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

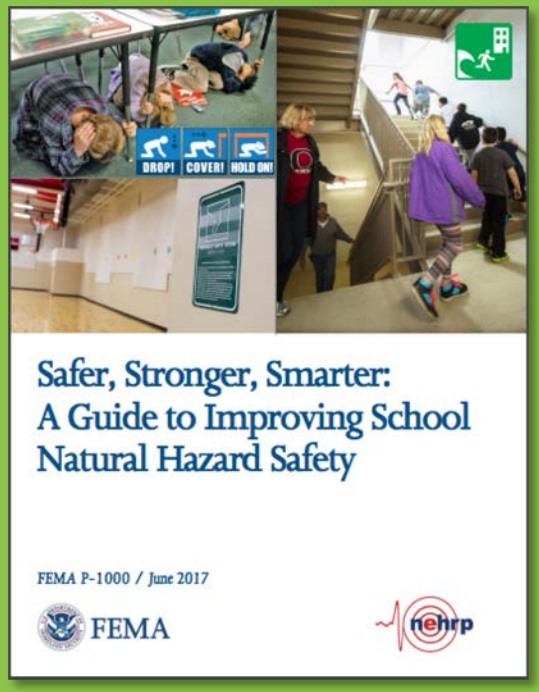
Developed by: Federal Emergency Management Agency (FEMA)

Provided by : National Earthquake Training Assistance Program (NETAP)

Facilitated by: Applied Technology Council (ATC)

FEMA

nehrp



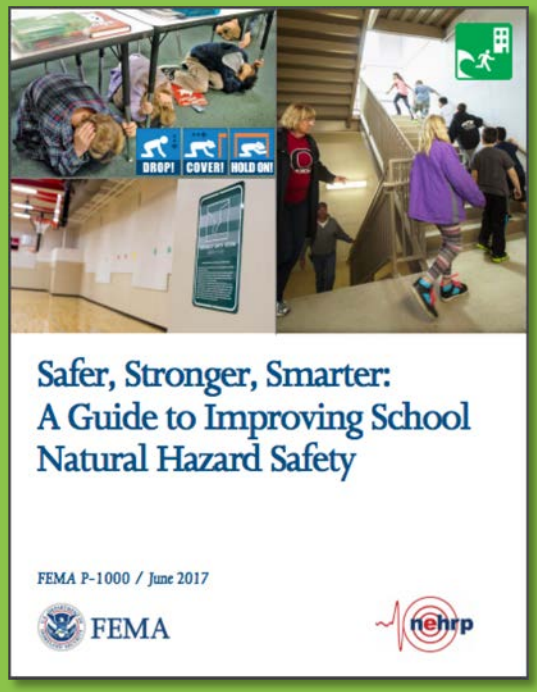
To Download, Visit: https://www.fema.gov/media-library/assets/documents/132592

To Order Free Hard Copies, Call: (800) 480-2520

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

Presenter: Barry H. Welliver, S.E.
Earthquake Engineering Research Institute

Earthquake Summit 2019
Clinton Community Bldg. - Sikeston, Missouri
February 20, 2019



To Download, Visit: https://www.fema.gov/media-library/assets/documents/132592

To Order Free Hard Copies, Call: (800) 480-2520

FEMA

nehrp

Objectives for Today

- Introduction to the **FEMA P-1000 Guide**
- Encourage **locally-specific** thinking about **natural hazards + school safety**
- Identify **actionable steps** for:
  - Identify **natural hazards** impacting schools (Ch. 2)
  - Making **existing *and* new school buildings** safer from natural hazards (Ch. 3)
  - Planning for emergency **response** (Ch 4)
  - Planning for short- and long-term **recovery (**Ch 5)
  - Engaging the **whole community** in school safety actions (Ch. 6)

FEMA

DROP! COVER! HOLD ON!

nehrp

Developing the Guidebook

Acknowledgements

- Prepared for: **Federal Emergency Management Agency**
  - Michael Mahoney (Project Officer)
  - Andrew Herseth (Task Monitor)

- Prepared by: **Applied Technology Council**
  - Jon A. Heinz (Program Executive, Program Manager)
  - Veronica Cedillos (Project Manager)
  - Ayse Hortacsu (Project Manager)

