of the changes FEMA must complete the NEPA process, including an environmental analysis
  - ESA lawsuits
PEIS Schedule

- Federal Register Notice published on March 25, 2014, announcing scoping meetings
- Scoping Meetings (webinars) will be held with the public April 22, 2014; May 13, 2014; and May 20, 2014
- Draft PEIS released for public comment CY 2014
- Final PEIS released CY 2015
- Record of Decision by early 2016
Building Science Branch
Building Science – Mitigation Assessment Team (MAT)

- Detailed forensic damage assessments
- Technical Focus
  - Document observations related to building performance
  - Make recommendations to reduce future damages and protect lives and property in hazard areas
Building Science – Isaac MAT

- MAT Firsts
  - First opportunity to conduct MAT activities in an area where a MAT had previously been done (Hurricane Katrina)

- Technical Focus
  - Document observations related to building performance
  - Make recommendations to reduce future damages and protect lives and property in hazard areas
Building Science – Isaac MAT

- From Katrina to Isaac: Key Mitigation Actions
  - Adopt Hurricane Katrina ABFEs
  - Elevate buildings above the effective BFE
  - Elevate new critical facilities to the 500-year flood level
  - Adopt modern building codes
  - Improve public outreach on flood risk

2005: Hurricane Katrina damage

2012: Post Isaac
Building Science – Sandy MAT Report

- Hurricane Sandy MAT Report
  - Released November 2013
- Courses
  - 26 total, 1031 participants reached
- Presentations and Briefings
  - 21 total, 1452 participants reached
- Forums and Meetings
  - 8 total, 2021 participants reached
- Other Resources
  - Hurricane Sandy Recovery Advisories and Fact Sheets
  - Hurricane Sandy – Building Science Activities and Resources web page
Building Science – Sandy MAT

- RA 1 - Improving Connections in Elevated Coastal Residential Buildings
- RA 2 - Reducing Flood Effects in Critical Facilities
- RA 3 - Restoring Mechanical, Electrical, and Plumbing Systems In Non-Substantially Damaged Residential Buildings
- RA 4 - Reducing Operational Interruptions to Mid- and High-Rise Buildings During Floods
- RA 5 - Designing for Flood Levels Above the BFE After Hurricane Sandy
- RA 6 - Protecting Building Fuel Systems from Flood Damage
- RA 7 - Reducing Flood Risk and Flood Insurance Premiums for Existing Residential Buildings in Zone A

Fact Sheet 1 – Cleaning Flooded Buildings
Fact Sheet 2 – Foundation Requirements and Recommendations for Elevated Homes
52 Conclusions

78 Recommendations

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Number of Recommendations</th>
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<tr>
<td>Low-Rise</td>
<td>31</td>
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<tr>
<td>Mid- and High-Rise</td>
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<td>Healthcare Facilities</td>
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<td>Wastewater Treatment Plants</td>
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<td>Historic Structures</td>
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</table>
# Building Science – Sandy MAT

**Recommendations & Local Code Amendments**

<table>
<thead>
<tr>
<th>New York State (FEMA recommendations)</th>
<th>New Jersey (proposed rules)</th>
<th>New York City (new laws)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site Requirements of the NYS Hospital Code</strong> - mandate the additional flood provision for all hospitals located in flood hazard areas</td>
<td><strong>NJ State Bill 2976</strong> - Higher standards for home elevation <strong>contractors</strong> - Requires elevation contractors in NJ to have at least two years of experience</td>
<td><strong>NYC Local Law 29/13</strong> - Raising and Moving of Buildings - Establish mechanism for special inspections</td>
</tr>
<tr>
<td><strong>Model Local Law for Administration of the Building Codes</strong> - develop optional provisions based on I-Codes for inclusion in the model local law for administration and enforcement</td>
<td><strong>New Rule N.J.A.C. 5:23-6.3A</strong> - Flood Resistant Construction - buildings undergoing SI shall comply with the applicable flood-resistant construction requirements</td>
<td><strong>Local Laws 83/13</strong> – Backflow Prevention, 99/13 – Raising Building Systems, and 100/13 – Relocate and Protect Building Systems in Floodprone Areas - Protect critical building systems in subgrade areas</td>
</tr>
<tr>
<td><strong>Building Code Amendments</strong> – consider amendments to strengthen code for residential buildings</td>
<td><strong>NJDEP</strong>, in conjunction with NJDCA, is reviewing its emergency FHCA rules/amendments</td>
<td><strong>Local Law 96/13</strong> – Flood Maps - Review mapping procedures</td>
</tr>
</tbody>
</table>
Conclusion:
- Benefits can be gained by additional changes to the I-Codes

