Family Reunification Center: Do you know your involvement?

Chrissy DePaolantonio: Safe Schools Planning Coordinator
Stacey P. Songer, MS: Access and Functional Needs Coordinator
Discussion Overview

- Chester County, PA Demographics
- Motivation for Family Reunification in Chester County
- Family Reunification Sites
- Family Reunification Process
  - Developing a Deployment Team
  - Identifying Agency’s and Resources needed
  - How a Site is activated
- Family Assistance Center
- Testing the Plan and working to improve our results
Chester County, PA

- 762 Square Miles
- 512,784 Residents
- 73 Municipalities
- 57 Fire Companies
- 45 Police Departments
- 32 EMS Agencies
Motivation

• Columbine High School, 1999
• Nickel Mines, 2006
• Virginia Tech, 2007
• Texas A&M, 2012
• Sandy Hook Elementary School, 2012
Family Reunification

• What is Family Reunification?
  • Process of reuniting families back together after a disaster. (Parent-Child Reunification)

• What is a Family Reunification Site?
  • A pre-identified building (large population, secure building access).
  • A Memorandum of Understanding (MOU) is in place with each site.

• What is the difference between:
  • Family Reunification Center
  • Family Assistance Center
Family Reunification Sites

- Identifying Family Reunification Sites
  - Site lists are not publically available
  - Sites are non-school buildings
- What makes an ideal site?
  - Parking
  - Ingress / Egress
  - Population Capacity
  - Layout of Building
  - Control Internal Access
  - Communication
Establishing a Deployment Team

• Partnered with Chester County Intermediate Unit’s Crisis Response Team
• Consists of:
  – Mental health therapists
  – School psychologists
  – Guidance counselors / supervisors
• Team members receive additional training 2-3 times
  – ICS Training
  – Resource Availability
  – Initial Site Set-Up
Reunification Kit

• Readily available at each site:
  – ICS vests
  – Signs to identify areas / critical security points
  – Emergency Release Forms
  – Supplies
  – Red binder with all identifying positions, site maps, and ICS forms
Agency Involvement

- Law Enforcement
  - County Sheriff’s Office
  - Detectives
- Local Fire and EMS Agencies
- Volunteer Organizations
  - American Red Cross
  - Medical Reserve Corps (MRC)
  - Disaster Crisis Outreach & Referral Team (DCORT)
  - Citizen Emergency Response Team (CERT)
Reunification Process

- Parent Check-in
- Parent Waiting Area
- Data Processing
- Reunification Rooms
- Student Holding Area
Parent Check-In

- Personnel
- Responsibilities:
  - Parent / guardian fills out Emergency Release Form
  - Staff verifies identification (or no ID)
  - Confirms emergency contact information via roster
  - Instructs parent to Parent Waiting Area
Emergency Release Form

Instructions: Please print clearly. Have photo identification out and ready to show reunification personnel.

Name of Student (PLEASE PRINT): ____________________________________________________________

Grade: ____________________________

Person Requesting Student: ________________________________________________________________

Relationship to Student: [ ] Parent  [ ] Other

Cell Phone Number(s): ________________________________________________________________

I request the student named above be released to my custody.
Signature ____________________________ Date ____________________________

Parent/Guardian Sign Off

Name of Student (PLEASE PRINT): ____________________________________________________________

Grade: ____________________________

Your Name: ____________________________ Signature: ____________________________
Emergency Release Form

FOR PARENT CHECK-IN AREA USE ONLY

☐ Requestor is listed as an emergency contact/authorized adult
☐ Requestor is not listed as an emergency contact/authorized adult.

Action taken for release: ________________________________

☐ ID checked    Type:  ☐ Drivers License    ☐ Other

Comments: ________________________________

Sent to Reunification Room #______________
Instruction for Parent

Instructions for Parents/Guardians:

☐ Please remain in the Parent Waiting Area and wait for your name to be called.
  ○ This may be a timely process since we are working proficiently to organize and account for all students.

