

I've Written My Hazard Mitigation Plan... NOW WHAT?!

*American Planning Association – Pennsylvania Chapter Conference
October 12, 2014*

Thomas S. Hughes
State Hazard
Mitigation Officer
PA Emergency
Management Agency

Ernest Szabo
State Hazard
Mitigation Planner
PA Emergency
Management Agency

Christine Caggiano,
AICP
Urban Planner
Michael Baker
International



Thomas S. Hughes, SHMO



Christine Caggiano, AICP



Pop Quiz!

(Don't worry – we won't grade you!)

Why We're Here



Every community needs a mitigation plan – why not make it great?

What is Hazard Mitigation?

Any sustained action taken to reduce or eliminate long-term risk to life and property resulting from natural and human-made hazards.



What is a Hazard Mitigation Plan?

A Mitigation Plan is a community-driven, living document that communities use to reduce their vulnerability to hazards.



Why have a Mitigation Plan?

(Other than access to grant funding)

Hazard Mitigation actions reduce vulnerability, and communities are able to recover more quickly from disasters.



Why have a Mitigation Plan?



Presidential Declarations
In Pennsylvania

56

Gubernatorial Declarations
In Pennsylvania

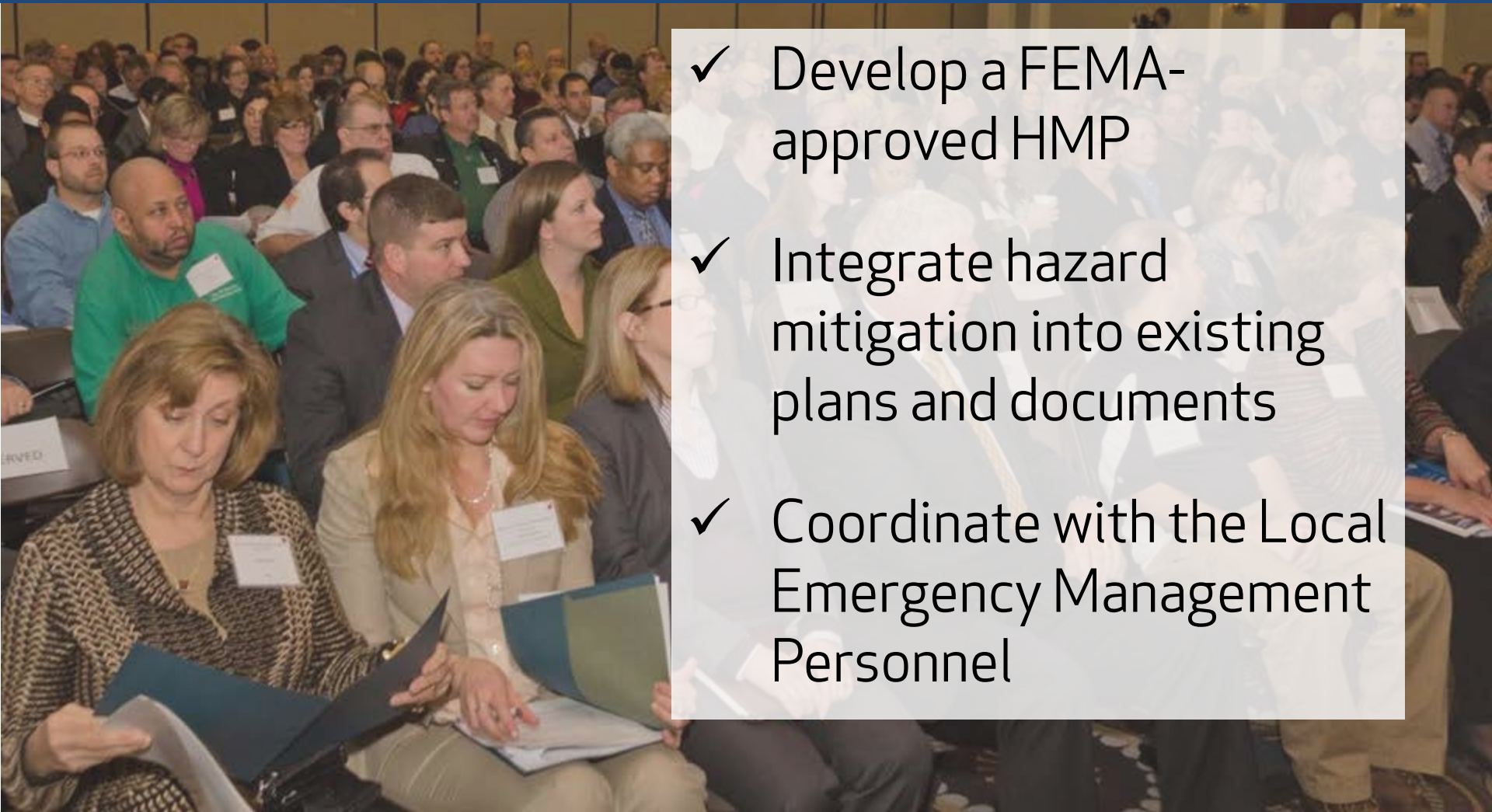
45



“Hope is not a plan and failure is not an option.”



The Planner's Role in Hazard Mitigation

- 
- ✓ Develop a FEMA-approved HMP
 - ✓ Integrate hazard mitigation into existing plans and documents
 - ✓ Coordinate with the Local Emergency Management Personnel

Hazard Mitigation Planning

A photograph showing a red pickup truck driving through deep floodwaters on a road. The water is murky and turbulent, reaching up to the truck's headlights. The background shows a blurred street scene with utility poles and buildings.

Guided by the Stafford Act and the Disaster Mitigation Act of 2000 (44 CFR 201.6) and explained in the Local Mitigation Plan Review Guide (FEMA, 2013)

PA Hazard Mitigation Planning Standards

Standard operating procedures for hazard mitigation planning in PA

- captures FEMA requirements
- clarifies and combines existing guidance



Commonwealth of Pennsylvania's
All-Hazard Mitigation Planning

Standard Operating Guide

Prepared for:
October 18, 2013
Pennsylvania Emergency Management Agency
2605 Interstate Drive
Harrisburg, PA 17110



Prepared by:
Michael Baker Jr., Inc.
1818 Market Street, Suite 3110
Philadelphia, PA 19103

Baker

Model Plan Outline for PA

1. Introduction
2. Community Profile
3. Planning Process
4. Risk Assessment
5. Capability Assessment
6. Mitigation Strategy
7. Plan Maintenance
8. Plan Adoption
9. Appendices



Adams County 2014 Hazard Mitigation Plan Update

Prepared for:
Adams County Dept. of Emergency Services
230 Greenmyer Lane
Gettysburg, PA 17325
with support from PEMA

