Welcome to the briefing: Flooding Threatens Public Schools Across the Country

The webinar will begin shortly.

For the full report, log on to www.pewtrusts.org/flood-prepared-communities

August 1, 2017
Questions?

Please type your question in the text field at the bottom right of your screen.
If you do not see this field, click on the Q&A icon in the top right corner (blue when enabled).
Questions will be addressed at the end of the briefing.
Today’s presenters

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FLOOD

INFRASTRUCTURE

NATURE-BASED SOLUTIONS

DISASTER MITIGATION
Flooding is the costliest, most common natural disaster in the U.S.

- Flooding cost Americans more than $260 billion in damage since 1980.
- In 2016, the federal government declared 36 disasters involving floods or hurricanes.
- Four of those floods caused at least $1 billion in damages each.
Schools at Risk

Flooding in West Virginia in June 2016 caused $130 million in damage to regional schools including Herbert Hoover High School in Clendenin.
Flooding Threatens Public Schools Across the Country

Infrastructure analysis evaluates county-level flood risk
Methodology: Data

School locations, school characteristics & physical risk:

- National Center for Education Statistics Elementary/Secondary Information System
- FEMA National Flood Hazard Layer
- FEMA Disaster Declarations
Methodology: Indicators

**Flood Zone Risk:** Potential for direct risk to the school
- School’s location in a 1% or 0.2% annual chance flood zone

**ZIP Code Risk:** Potential for indirect risk to the school via the risk of the surrounding community
- Percentage of the school’s zip code located in the 0.2% annual chance flood zone

**Disaster Count Risk:** Potential for direct or indirect risk based on frequency of historical flood-related disasters
- Number of historical flood-related disaster declarations in the school’s county
Methodology: Calculations

Composite Flood Risk:
Sum of flood zone, ZIP code, and disaster count risk scores

Scores are calculated at the county level: individual school indicator scores are averaged across all schools in the county to create county-level indicator scores
Nicolet High School, WI

- July 2010, 8 inches of rain resulted in $14 million in damages
- $1.2 million on upgrades to better manage stormwater runoff
Eureka High School, MO

- Dec. 2015, 3 days of heavy rainfall flooded 75% of school, costing $2.5 million in damages
- School is collaborating with FEMA to increase resilience
2013 floods resulted in $60,000 of damages and initiated conversation on long-term outlook

Due to a history of repeated flooding, officials have relocated and are consolidating school outside the floodplain
Key Findings
School Flood Risk Is Distributed Widely Across the U.S.
Overall composite flood risk scores
High Flood Risk Scores Are Not Limited to the Coasts
Composite flood risk scores for coastal and inland counties

Risk score
Lowest  Highest

Note: The National Oceanic and Atmospheric Administration defines inland counties as those located outside the watersheds adjacent to the Pacific Ocean, Atlantic Ocean, Gulf of Mexico, or one of the Great Lakes.

Source: ICF
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Counties With Highest Composite Scores Serve Nearly 4 Million Students
100 counties with highest composite flood risk scores

Source: ICF
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6,353 Schools Are Located in a Flood Zone
Number of schools in FEMA’s mapped flood hazard areas

96,659
U.S. public schools

6,353
Total in flood zone

2,247
1% annual chance flood zone

4,106
0.2% annual chance flood zone

12,536
No digital flood map available
Schools Outside Flood Zones Still Have Students Affected by Potential Floods

Percentage of schools and school ZIP codes in flood zone, by region

- South Atlantic: 5.3% (20.3%)
- Pacific: 2.9% (8.4%)
- East South Central: 2.7% (13.6%)
- West South Central: 2.5% (15.9%)
- Mountain: 2.3% (4.7%)
- Mid-Atlantic: 2% (9.6%)
- New England: 1.2% (10.9%)
- West North Central: 1.1% (10.4%)
- East North Central: 0.9% (8.3%)

Legend:
- Average percent of school ZIP code in a flood zone
- Percent of schools in a flood zone
Underinvesting in Mitigation and Infrastructure

Schools

53% of schools need improvements to reach "good" condition
Recommendations

- Modernize maps
- Leverage federal assistance
- Develop pre-disaster plans for schools
- Rebuild smarter with federal dollars
Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety

FEMA P-1000 / June 2017
Where to start?

• Guide on Developing High Quality School Emergency Operations Plans (DoE, 2013)

• Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety (FEMA P-1000, 2017)
FEMA P-1000 – Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety

• Provides up-to-date, authoritative information and guidance that schools can use to develop a comprehensive strategy for addressing natural hazards including actions to take before, during, and after a hazard event.

• Developed for administrators, facilities managers, emergency managers, emergency planning committees, and teachers and staff at K through 12 schools.

• Also valuable for state officials, district administrators, school boards, teacher union leaders, as well as parents, caregivers, and students.

• Includes real-world case studies and examples highlighting the importance and effectiveness of the guidance.
FEMA P-1000 – Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety

• Comprehensive approach to school natural hazard safety. Key components:
  - Identifying hazards
  - Approaches for making school buildings safer
  - Planning for hazard response
  - Planning for hazard recovery
  - Engaging the whole community

• Hazard supplements and Appendices:
  - Earthquakes
  - Floods
  - Hurricanes
  - Tornadoes
  - Tsunamis
  - High Winds
  - Other Hazards: Snow storms, Volcanic Eruptions, and Wildfires

School buses in New Orleans, Louisiana were swamped by the floodwaters following Hurricane Katrina in September 2005 (Photo source: Liz Roll, FEMA).
Many of our Nation’s schools are at risk of flooding and other hazards.

Planning and preparing is essential.

Limited resources and competing priorities require smart investments.

Improve safety, recover more quickly, and be better prepared for the future.

https://www.fema.gov/media-library/assets/documents/132592
Schools in all 50 States Face Flood Challenges
Evaluation of community infrastructure risk potential
August 01, 2017 | Flood-Prepared Communities

Overview

The score is made up of three major indicators

Download Resources: Chartbook Case Studies: Wisconsin School | Kentucky School | Missouri School
County-level view

Composite Score

The score is made up of three major indicators

Municipality or County: Floyd County, Kentucky

1.21

Number of Schools: 17
Schools Flood Zone: 8
Percent of Schools in Flood Zone: 47.1%
Number of Students: 6,342

Composite Risk Score

Lowest

Highest

No Data
Composite Score

The score is made up of three major indicators

Municipality or County: Monroe County, Florida

Composite Risk Score

- Number of Schools: 24
- Schools Flood Zone: 21
- Percent of Schools in Flood Zone: 87.5%
- Number of Students: 8,489
Speakers

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For more information and to access the report, go to:
http://www.pewtrusts.org/schools-flood-risk