☐ If you are picking up more than 1 child, this may take extra time so we can reunify you as a family.

☐ A School representative will be providing periodic updates.

☐ Once your name is called, please follow the assigned staff member to the reunification area.

We thank you for your patience!
Parent Waiting Area

• Personnel

• Responsibilities:
  – Parent / Guardian are to remain in this area until called upon
  – School representative will provide periodic updates (approved from Incident Command)
Student Holding Area

• Personnel

• Responsibilities:
  – All students will be staged in this area with a school representative
  – Once name is called, will be escorted to a reunification room
Data Processing

• Personnel

• Responsibilities:
  – Verifies students are physically in building
  – How to handle missing students
  – Once confirmed via emergency release form and roster of students:
    • 1 runner retrieves parents
    • 1 runner retrieves student
  – Escort to a reunification room
Reunification Rooms

• Personnel per room

• Responsibilities:
  – Provide support to families
  – Provide information to parents if students experienced a traumatic event
Reunification Activation

• Sites are requested by the school through the 911 center

• Key information to provide to 911:
  – Student / Staff Population
  – Transportation (needed?)

• County Emergency Management would determine the site based on information
  – Initial notification is made to deployment team and Sheriff’s Office
Team Response

• Deployment Team arrival:
  – Locate the reunification kit
    • Specific site set-up
    • Critical security points
    • ICS Roles
    • Limited equipment and resources

• Incident briefing to arriving team members.
Always Remember....

- A Family Reunification Center can transition into a Family Assistance Center...
What is a Family Assistance Center?

• A secure facility established to serve as a centralized location to provide information and assistance about missing or unaccounted persons and deceased

• Support the reunification of the missing or deceased with their loved ones
Family Assistance Center

• Provides two types of benefits for families of victims:
  – Information:
    • Notifying families of status of victim
    • Updates regarding incident recovery efforts
  – Services:
    • Emotional support, spiritual care, health and social services
Purpose of a Family Assistance Center

• Long-term operation
• Private, safe and secure location for family members to grieve
• Provide factual information
• Provide assistance to family members
• Identify and organize all service providers in one location
• Coordinate interagency response
• Avoid duplication of services and efforts
Family Assistance Services

- Safety and Security
- Crisis and grief counseling
- Official briefings (facts)
- Collection of ante mortem information
- Meals and beverages
- Financial assistance
- Transportation
- Child Care
- Spiritual care
- Health services
- Death notifications (possibly)
- Other services as deemed necessary
Concerns of Family Members

**Notification of Involvement**
“What happened?”
- Initial notification
- Immediate factual information

**Access to Resources and Information**
“How will I get information and resources?”
- Crisis Counseling
- Information regarding investigation
- Financial / logistical
- Legal rights

**Victim Accounting**
“Where is my loved one?”
- Search, rescue, hospitalization
- Search & recovery of fatalities
- Identification, death certification, and return of remains

**Personal Effects**
“Where are their belongings?”
- Recovery, processing and return of personal effects
- Associated and unassociated
Operational Areas of Concern

• 3 operational areas of greatest concern to both ME/coroner AND family members?

- Recovery Scene
- Family Assistance Center
- Disaster Morgue
Testing the Reunification Process
Exercise Objectives

• Assess the effectiveness of the procedures and activities to operate a site.

• Collaborate and share information.

• Evaluate the implementation of Incident Command System/Unified Command.
Participating Organizations

• County
  – Chester County Sheriff’s Office
  – Chester County Detectives
  – Chester County Department of Emergency Services
  – Chester County Intermediate Unit

• Local Fire and EMS Agencies

• Non-Governmental Organizations
  – Medical Reserve Corps (MRC)
  – Collegium Charter School
  – Local Boy Scouts
Exercise Overview

• Notifications to Deployment Team and Sherriff’s Office
• Deployment Team arrival:
  – Locate the reunification kit
  – Assign ICS Roles and area set-up
  – Assign Sherriff’s to critical security points
  – Assign School Staff to appropriate locations
  – Equipment and resources
• Incident briefing provided to arriving area supervisors
• Reunification process
Reunification Process

Parent Check-in

Parent Holding Area

Data Processing

Reunification Rooms

Student Holding Area
Lessons Learned

• Accurate information obtained on the Emergency Release Form.