Prepared by:
Michael Baker Jr., Inc.
1818 Market Street, Suite 3110
Philadelphia, PA 19103

October 13, 2014



Michael Baker
INTERNATIONAL

Model Plan Outline for PA



Adams County 2014 Hazard Mitigation Plan Update

Prepared for:
Adams County Dept. of Emergency Services
230 Greenamyer Lane
Gettysburg, PA 17325
with support from PEMA

Prepared by:
Michael Baker Jr., Inc.
1818 Market Street, Suite 3110
Philadelphia, PA 19103

October 13, 2014

1. Introduction
2. Community Profile
- 3. Planning Process**
- 4. Risk Assessment**
- 5. Capability Assessment**
- 6. Mitigation Strategy**
- 7. Plan Maintenance**
8. Plan Adoption
9. Appendices



Michael Baker
INTERNATIONAL

Chapter 3: Planning Process

An aerial photograph showing a large area of water, likely a flooded field or pond. In the foreground, there is a large, blue, rectangular barn with a white roof. To the right of the barn, there is a circular silo. The surrounding area is a mix of green grass and brown, muddy water. The sky is overcast and grey.

- CFR Requirements:
 - Process shall provide an opportunity for the public to comment on the plan
 - Process shall include an opportunity other stakeholders to be involved in planning process
 - Plan must document planning process

Planning Process Enhancements

An aerial photograph of a farm area that has been significantly flooded. A large, dark blue barn with a white roof is partially submerged in muddy water. To the right, a tall metal silo stands near a dirt road with several vehicles, including a white van and a red truck. The surrounding fields are green but partially obscured by the floodwaters. The sky is overcast and grey.

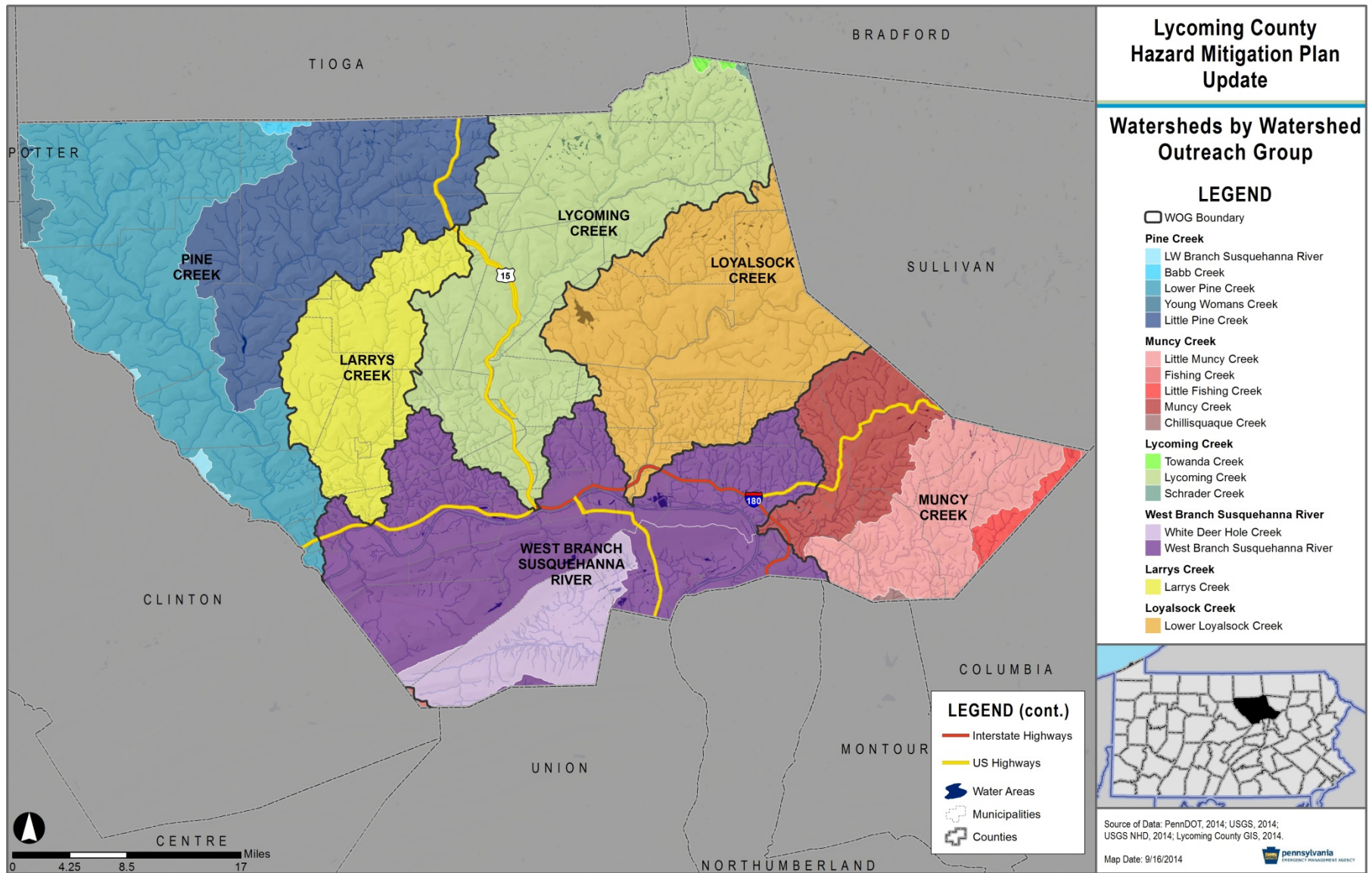
- Diversify stakeholders
- Plan by watershed
- Outreach “to the people”
- Digital engagement

Diversify Stakeholders

An aerial photograph showing a large area of water flooding agricultural fields. In the foreground, a large, white, rectangular building is partially submerged. The water is dark and murky, covering most of the landscape. The sky is overcast and grey.

- Invite others who have a stake in/resources for mitigation:
 - Academia
 - Business
 - School Districts
 - Non-Profit/Non-Governmental Community Leaders

Plan by Watershed



Outreach "to the people"



Digital Engagement

Pennsylvania Hazard Mitigation Planning

 Search this site

[Home](#) [About](#) [Planning Tools](#) [County HMPs](#) [University HMPs](#) [Contact Us](#)



The approach to the emergency management cycle in Pennsylvania has evolved considerably over the several years. A renewed emphasis has been placed on planning for disasters before they occur as a complement to effective response and recovery. As a result, hazard mitigation planning has gained increasing prominence as a critical part of emergency management. Through sustained action to reduce or eliminate the long-term risk to human life and property, risks can be combated in a systematic and proactive manner.