Recommendations:
- For the IRC: Incorporate additional height (freeboard) of one foot above BFE for dwellings in all flood hazard areas
- For the IRC: Require Coastal A Zones, where delineated on a FIRM or designated as such by a community, to be regulated using the same requirements for Zone V

Code Change Proposal Success:
Both of the above were approved code changes to be incorporated into the 2015 IRC!
Building Science

2015 Code Cycle and Code Studies
Submitted 53 flood-related proposals to the IRC and IBC, 43 were accepted, including the following key changes:

- IRC: Require one foot of freeboard
- IRC and IBC: Treat Coastal A Zone as Zone V
- IRC and IBC: Reference updated, soon-to-be-released ASCE 24

Submitted code change to require storm shelters in new schools and critical emergency facilities in 250-mph wind zone
Participated in the update of ASCE Standard ASCE 24, *Flood Resistant Design and Construction*

Will be referenced by the 2015 I-Codes

Anticipated revisions include:
- New Flood Design Classes with varying requirements
- Coastal A Zone provisions only where LiMWA is delineated or where designated by community
- Require flood openings in breakaway walls
- Eliminate lowest horizontal structural member orientation as a factor to determine lowest floor elevation in Zone V
Building Science – Including Building Codes in the NFIP

The purpose of this report is to present findings of the impact, effectiveness, & feasibility of including widely used & nationally recognized building codes as part of the FEMA’s NFIP floodplain management criteria.

- Overall positive impact in reducing physical flood losses and other hazard losses
- Flood provisions in the 2009 and 2012 I-Codes are consistent with NFIP requirements for buildings and structures
- Effective because of specific mitigation provisions required for compliance
70% of NFIP communities have adopted flood-resistant building codes.
Building Science – Region IV Losses
Avoided Demonstration Study

**Scope:**
- Larger study area demonstrating ability to model big data
- Parcel level Hazus study for entire R4 SFHA & 500-yr floodplain
- 4.5M parcels in R4
- Flood, wind, seismic hazards

**Method:**
- Acquire data & adapt to Hazus format
  - Parcel data (Dunn & Bradstreet vs CoreLogic)
  - Building data (structure & foundation type)
  - Building code adoption dates by jurisdiction
  - Hazard layers (flood depth grid, wind velocity, seismic PGA)
- Modify damage function for post-2000 codes by building construction type
- Model pre- and post-2000 conditions
  - Compare losses, both direct & indirect, AAL
The primary focus of the guidance document is on dry floodproofing technologies for non-residential buildings. The publication provides information about regulatory requirements, design considerations, and descriptions of floodproofing methods and equipment.
Guidance for Applying ASCE 24 Engineering Standards to HMA Flood Retrofitting and Reconstruction Projects

Upcoming Publications

- FEMA P-320, *Taking Shelter From the Storm: Building a Safe Room For Your Home or Small Business* (Coming Summer 2014)
- FEMA P-361, *Design and Construction Guidance for Community Safe Rooms* (Coming early 2015)
- Soliciting input for Technical Bulletin updates
Upcoming Courses

- Courses at EMI – **Spaces Available!**
  - EMI E386, *Residential Coastal Construction* (August 18-21, 2014 in Emmittsburg, MD)

- Independent Study Courses Online
  - *IS-00386: Introduction to Residential Coastal Construction*
  - *IS-00395: FEMA Risk Assessment Database*
THANK-YOU!

ASFPM Annual Conference, June 2014