• Layout of the Reunification Site.

• Information disseminated to parents at the Parent Waiting Area needs to come from a PIO or school representative.
Student Holding Area/Data Processing

*Lessons Learned*

- School administration supplies master student roster
  - Accurate information obtained on the Student Release Form.

- Two runners escorting students and parents to Reunification Rooms.

- Communication between Operations Division and School Emergency Operations Center.
Reunification Process

- Parent Check-in
- Parent Holding Area
- Data Processing
- Reunification Rooms
- Student Holding Area
Reunification Rooms

Lessons Learned

• Parents and children should be reunited in private.
  – Staff Reunification Room with:
    • Law Enforcement
    • Counseling
    • School staff member

• Provide follow-up information to parents:
  – Symptoms and signs to look for
  – Family Assistance
Overall Exercise Lessons Learned

• Appropriate agencies participated.
• All critical communication devices (and internet services) were functional.
  – Student roster accessed electronically from the Reunification Site.
  – Provide Sheriff with radio to communicate to Reunification Deployment Team Supervisor.
• Staff followed the incident command structure.
• Site security worked well.
• Public Information in Parent Waiting Area
• Identification of School Staff
• TRAINING!!!
Next Steps

• Develop a Family Assistance Center Plan
  – Following Family Reunification Activation
  – Activation during Community Event Emergency

• Family Assistance Table Top Exercise
  – October 2016
Take away...

• Find and build your team...

• Develop a reunification process...

• Find reunification sites...
Thank You!

Chester County Department of Emergency Services, Emergency Management Division

Chrissy DePaolantonio  
Safe Schools Planning Coordinator  
cdepaolantonio@chesco.org

Stacey P. Songer, MS  
Access and Functional Needs Coordinator  
ssonger@chesco.org
Updates from the Pennsylvania Department of Health (PADOH)

May 18, 2016
Agenda

1. Capabilities
2. Health Care Coalitions
3. Strategic National Stockpile
4. Novel diseases and Ebola
Public Health and Health Care Capabilities

Jeffrey Backer
Planning and Operations Director
Bureau of Public Health Preparedness
Pennsylvania Department of Health
<table>
<thead>
<tr>
<th>Public health preparedness capabilities</th>
<th>Health care preparedness capabilities</th>
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<tbody>
<tr>
<td>1  Community preparedness</td>
<td>1  Health care system preparedness</td>
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<td>2  Community recovery</td>
<td>2  Health care system recovery</td>
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<td>3  Emergency operations coordination</td>
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<td>4  Emergency public information and warning</td>
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<td>5  Fatality management</td>
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<td>8  Medical countermeasure dispensing</td>
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<td>11 Non-pharmaceutical interventions</td>
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<td>13 Public health surveillance and epidemiological investigation</td>
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<td>14 Responder safety and health</td>
<td>14 Responder safety and health</td>
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<td>15 Volunteer management</td>
<td>15 Volunteer management</td>
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## Emergency Support Functions

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<th>ESF 1</th>
<th>Transportation</th>
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<tr>
<td>ESF 2</td>
<td>Communications</td>
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<td>ESF 3</td>
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<td>ESF 6</td>
<td>Mass care, housing and human services</td>
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<td>ESF 7</td>
<td>Logistics management and resource support</td>
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<td><strong>ESF 8</strong></td>
<td><strong>Public health and medical services</strong></td>
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<td>ESF 9</td>
<td>Search and rescue</td>
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<td>ESF 10</td>
<td>Oil and hazardous materials response</td>
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<td>Agriculture and natural resources</td>
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<td>ESF 13</td>
<td>Public safety and security</td>
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<td>ESF 14</td>
<td>Long term community recovery</td>
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<td>ESF 15</td>
<td>External affairs</td>
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</tbody>
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People
• Public health
• Health care
• Emergency medical services
  • EMS strike teams
• Behavioral health
  • Disaster crisis outreach and referral teams (DCORT)
• Coroners and funeral directors
• Volunteers/SERVPA
  • Medical reserve corps
    State medical assistant teams
Mobile Medical Equipment
State Medical Assistance Teams