Commonwealth of Pennsylvania
2013 State Standard
All-Hazard Mitigation Plan

Hazard Mitigation Planning

FEMA - Hazard Mitigation Planning Part 1



www.esuhmp.com

[Home](#) [About the Project](#) [Resource Center](#) [Announcements](#) [Calendar](#) [HM Links](#) [Contact Us](#) [Survey](#)

Survey

Thank you for your interest in Hazard Mitigation Planning at East Stroudsburg University!

The Pennsylvania State System of Higher Education (PASSHE) will use this survey as a tool in its continuing work to make East Stroudsburg University and the other State System schools more disaster-resistant through an effective Hazard Mitigation Plan.

This survey is meant to capture some basic information about you and your thoughts on hazard mitigation efforts at East Stroudsburg University. One lucky responder will win a backpack and a disaster kit, so don't forget to leave your email!

* Required

*What is your role at East Stroudsburg University? **

- Faculty
- Student
- Staff
- Other:

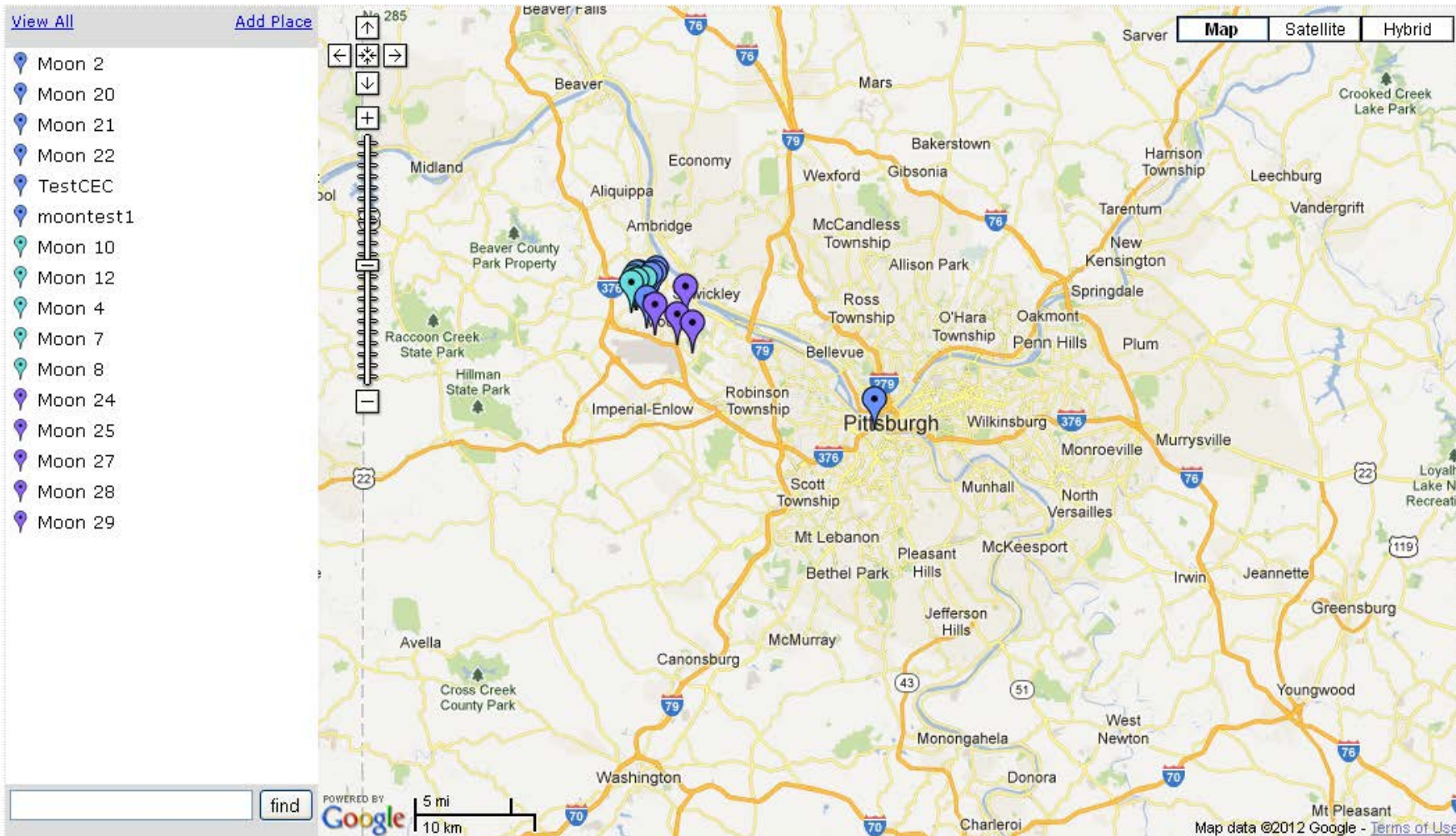
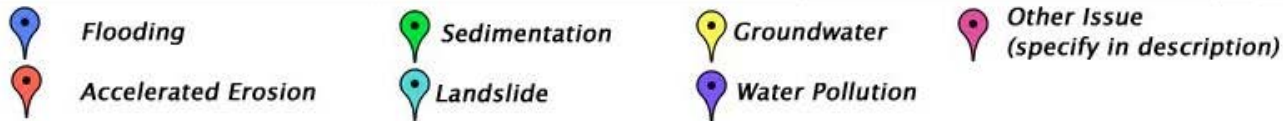
*Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural and human-made hazards and their effects. How familiar are you with hazard mitigation? **

- Very familiar (expert level)
- Familiar
- Somewhat familiar
- Not at all familiar
- Other:

Comments

www.pennsylvaniahmp.com

Digital Engagement



Chapter 4: Risk Assessment

- CFR Requirements:
 - Plan shall include description of all hazards
 - Plan shall include a description of the location and extent of hazards, past occurrences, and future probability
 - Plan shall include a description of jurisdiction's vulnerability to hazards in terms of:
 - Number and type of existing and future buildings, infrastructure, and critical facilities
 - Estimation of potential losses
 - Current and future land use patterns

Risk Assessment Enhancements

- Data collection for loss and vulnerability assessments
- Inventories of hazard-prone properties and critical facilities
- Enhanced Hazus analysis
- Use of Risk MAP products
- Climate change

Data Collection Improvements



- Critical by category
- Residential attributes
- Occupied/unoccupied
- Economic importance
- Potential for secondary hazard