- **Project Management Committee:**
  - Barry H. Welliver (Project Technical Director)
  - Suzanne Frew
  - William T. Homes
  - Christopher P. Jones
  - Lori Peek
  - John Schelling
  - Thomas L. Smith
  - Edward Wolf

+ +

Developing the Guidebook

FEMA

DROP! COVER! HOLD ON!

nehrp

Acknowledgements

- **Report Development Consultant:**
  - Laura Dwelley-Samant

- **Project Review Panel:**
  - Ines Pearce (Chair)
  - Jill Barnes
  - Victor Hellman
  - Andrew Kennedy
  - Rebekah Paci-Green
  - Cindy Swearingen
  - Edward Wolf

- **Working Group:**
  - Lucy Carter
  - Shawna Bendeck
  - Scott Kaiser
  - Jacob Moore
  - Meghan Mordy
  - Katherine Murphy
  - Jennifer Tobin

- Conducted a Literature Review of 250 Documents
- Assisted with Focus Groups with School Leaders

Developing the Guidebook

Why Schools?

FEMA

DROP! COVER! HOLD ON!

nehrp

“In the United States, school buildings are the only high occupancy public buildings, other than prisons and courthouses, whose inhabitants are compelled by legal mandate to be inside them. Perhaps because children are required to attend school, by law, the general public often perceives school buildings as possessing good resistance to natural hazards. However, school buildings can be more vulnerable to damage to natural hazards than other types of buildings.” – FEMA P-1000, p. 1-3

FEMA

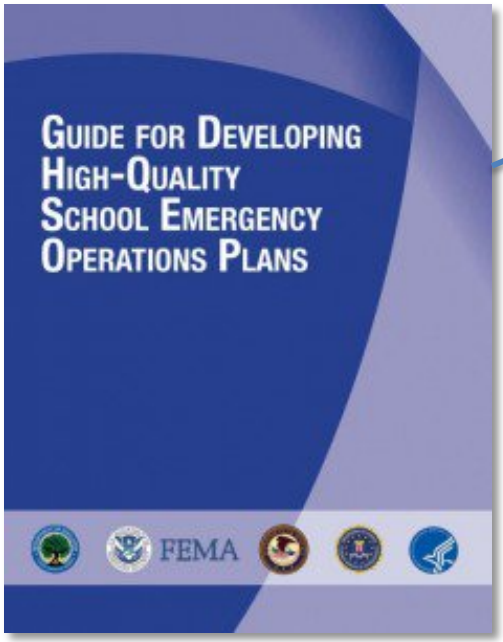
DROP! COVER! HOLD ON!

nehrp

About the Guidebook

- ***Why was the guidebook created?***
- ***What knowledge and practice gaps does it fill?***

1. Information for **K-12 public schools** to develop a ***comprehensive strategy*** for addressing **multiple natural hazards**
2. Intended to **help build *resilient communities*** through **creating safer schools** and **protecting children** and **school staff**
3. It is a complement to the 2013 ***Guide for Developing High-Quality School Emergency Operations Plans*** (led by the U.S. Department of Education; in partnership with FEMA, HHS, DHS, DOJ, FBI)



FEMA

DROP! COVER! HOLD ON!

nehrp

About the Guidebook

- ***Who is the intended audience?***
  - Primary
  - Secondary

FEMA

DROP! COVER! HOLD ON!

nehrp

About the Guidebook

- ***Who is the intended audience?***
  - **Primary:** administrators, facilities managers, emergency managers, emergency planning committees, teachers and staff at public K-12 schools, school board members, and others who play a role in providing disaster-resistant schools
  - **Secondary:** parents, caregivers, and students can also use this guide to learn ways to advocate for safe schools in their communities

The stakes are high—natural hazards can endanger the lives of children and staff, increase emotional traumas, and result in long-term harm to children and communities.

FEMA

DROP! COVER! HOLD ON!

nehrp

About the Guidebook

Section	Content	Description
Comprehensive Approach for School Natural Hazard Safety	Ch 1: An Introduction to School Natural Hazard Safety Ch 2: Identifying Relevant Hazards Ch 3: Making School Buildings Safer Ch 4: Planning the Response Ch 5: Planning the Recovery Ch 6: Engaging the Whole Community Ch 7: Moving Forward	These chapters are recommended for all readers. They provide an overview of the key components of a comprehensive approach for school natural hazard safety.