- Three teams: Southeastern Pa., Indiana County and Erie County
- Medical surge event support either at a local health care organization or provision of field operations at the incident site
- Equipment and supplies to support operations for 96 hours or more
Statewide Incident Management System
Common Operating Picture
Medical Surge
SEOC/DOC Event Coordination
2016 Public Health Preparedness Summit

Building Coalitions and Strengthening our Community

Sept. 14-16, 2016
Blair County Convention Center
Altoona, Pa.

#PHPSummit16
Health Care Coalitions and the Regional Task Force Where Public Health and Emergency Management Collide

Andrew Pickett
Director, Bureau of Public Health Preparedness
Pennsylvania Department of Health
Health Care Preparedness Funding

• Federal funders push towards regional efforts
• Concept of a “Health Care Coalition” (HCC)
  ✷ Regional organization tasked with planning, training, exercising, and sharing information and resources
  ✷ Operational role
    ✷ Not as first responders, but as a coordinating entity among the ESF 8 community
    ✷ Multi-agency coordination, not incident command or EOC
    ✷ “One stop shop” for external partners (PADOH, county and local emergency management, etc.)
Makeup of a Health Care Coalition
Benefits for Regional Task Forces

- More robust health and medical preparedness on a regional level
- Better inclusion of all sectors within the health and medical community
- Partnership between health care and emergency management with a single point of contact
- Funding available for health and medical efforts that will benefit first responder community
Benefits for Healthcare Coalitions/Health

- Fits into federal funder model
- Allows broader health and medical community access to funding
- Allows coalitions/H and M subcommittees to engage in projects that would otherwise be unavailable
- Allows health and medical community a degree of autonomy while still fitting into regional preparedness model
Pennsylvania’s Mass Distribution of Medical Countermeasures

State Operational Readiness Review

Joanne Roth
Community Preparedness Planning and Response Section Chief
Operational Readiness Review

- **Purpose** - identify gaps
- **Conducted by** – the Centers for Disease Control and Prevention (CDC), Office of Public Health Preparedness and Response (OPHPHR), Division of State and Local Readiness (DSLR)
- **Process**
- **Outcome**
Operational Readiness Review

Process

• ORR tool
  • PHEP capabilities
    • Capability 1 – Community preparedness
    • Capability 3 – Emergency operations coordination
    • Capability 4 – Emergency public information and warning
    • Capability 6 – Information sharing
    • Capability 8 – Medical countermeasure dispensing
    • Capability 9 – Medical materiel management and distribution
    • Capability 14 – Responder safety and health
    • Capability 15 – Volunteer management
  • Capability function ratings
    • Early
    • Intermediate
    • Established
    • Advanced
Operational Readiness Review

Next Steps

- Technical assistance (TA) – 2016
  - State level
    - Requested TA
    - Provided by CDC DSLR
  - City readiness initiative (CRI) counties
    - Requested TA
    - Provided by PADOH BPHP

- ORR – 2017
Medical Materiel / Countermeasure
Medical Countermeasures Activities

- Fall 2015 – Papal visit and CHEMPACK temporary move
- May 2016 – Vibrant response
- May 2016 – Pittsburgh Metropolitan Statistical Area (MSA) full-scale exercise
- June 2016 – Delaware County dispensing exercise
- Fall 2016 – Pike MSA – full scale exercise
Ebola Viral Disease and other Novel Diseases: Pennsylvania's Concept of Operation