Structure Attributes

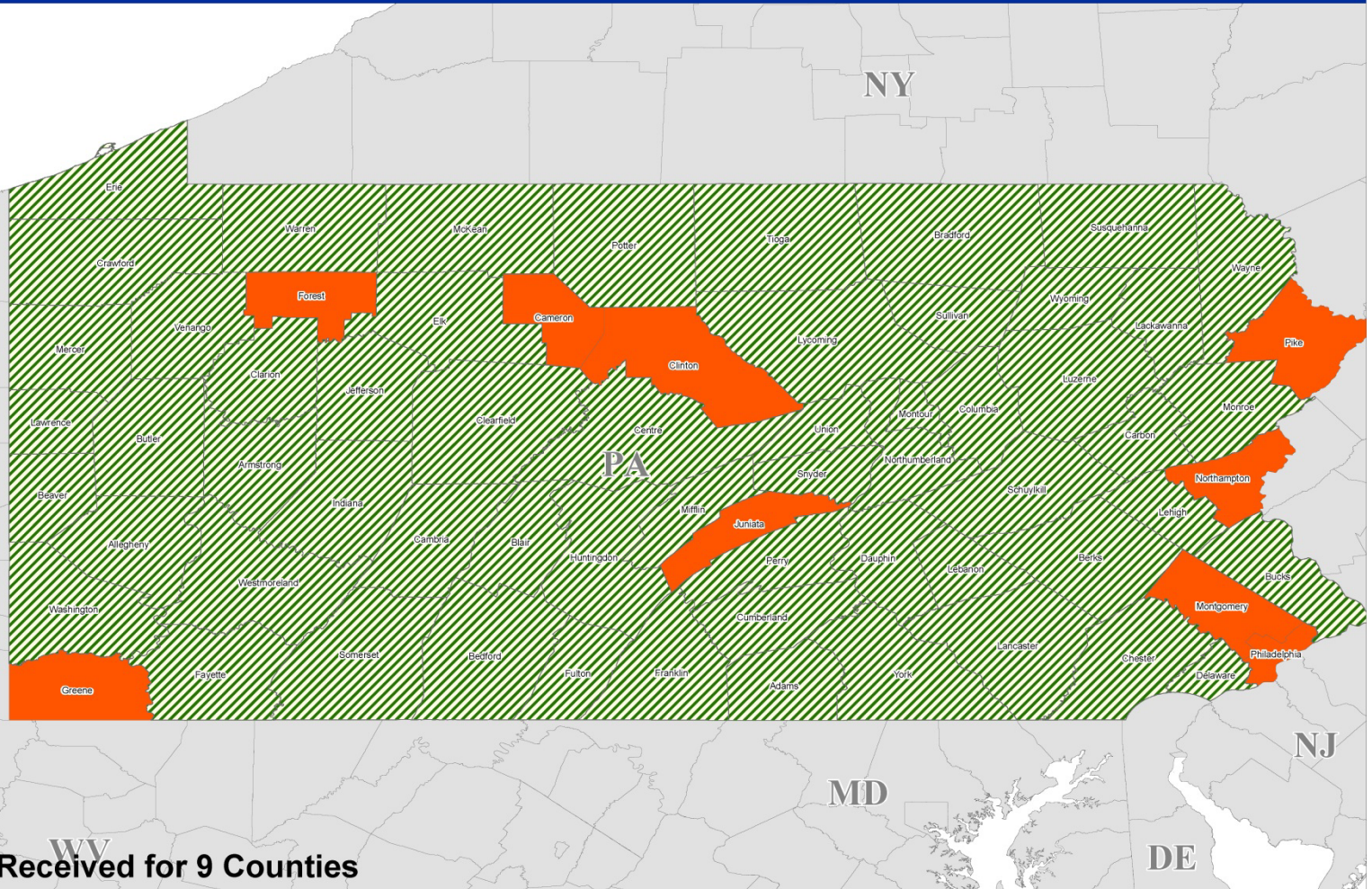
- Occupancy
- Structure replacement value
- Address, owner, year built
- First floor elevation
- Number of stories
- Total area
- Construction type/quality
- Shelter capability
- Access during emergency?



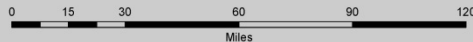
PA Geospatial Coordination

PA Geospatial Coordination - County Level Response

As of October 13, 2014



NO Assessment Received for 9 Counties



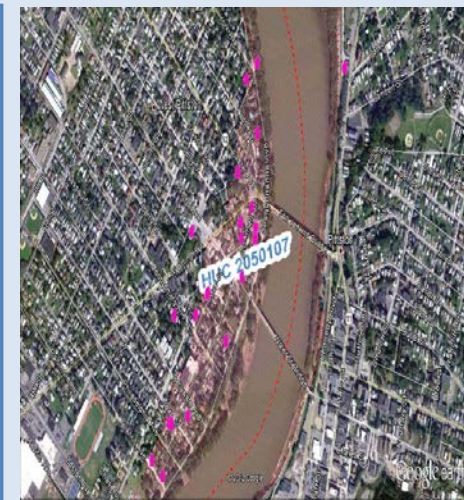
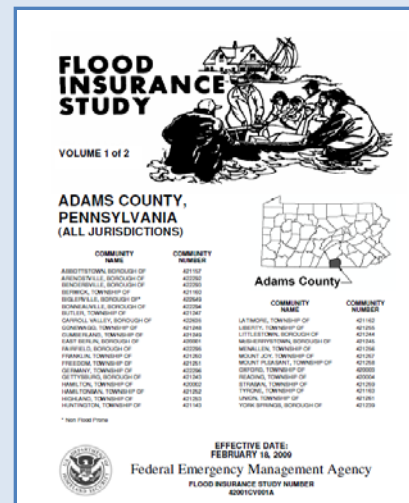
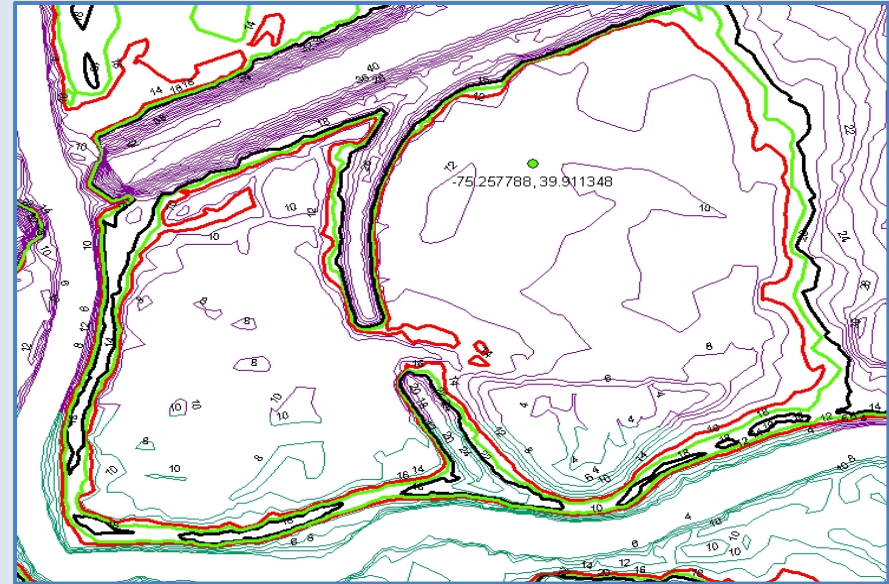
Inventory Hazard-Prone Properties