FEMA

DROP! COVER! HOLD ON!

nehrp

About the Guidebook

Section	Content	Description
Comprehensive Approach for School Natural Hazard Safety	Ch 1: An Introduction to School Natural Hazard Safety Ch 2: Identifying Relevant Hazards Ch 3: Making School Buildings Safer Ch 4: Planning the Response Ch 5: Planning the Recovery Ch 6: Engaging the Whole Community Ch 7: Moving Forward	These chapters are recommended for all readers. They provide an overview of the key components of a comprehensive approach for school natural hazard safety.
Hazard-Specific Supplements	E: Earthquakes F: Floods H: Hurricanes TO: Tornadoes TS: Tsunamis W: High Winds X: Other Hazards: Snow Storms, Volcanic Eruptions, and Wildfires	These supplements provide detailed information and guidance focused on particular natural hazards. Readers should refer to the hazards that affect their schools.

FEMA

DROP! COVER! HOLD ON!

nehrp

About the Guidebook

Section	Content	Description
Comprehensive Approach for School Natural Hazard Safety	Ch 1: An Introduction to School Natural Hazard Safety Ch 2: Identifying Relevant Hazards Ch 3: Making School Buildings Safer Ch 4: Planning the Response Ch 5: Planning the Recovery Ch 6: Engaging the Whole Community Ch 7: Moving Forward	These chapters are recommended for all readers. They provide an overview of the key components of a comprehensive approach for school natural hazard safety.
Hazard-Specific Supplements	E: Earthquakes F: Floods H: Hurricanes TO: Tornadoes TS: Tsunamis W: High Winds X: Other Hazards: Snow Storms, Volcanic Eruptions, and Wildfires	These supplements provide detailed information and guidance focused on particular natural hazards. Readers should refer to the hazards that affect their schools.
Appendices	Earthquake Appendix Flood Maps Appendix Resources Appendix	The appendices provide more detailed information on a variety of topics, and are referenced in other sections of this *Guide*. The *Resources Appendix* points the reader to many sources of useful information that expand on the topics covered by this *Guide*.

FEMA

DROP! COVER! HOLD ON!

nehrp

About the Guidebook

Section	Content
Comprehensive Approach for School Natural Hazard Safety	Ch 1: An Introduction to School Natural Hazard Safety Ch 2: Identifying Relevant Hazards Ch 3: Making School Buildings Safer Ch 4: Planning the Response Ch 5: Planning the Recovery Ch 6: Engaging the Whole Community Ch 7: Moving Forward
Hazard-Specific Supplements	E: Earthquakes F: Floods H: Hurricanes TO: Tornadoes TS: Tsunamis W: High Winds X: Other Hazards: Snow Storms, Volcanic Eruptions, and Wildfires
Appendices	Earthquake Appendix Flood Maps Appendix Resources Appendix

FEMA

DROP! COVER! HOLD ON!

nehrp

"Children not only have the right to an education; they also have the right to an education in a safe environment. However, in many parts of our country, school buildings are vulnerable to severe damage or collapse in the next earthquake, tornado, hurricane, flood, tsunami, windstorm, or other natural hazard and are therefore putting our children at risk."

– Foreword to FEMA P-1000, *Safer, Stronger, Smarter*

FEMA

DROP! COVER! HOLD ON!

nehrp

*"We believe that a comprehensive document for school administrators and staff … that provides advice on both successful operational policies and practices, as well as recommendations on how to improve the physical protection of the school facility to resist applicable natural hazards would help improve **overall school safety**."*

– Foreword to FEMA P-1000, *Safer, Stronger, Smarter*

FEMA

DROP! COVER! HOLD ON!

nehrp

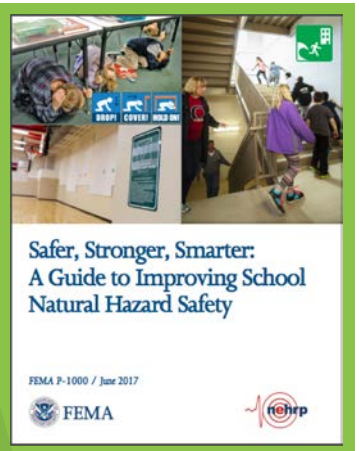
About the Guidebook – The **Big** Why

FEMA

DROP! COVER! HOLD ON!

nehrp

- Where are you at in terms of school safety work?