Diane Brannon-Nordtomme
Planning and Emergency Response Coordination Section Chief
• Assumptions regarding Ebola viral disease and novel diseases (EVD/ND) in Pa.
  • Pa. monitors travelers from countries where there is active EVD/ND outbreak or has been an active EVD/ND outbreak
  • EVD/ND patients present at hospitals and other health care facilities when signs and symptoms occur.
• Transport of suspected EVD/ND patient
  • EMS agencies may receive calls to residences or other locations for a potential EVD/ND case
  • Acutely ill patients are transported to nearest hospital
Transport of suspected EVD/ND patient

- If patient is not acutely ill, every attempt is made to directly transport patient to Ebola Assessment Treatment Facility (EA/TF) by a pre-selected transport team.

- Currently, there are 10 transport teams identified by Bureau of Emergency Medical Services to transport EVD/ND patients.
• Treatment of suspected EVD/ND or confirmed EVD/ND in patients
  • CDC provides guidance for treatment of EVD/ND.
  • Pa. utilizes a two-tier hospital system.
• Tier one – front line hospitals
  • All hospitals in Pa. are frontline hospitals
  • All hospitals are able to screen, isolate and inform regarding EVD/ND Patients.
  • It is necessary to isolate potential EVD/ND patients for up to twenty-four hours.
• Tier two – EVD/ND assessment/treatment hospitals
  • For patients suspected of EVD from residence or from a Frontline hospital.
  • Eight in Pennsylvania.
  • Diagnosis and treatment of patients from onset to outcome.
• ConOps also includes guidance on
  - Remains care
  - Waste management in hospitals, from transport and in private residences
  - Communications strategies
  - Utilization of regional Ebola treatment facility
    - Johns Hopkins Medicine in Baltimore, Md.
  - References to CDC guidance on EVD/ND
Emergency Response

QUESTIONS

COMMENTS
THANK YOU!
THE GOOD, THE BAD, THE GREAT

IMT & EOC Coordination on the September 2013 Floods

Amy Danzl

Boulder Office of Emergency Management
BOULDER EOC

- Situational Awareness
- Resource Mobilization
- Coordination & Partnerships
- Forge & Implement Dynamic Solutions
- Policy Group Management
WHY IT MATTERED

- 1102 People Evacuated by Air
- 558 Animals Evacuated by Air
- 707 People Evacuated by Road
- Only Four Deaths
RELATIONSHIPS, CONFLICTS & FAILURES
IMTS & EOCs: COMMONALITIES

- Results
- Mutual SA & Info Support
- Restore order in chaos.
- Uniquely trained.
- Problem solving oriented.
IMTS & EOCS: DIFFERENCES

- Command & Control versus Coordination & Support.
- Scope: incident footprint versus the whole community.
- Authorities: single line versus multiple authorities.
- 12-hour versus undefined operational periods.
  - Planning Cycle.
  - Staff Transitions.
  - Briefings.
  - Media.
- Dynamic versus static IAPs.
- Style of Management.
- Skill sets and training.
IMTS & EOCs: COMPLEMENTATION

**IMTs**
- Command & Control
- Primary Objective: Life Safety
- Needs Additional Resources
- Needs Additional Coordination
- Manages the Incident

**EOCs**
- Support & Coordinate
- Primary Objective: Unmet Needs
- Fills Resource Requests
- Coordinates with MAC or Policy Groups
- Manages the Coordination of the Event Surrounding the Incident
DELEGATION VS. DECLARATION
DELEGATION VS. DECLARATION

Delegations

- Wildfire Model.
- Well practiced in Colorado.
- Delegate authority.
  - Can specify which authorities are delegated and which are maintained.
- Local to Sheriff to State (EFF) to Federal (FMAG).