- Identify structures and populations most likely to be impacted by all hazards
- Prioritize structures/facilities for mitigation measures
- Overlay hazard history and probable occurrence to identify areas most vulnerable to hazards

Key Inventories

- RL and SRL data
- Mitigated properties
- Maps:
 - Flood ways and Flood zones
 - Historical Floods
 - Dams and Levees
 - Critical structures in flood zone
- Critical transport routes at risk

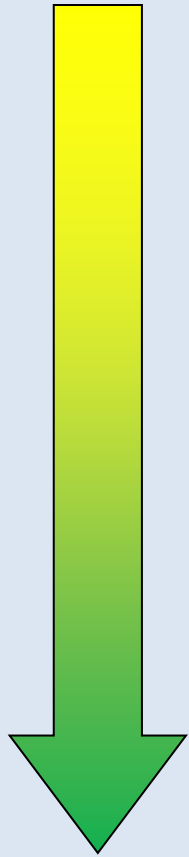


Enhanced Hazus Analysis



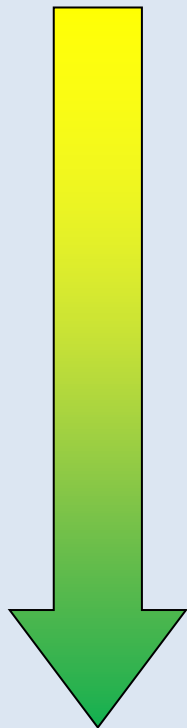
HAZUS
MULTI-HAZARD LOSS ESTIMATION **MH**

Enhanced Hazus Analysis: Flood



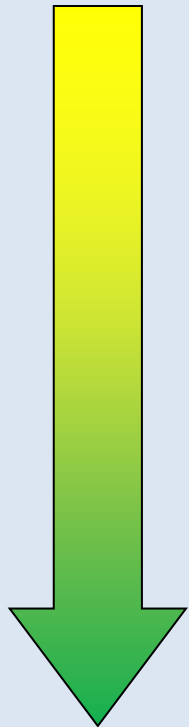
Level of analysis	Hazard	Building Stock, Demographics	Critical Facilities, Utilities, Transportation
Basic	Hazus-generated hazard	Default census block – level	Default
Enhanced	Hazus-generated hazard with user-specified Critical Facilities	Updated census block – level general building/demographics	Updated CDMS site-specific module
Enhanced	DFIRM depth grid	Site-specific buildings with flood attributes (User Defined Facilities)	
Enhanced	User-generated depth grid		

Enhanced Hazus Analysis: Earthquake



Level of analysis	Hazard	Building Stock, Demographics	Critical Facilities, Utilities, Transportation
Basic	Probabilistic or Annualized	Default tract -level	Default
Enhanced	Deterministic (e.g. Historical or Arbitrary)	Updated tract -level general building stock/demographics	Updated CDMS site-specific module
Enhanced	User-supplied hazard (e.g. ShakeMap, landslide, liquefaction, soil type, etc.)	Site-specific buildings with earthquake attributes (User Defined Facilities) or AEBM site specific analysis	

Enhanced Hazus Analysis: Hurricane Wind



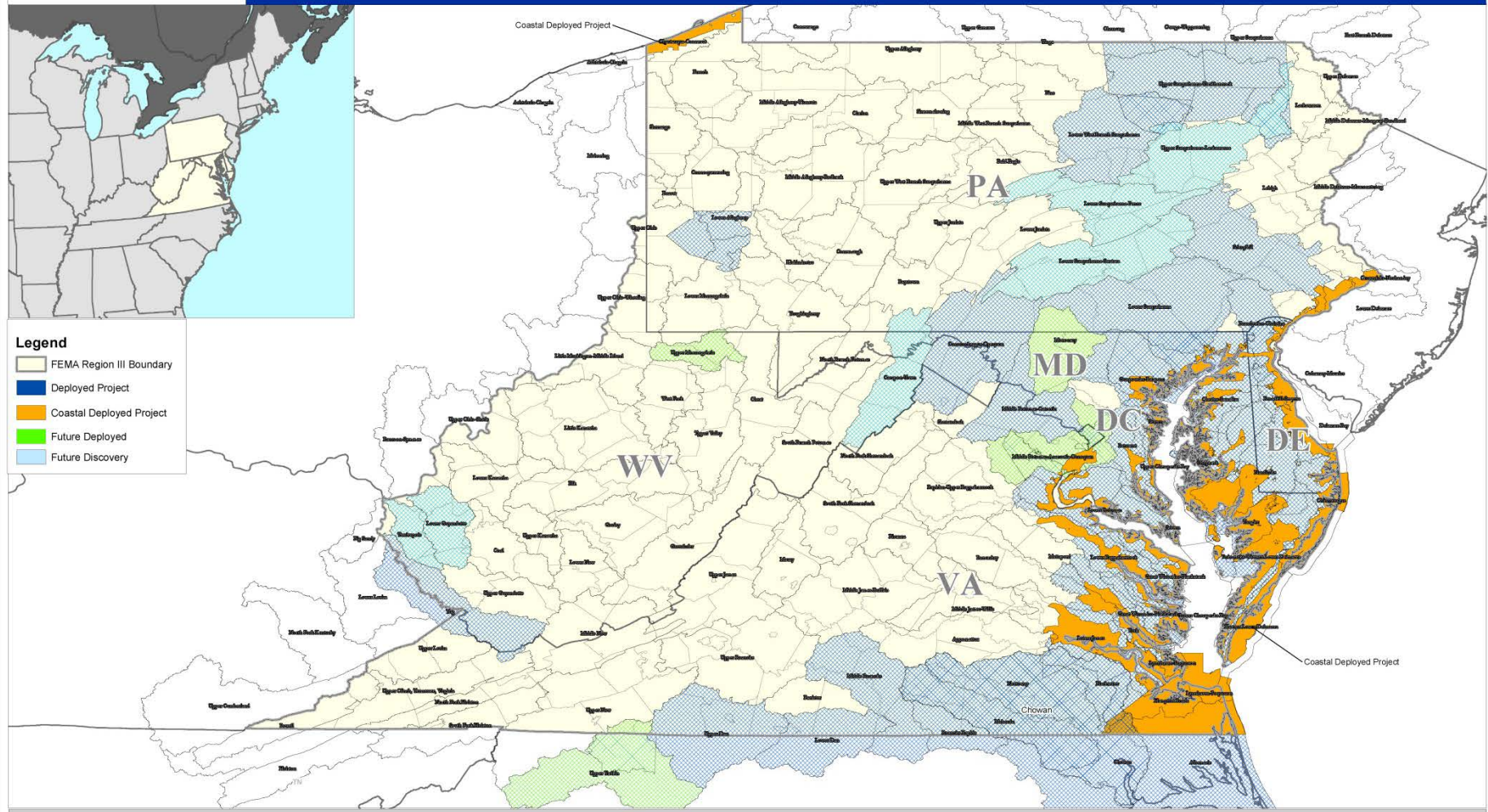
Level of analysis	Hazard	Building Stock, Demographics	Critical Facilities, Utilities, Transportation
Basic	Hazus-generated hazard	Default tract -level	Default
Enhanced	Hazus-generated hazard with user-specified location	Updated tract -level general building stock/demographics	Updated CDMS site-specific module
Enhanced	User-generated H-Wind field or Hurrevac wind field	Site-specific buildings with hurricane attributes (User Defined Facilities)	