+
Knowledge and Activity

++
Knowledge and Activity

+++
Knowledge and Activity

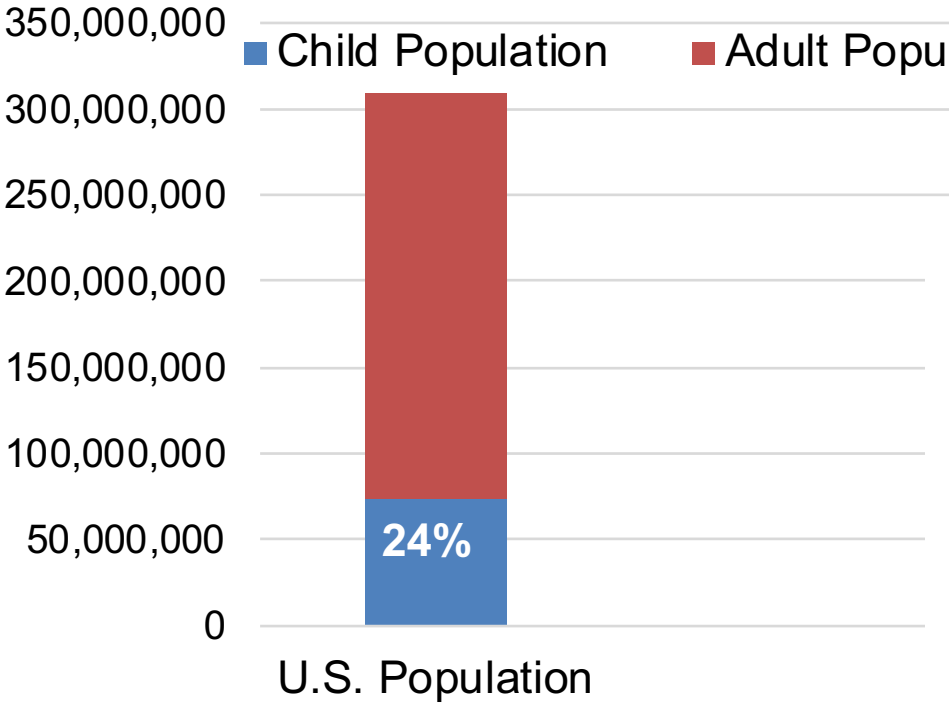
FEMA

DROP! COVER! HOLD ON!

nehrp

Big Picture Takeaway #1

- *Children are **vitally important,** but often overlooked.*




FUTURE

Big Picture Takeaway #2

- ***We Are*** *(Almost)* ***All Living at Risk***

94%

of children in the U.S. live in communities at risk of natural disasters (Save the Children, 2012).

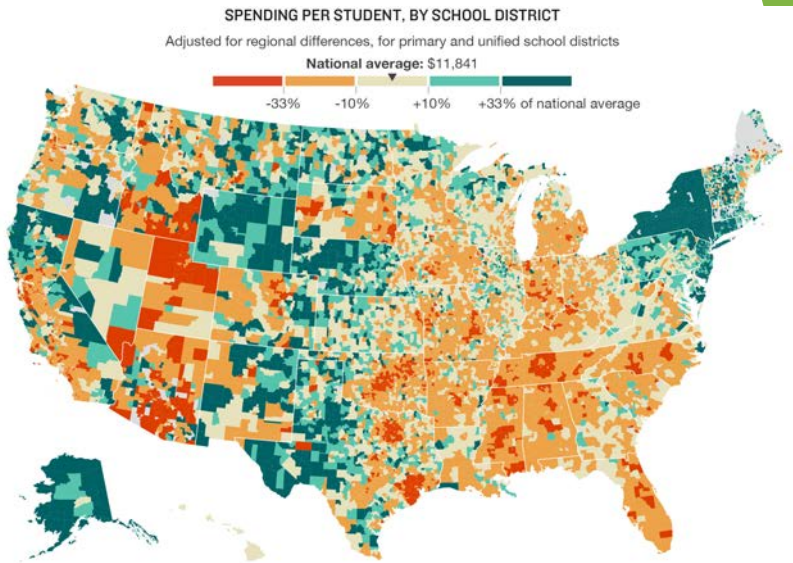
FEMA

DROP! COVER! HOLD ON!