Declarations

- All-Hazards Model.
- Every special district (including fire districts) is responsible for declaring their own disaster in order to access funds.
- Everyone maintains their authority (and responsibility to pay).
  - Flood: Boulder EOC authorized resource orders because the County and State were paying.
- Local to County to State to Federal (Stafford Act, “Major Disaster” w/potential IA and PA)
DELEGATION VS. DECLARATION

Delegations

- Funding: Upfront cost-share agreement, usually costing the local jurisdiction nothing or very little.
- Under EFF or FMAG, the State of Feds can hire contractors (such as volunteer firefighters) to prevent the emergency from escalating.

Declarations

- Funding: 75% reimbursement of eligible expenses come weeks, months or years later.
  - Payment of staff is equal to that paid prior to the disaster.
  - Response: $3.2m, Reimbursable: $1.6m.
- Utilizes an Emergency Operations Plan (EOP) and annexes.
  - Must be followed to be eligible for reimbursement.

Questions?
FLOOD EXPERIENCE: COMMAND VS. SUPPORT

- Jurisdictions maintained authority
- FPDs became branches or divisions
- Mission clarity
SOLUTIONS: COMMAND VS. SUPPORT

- **Delegation:**
  - Mission definition
  - Pre-script
  - Education for all-hazards
  - Conflict resolution process
  - EOP + Annexes

- **Transition:**
  - Roles and responsibilities
  - Unique capabilities
  - Relationship and communication
FLOOD EXPERIENCE: AUTHORITY TO ORDER

- All-Hazards Declaration: authority and payment
- County and State Cost Share
- IMT subject to agreement - Preorder
- Interagency Dispatch
SOLUTIONS: AUTHORITY TO ORDER

- Nuances in transition meeting
- Resource Mobilization Standards
  - Developing statewide curriculum
- More informed all-hazards IMT response
- Ductile: able to undergo change of form without breaking.
FLOOD EXPERIENCE: ALL-HAZARDS COMPLEXITY

- Footprint - shower units, catering, office trailers.

- Hundreds of special districts: water districts, ditch companies, school districts, 22 fire protection districts, multiple cities and townships.

- Financial impacts
SOLUTIONS: ALL-HAZARDS COMPLEXITY

- Scoping: duration and pre-order
- Understanding the geo-political environment
  - IMT status and mobilization board in WebEOC
- Developed Field 213RR for pre-IMT deployment
- Creative collaboration - Fuel pump security
FLOOD EXPERIENCE: THE GREAT

- Got the job done!
- Sheriff’s confidence and trust in our IMT3.
- Learned the all-hazards environment.
- Honest desire to improve teams statewide based on learning from this all-hazards incident.

“Peace cannot be kept by force. It can only be achieved by understanding.”

– Albert Einstein
QUESTIONS?
Amy Danzl
Deputy Director
Boulder Office of Emergency Management
Boulder, Colorado

303-441-3640
adanzl@bouldercounty.org
Weather Hazards & Forecast Challenges across the Commonwealth

Presentation & Panel Discussion
Tuesday, May 17, 2016 1:30-3:00PM
Wednesday, May 18, 2016 8:30-10:00AM

Session Outline

Introduction
Jeff Jumper, PEMA State Meteorologist

Weather Trivia
Peter Jung, Warning Coordination Meteorologist – NWS State College
Fred McMullen, Warning Coordination Meteorologist – NWS Pittsburgh

Seasonality of PA Weather & Forecast Challenges
Dr. John Scala, Certified Consulting Meteorologist & WGAL-TV

Panel Discussion
Moderator
Barbara Watson, Meteorologist-in-Charge – NWS State College

Panel Members:
Peter Jung, Warning Coordination Meteorologist – NWS State College
Fred McMullen, Warning Coordination Meteorologist – NWS Pittsburgh
Dr. John Scala, Certified Consulting Meteorologist & WGAL-TV
Joe Murgo, WTAJ-TV Chief Meteorologist
Jeff Jumper, PEMA State Meteorologist
Panel Questions

How would you describe your audience on social media?

How has it evolved?

How do you expect it to change?