Risk MAP



FEMA Risk MAP Footprint - Based on Deployment

June 25, 2014



Legend

- FEMA Region III Boundary
- Deployed Project
- Coastal Deployed Project
- Future Deployed
- Future Discovery

Projection: Geographic NAD 83



Data Sources: FEMA Region III, ESRI

Climate Change

- Sea Level Rise
- Extreme weather events
- Incorporation into future development/future vulnerability



Chapter 5: Capability Assessment

- CFR Requirements:
 - Plan shall include a mitigation strategy based on existing authorities, policies, programs, and resources and its ability to improve existing tools
 - Plan shall address each jurisdiction's NFIP participation and compliance
 - Plan shall include the review and incorporation of other planning mechanisms

Capability Assessment Enhancements

- Plan integration
- NFIP implementation

Plan Integration Benefits



- Help guide development and redevelopment patterns
- Reduce risk to hazards
- Avoid or minimize risk through safe development practices

Integration Opportunities



- Comprehensive plan
- Zoning ordinance
- SALDO
- Site planning requirements
- Building codes
- Capital improvement plans
- Functional plans
- Special programs

Integration Guidance



Integrating Hazard Mitigation Into Local Planning

Case Studies and Tools for Community Officials

March 1, 2013



- Includes recommended steps and tools to assist with local integration efforts, along with ideas for overcoming possible impediments

So, How Do We Do It?



- Review existing local HMP for hazards, risks, and mitigation strategies
- What plans, policies, and tools already in place?
- Identify gaps and overlaps with your current plans

NFIP Implementation



National Flood Insurance Program

Flood Insurance Manual

June 2014
Revised October 2014



FEMA

- Who administers program?
- What is the planning mechanism used?
- Does your ordinance meet or exceed the state minimums?
- How are permits and violations handled?

Chapter 6: Mitigation Strategy

- CFR Requirements:
 - The plan shall include a description of mitigation goals
 - The mitigation strategy shall include a section identifying a comprehensive range of specific actions and projects
 - The strategy must address NFIP participation and compliance
 - The strategy shall include an action plan describing prioritization and implementation

Mitigation Strategy Implementation

- Alignment with state priorities
- New mitigation techniques
- FEMA HMA funding
- PA mitigation successes
- Grant application tips
- Other resources for mitigation

Mitigation Techniques

Types of Mitigation Actions

1. Local Plans and Regulations
2. Structure and Infrastructure Projects
3. Natural Systems Protection
4. Education and Awareness Programs



Local Plans and Regulations



- Targeted planning (local plans, zoning, regs)
- Revision of building codes
- Stormwater and floodplain regulations

Structure and Infrastructure Projects



- Elevation of flood-prone structures
- Floodproofing measures
- Relocation, Acquisition, Demolition
- Floodwalls, retaining walls, detention and retention structures, culverts, dams/levees, and safe rooms

Natural System Protection



- Minimize damage and losses and preserve or restore the functions of natural systems
- Examples include sediment and erosion control, stream corridor restoration, forest management, conservation easements, and wetland restoration and preservation

Education and Awareness



- Outreach projects
- Library materials dissemination
- The creation of hazard information centers
- School age / adult education programs

State Mitigation Priorities

- Acquisition/Demolition of damaged, substantially damaged, or destroyed homes.
- Small structural projects using FEMA Benefit Cost Analysis (BCA) Software.
- Other eligible State Initiative flood mitigation opportunities (up to 5% of the grant total).
- Development of County Hazard Mitigation Plans (allowable amount up to 7% of the grant total).
- Home elevation projects.
- Eligible business mitigation activities; e.g. flood-proofing or other resilient mitigation retrofitting measures.

Note: Other federal and state programs are available for structural projects.

Who is eligible to apply for the FEMA HM Funding?

Projects on private property may be eligible for funding under the HMA only if submitted by a county or municipal government entity

Participation in an HMA project by both private citizens and eligible entities
MUST BE VOLUNTARY!

Eligible HMGP Projects

- Property Acquisition and Structure Demolition
- Structure Relocation
- Dry Floodproofing of Historic Residential Structures
- Dry Floodproofing of Non-residential Structures
- Minor Localized Flood Reduction Projects
- Structural Retrofitting of Existing Buildings
- Non-structural Retrofitting of Existing Buildings
- Safe Room Construction
- Infrastructure Retrofit
- Structure Elevation
- Soil Stabilization
- Wildfire Mitigation
- Post-disaster Code Enforcement
- 5% Initiative Projects
- Hazard Mitigation Planning (counties) [7% Cap]



What isn't Eligible?

- Repair or replacement of existing infrastructure, roads, facilities, etc.
- Debris/snow removal
- Stream-related work
- Bridge replacement
- Mitigation for damaged infrastructure that can be funded under Public Assistance
- Deferred maintenance



The “Maybe” Costs

- Hydrology and Hydraulics (H&H) studies
- Elevation drawings
- Appraisals
- Title searches
- Surveying



What Throws Projects Off-Track

- Pre-award costs
- Surveying
- Trust Land
- Appraisals
- Engineering costs
- Legal costs
- Taxes



FMA Project Example

FLOOD GATE, City of Sunbury,
Northumberland Co. (2006)



State Route 61 (Sunbury to Shamokin)

FMA Project Example

41 & 3 W. Indian Ave, West Norriton Twp.
Schuylkill River, Montgomery Co. (2009)



≈\$250,000 / elevation in the SE



Combination HMGP-RFC Project



**S SIXTH STREET FLOOD MITIGATION PROJECT
BOROUGH OF LEWISBURG.**

JUDITH T. WAGNER, *Mayor*
CHAD SMITH, *Borough Manager*
PETER J. BERGONIA, JR., *Council President*
SUSAN P. MAHON, *Council Vice President*
MEDLY A. ROBINSON, *Council Member*