Panel Questions

How do you handle misinformation?

Panel Questions

What is your biggest weather fear for your jurisdiction?
Panel Questions

Which particular weather event type has the greatest effect on you?

Panel Questions

What are your primary sources of weather information?

Why?

Panel Questions

How often do you need a forecast update?

What forecast changes do you feel warrant an update?
Panel Questions

How much lead time do you require in non-severe warnings & advisories?

(i.e., freezing rain, wind chill, fire weather)
Pennsylvania High Impact Weather Trivia

Did this happen in Pennsylvania? If so, where (and when)?

EF-3 Tornado: Lyons, PA (Berks County) May 30, 1998

Wall Cloud: Allentown, PA (Lehigh County) June 30, 2015
Tsunami: Hawaii, 1946

Flooding: Easton, PA (Northampton County) June 29, 2006

Turnpike Accident: Lower Bucks County, PA February 14, 2014
EF-1 Tornado: Lawrence County, PA 2013

Heavy Snow: Terra Alta (Preston County, WV) 2010

EF-2 Tornado: White Horse (Lancaster County) Feb 24, 2016
Heavy Snow: Southern Tier of PA, January 23-24, 2016

Flooding (Rain/Snowmelt) January 19, 1996

EF-3 Tornado: Salisbury, PA (Somerset County) May 31, 1998
Ice Storm: Upstate New York 1998

EF-2 Tornado: Roundtop (York County) April 28, 2011

Flash Flood: Johnstown (Cambria County) – 1889, 1936, 1977, ....
Snow Squall: Erie, PA (Erie County) – November 18, 2014
Weather Resources

Local National Weather Service Weather Forecast Offices are your primary point of contact for county specific weather and climate information.

- **National Weather Service – Binghamton, NY**
  - Bradford, Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties
  - [http://www.weather.gov/bgm/](http://www.weather.gov/bgm/)

- **National Weather Service – State College, PA**
  - Adams, Bedford, Blair, Cambria, Cameron, Centre, Clearfield, Clinton, Columbia, Cumberland, Dauphin, Elk, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Lycoming, McKean, Mifflin, Montour, Northumberland, Perry, Potter, Schuylkill, Snyder, Somerset, Sullivan, Tioga, Union, York and Warren counties
  - [http://www.weather.gov/ctp/](http://www.weather.gov/ctp/)

- **National Weather Service – Mounty Holly, NJ**
  - Berks, Bucks, Carbon, Chester, Delaware, Lehigh, Monroe, Montgomery, Northampton and Philadelphia counties

- **National Weather Service – Pittsburgh, PA**
  - Allegheny, Armstrong, Beaver, Butler, Clarion, Fayette, Forest, Greene, Indiana, Jefferson, Lawrence, Mercer, Venango, Washington and Westmoreland counties
  - [http://www.weather.gov/pbz/](http://www.weather.gov/pbz/)

- **National Weather Service – Cleveland, OH**
  - Crawford and Erie counties
  - [http://www.weather.gov/cle/](http://www.weather.gov/cle/)
Weather Resources

Additional information can be found on rivers/hydrology through the River Forecast Centers:


![](River Forecast Centers serving Pennsylvania)

Additional information can be found on climate through the following resources:

- **Pennsylvania State Climatologist**
  - [http://climate.met.psu.edu/](http://climate.met.psu.edu/) – Phone: 814-865-8732
- **National Centers for Environmental Information (NCEI)**
  - formerly National Climatic Data Center (NCDC)
    - [https://www.ncei.noaa.gov/](https://www.ncei.noaa.gov/) – Phone: 828-271-4800
- **Climate.gov**
  - [https://www.climate.gov/](https://www.climate.gov/)

Additional weather information can be found through the following resources:

- **Storm Prediction Center** – [http://www.spc.noaa.gov/climo/online/](http://www.spc.noaa.gov/climo/online/)
- **National Hurricane Center** – [http://www.nhc.noaa.gov/climo/](http://www.nhc.noaa.gov/climo/)
- **Flood Insurance Rate Maps (FIRMs)**
- **FEMA Flood Map Service Zone** – [https://msc.fema.gov/portal](https://msc.fema.gov/portal)
- **Earthquakes, Energy, Soil, Water Use, Volcanos**
- **Remote Sensing Data**
Weather Hazards and Forecasting Challenges across the Commonwealth

Pennsylvania

>46,000 mi² – Ranks 32nd

Mount Davis 3213’
Delaware River 0’

Range of Warm/Cold Season Weather Hazards

Winter of 2014-15
PA DOT - $272 Million across 40,000 miles of Roads
(Budget $203 Million)
Pennsylvania
46,000 mi
Ranks 32

Hurricane Agnes
9/8/2011
Wilkes-Barre, PA

9/8/2011
Hurricane Agnes

9/8/2011
Hurricane Agnes

2015 Pennsylvania THIPA:
A threat and risk analysis for the Commonwealth

What is Pennsylvania’s Number 1 Threat?

Flooding, Flash Flooding, & Dam Failure

Top Ten Include
Winter Storms (#3)
Extreme Temperatures (#7)
Tornado/Wind Storm (#9)
Hurricane/Tropical System/Nor’easter (#10)
Allegheny River Flooding, Pittsburgh 19–21 January 1996

National Weather Service - Pittsburgh

National Flood Insurance Program Coverage: $250,000 for structure, up to $100,000 for possessions


What was PA's national ranking in 2014 for claims paid per policy in force?

Lancaster, PA September 8, 2011 Credit: John Scala

Ike
Katrina
Irene
Sandy
Average Number of Thunderstorm Days Per Year

National Weather Service

Gratz et al (2005)
"I heard thunder but I didn’t see any lightning so I’m safe."

August 27, 2000
8:05 PM

Gratz et al 2004

"Lightning never strikes the same place twice."

"Heat lightning is a real phenomena."

Credit: Johnny Autery

What makes a thunderstorm severe?

Combination of instability and wind shear

Credit: Tim Marshall

Copyright: 1996, Tim Marshall
"Doppler weather radar detects all cloud-based rotations before they become tornadoes."
...if only forecasting were this simple

Numerical Weather Prediction

<table>
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<th>Global Models (operational)</th>
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</tr>
</tbody>
</table>

Credit: John Scala
Challenge of Conveying Life-Threatening Weather Information

- Pre-conditioning of response to severe weather
- Individual perception of risk and vulnerability
- Variable tolerances (human, physical, programmatic)
- Communicating range of impacts to diverse audience

Traffic jam - Moore, OK
May 20, 2013

Smithville, Mississippi
April 27, 2011

“...providing more accurate forecasts may not lead to rational decision making.”
Harold Brooks, National Severe Storms Lab

MS EMS/?HW/S MEM

Communicating Risk...

...not all outcomes are predictable
"Disaster risk is growing. We continue to put more people and more stuff in harm’s way, whether it’s coastal communities, earthquake prone areas, or flood plains."

- David Applegate, Assoc. Dir.
U.S. Geological Survey

AP Photo/U.S. Air Force, MSgt Mark C Olsen
Kinzua Viaduct Bridge – constructed 1882, improved 1900...

...destroyed July 21, 2003

S Annville Township
Healthy Hardwood
2.5 feet in Diameter
2014 – NFIP $373 Million in Flood claim payouts
PA – 785 claims at $14.36 Million (5)
FL – 3,823 claims at $115.84 Million (1)
According to Munich Re:
- 650 Fatalities
- $15 Billion Losses
- 26,000 Severe Storms
- 6 Atlantic Basin Hurricanes
- 1,300 Tornadoes
- 5,000 Floods

PA (2015) – 15 Fatalities, 15 Injuries, $20.54 Million
A non-severe thunderstorm can develop in as little as _____ minutes

Credit: John Scala