LEWISBURG

TED L. STROSSER, *Council*
LOUIS (TREV) CASMIR, *Council*
ED COX, *Council*
KENNETH N. BAKER, *Council*
KATHRYN MORRIS, *Council*

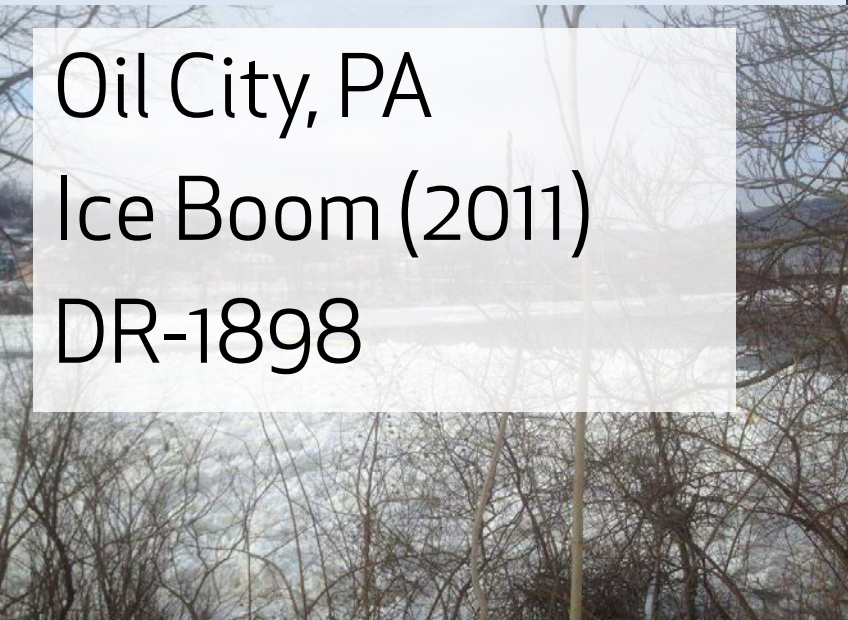
IN COOPERATION WITH:
FEDERAL EMERGENCY MANAGEMENT AGENCY
PENNSYLVANIA EMERGENCY MANAGEMENT AGENCY
SEDA - COUNCIL OF GOVERNMENTS
LEWISBURG NEIGHBORHOODS CORPORATION

PROJECT ENGINEER: LARSON DESIGN GROUP

Lewisburg, PA
Acquisition/demolition of
10 homes (5 RFC/5 HMGP)
DR-1898

HMGP Project Example

Oil City, PA
Ice Boom (2011)
DR-1898



L-PDM Project Example

Beach 5 - New Road Alignment- Prop Tie-In to Ex. Old Lake Road @ North End of Work Area.

Apr 20, 2012



Beach 5 - Prop. New Road Alignment - Clearing View to South from Center of Work Area

Mar. 22, 2012



Beach 5 - New Dune Alignment

July 26, 2012

View to South from Top of Dune @ Center of Work Area



Beach 5 -Wearing Course & Line Painting - North End of Work Area -View to North Transition to Ex. Old Lake Road

May 7, 2012



Presque Isle State Park,
City of Erie (2008)
Flood mitigation

ICC Fund Project Examples



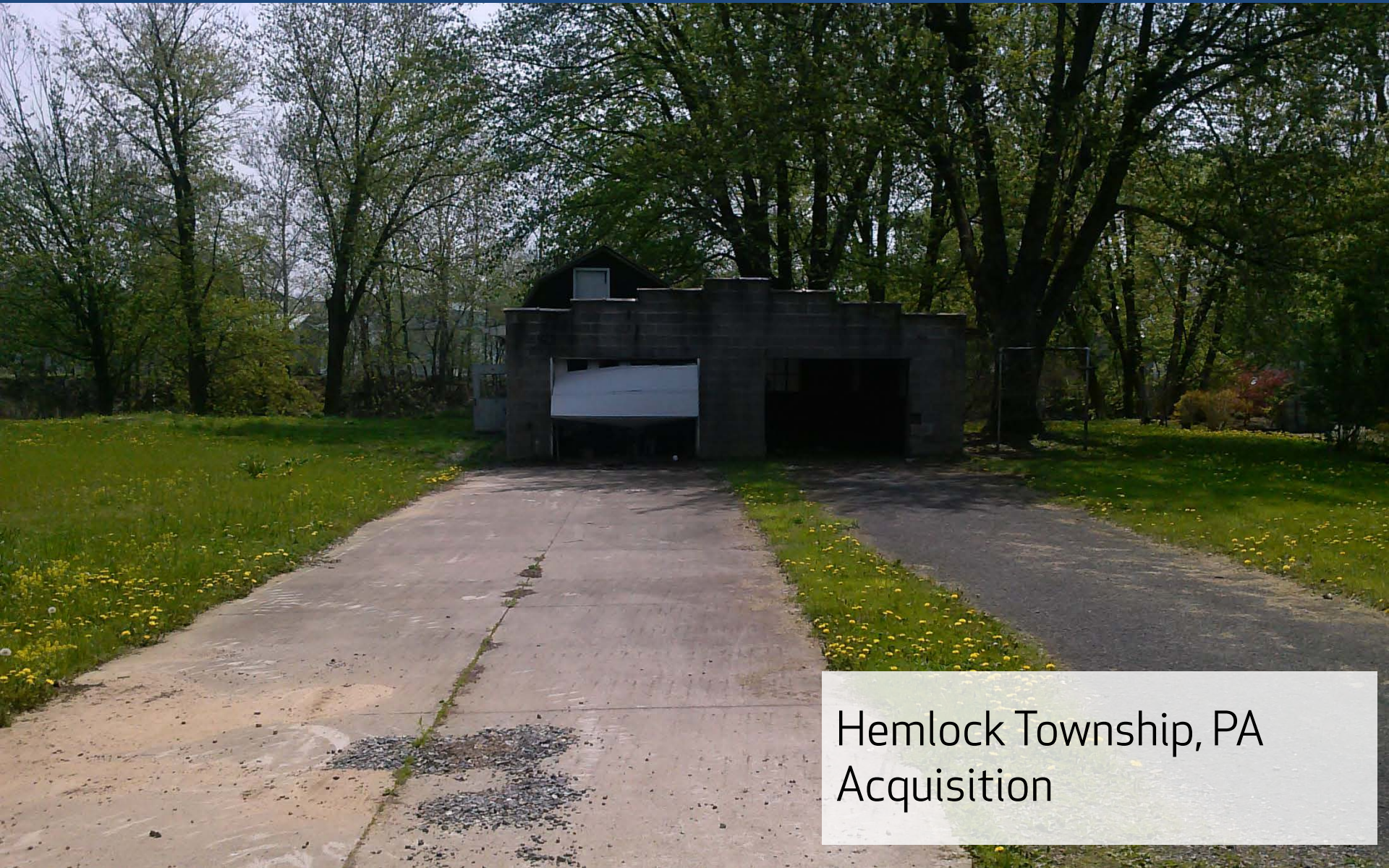
Scott Township, PA
Elevation

ICC Fund Project Examples



Scott Township, PA
Elevation

ICC Fund Project Examples



Hemlock Township, PA
Acquisition

Grant Application Tips



- HMGP Read-me online
- PDM Guide
- Realistic budgets accounting for all costs
- Continuity of contact
- Manage Expectations of homeowners
- Manage execution of the project within POP

Other Potential Funding

- <http://www.newpa.com/find-and-apply-for-funding/funding-and-program-finder>
- Community Development Block Grant (CDBG)
- CDBG-DR (Disaster Funding)
- Small Business Administration (SBA) Disaster Loans
- PA Silver Jackets Funding Guide

www.esa.dced.state.pa.us

Guidelines Released in March 2014

- Abandoned Mine Drainage
- Baseline Water Quality Data
- Flood Mitigation
- Greenway Trails Recreation
- Multimodal Transportation Fund
- Orphan Abandon Well Plugging
- Sewage Facilities
- Small Water and Sewer
- Watershed Restoration Protection

State Hazard Mitigation Resources

- PEMA
 - Tracks mitigation projects
 - Funding
 - DCED Coordination
 - Training and Exercises
 - Resources
 - Technical Assistance

PA Silver Jackets

Our Partners



Flood Risk Management Resources

By Pennsylvania Silver Jackets

The Pennsylvania Silver Jackets is an innovative program that provides an opportunity to bring together local, state, regional and federal agencies to address the state's flood risk management priorities. For more information please visit the [Pennsylvania Silver Jackets webpage](#).

This site was created by the Pennsylvania Silver Jackets team to provide the best resources for flooding information for the Commonwealth of Pennsylvania. The site is divided into three major categories - before the flood/general information, during the flood, and after the flood - and provides information on types of flooding, levees, protecting your family during a flood, recovering after a flood, and more.

Before the Flood



During The Flood



After The Flood

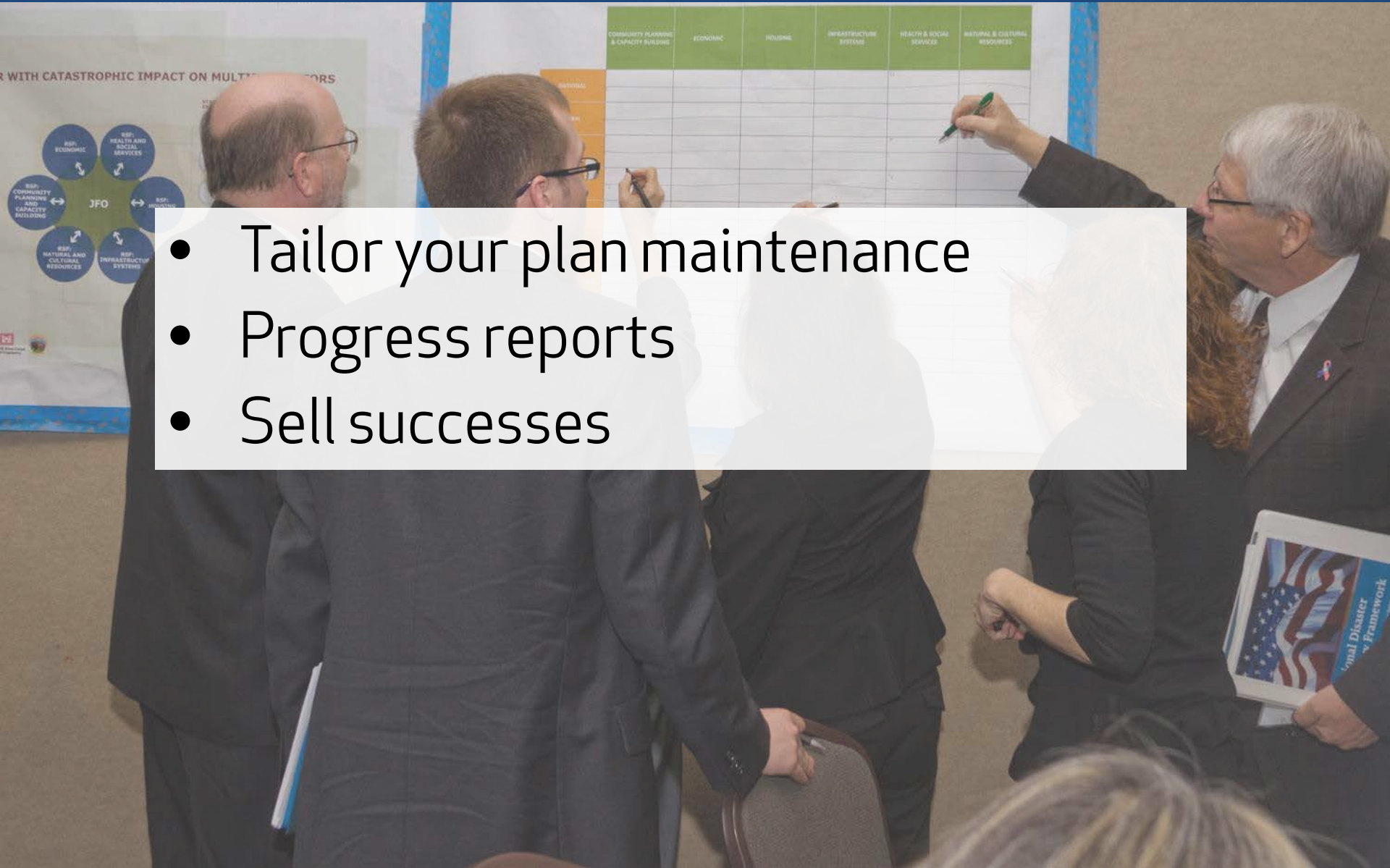


Chapter 7: Plan Maintenance

- CFR Requirements:
 - The plan shall describe how it will be kept current between updates
 - The plan shall include a process by which the HMP will be incorporated into other plans
 - The plan shall discuss how the community will continue participating

Chapter 7: Plan Maintenance

- Tailor your plan maintenance
- Progress reports
- Sell successes





Questions?





I've Written My Hazard Mitigation Plan... NOW WHAT?!

THANK YOU!

Thomas S. Hughes
thughes@pa.gov

Christine Caggiano, AICP
ccaggiano@mbakerintl.com