nehrp

Big Picture Takeaway #3

- *Risk is Amplified by* ***Crumbling Physical Infrastructure and Unequal Allocation of Financial and Social Resources***



FEMA

DROP! COVER! HOLD ON!

nehrp

Big Picture Takeaway #3

- *That Risk is Amplified by* ***Crumbling Physical Infrastructure*** *and* ***Unequal Allocation of Financial and Social Resources***

Every few years, the American Society of Civil Engineers (ASCE) issues Infrastructure Report Cards that indicate the current conditions of infrastructure. The 2017 report card gave school infrastructure a D+, noting that the nation continues to underinvest in school facilities and that 53% of public schools need to make investments to be in "good" condition (ASCE 2017)

FEMA

DROP! COVER! HOLD ON!

nehrp

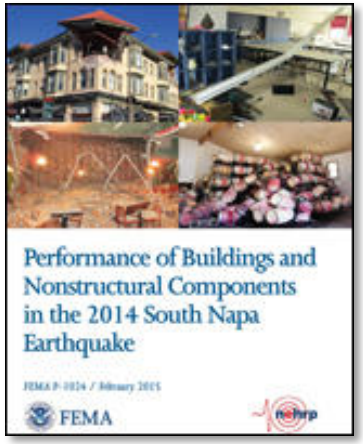
Big Picture Takeaway #4

- *Many **"Close Call"** Events in Our Nation's Schools*

Joplin Tornado

West Virginia Floods

South Napa Earthquake



FEMA

DROP! COVER! HOLD ON!

nehrp

Big Picture Takeaway #4

- ***Deadly Events*** *in Our Nation's Schools*

Moore, Oklahoma Tornado

FEMA

DROP! COVER! HOLD ON!

nehrp

Big Picture Takeaway #5

- ***Natural hazards*** *are inevitable*
- ***Disasters*** *are NOT.*

A Tale of Two Earthquakes

December 23, 2003 Bam, Iran (M 6.6)	October 17, 1989 Loma Prieta, California (M 6.9)
• At least 26,271 people were killed and 30,000 injured. • Eleven-thousand students were killed and 1/5 of the 5,400 local teaching staff were also. • Most of the affected buildings were unreinforced masonry or adobe construction • Iran responded by investing over $7 billion in rebuilding schools	• After school hours • **No school buildings collapsed** • 63 deaths • 1933 Field Act in California helped ensure the construction of safe school buildings able to withstand the 1989 earthquake

FEMA

DROP! COVER! HOLD ON!

nehrp

Big Picture Takeaway #6

- *There are actions we can take **before, during,** and **after** disaster to minimize risks to children, school staff, and school buildings.*

FEMA

DROP! COVER! HOLD ON!

nehrp

Let's Think About Your Schools + Hazards

FEMA

DROP! COVER! HOLD ON!

nehrp

Your Schools

- *Where is your school district located?*

nehrp

Your Schools

- *Where is your school district located?*
- *How many school buildings/ facilities are a part of your district?*
- *How many students are in your buildings on a given day?*
- *How many school administrators, teachers, staff, and visitors are in your buildings on a given day?*

FEMA

DROP! COVER! HOLD ON!

nehrp

Your Schools

- *Where is your school district located?*
- *How many school buildings/ facilities are a part of your district?*
- *How many students are in your buildings on a given day?*
- *How many school administrators, teachers, staff, and visitors are in your buildings on a given day?*
- *How dependent is your community on your school facilities – during disaster and non-disaster times?*

FEMA

DROP! COVER! HOLD ON!

nehrp

Your Schools – Why This Matters

- Disasters can have both **immediate** and **long-term impacts** on school buildings and the people who occupy those buildings

FEMA

DROP! COVER! HOLD ON!

nehrp

Your School Buildings – Why They May Be Vulnerable

- Schools often have **large assembly rooms** such as auditoriums and gymnasiums
- Lack of consistent **capital renewal funds** leaves older school buildings more vulnerable to damage, as they were built to older building codes that are out of date and less disaster-resistant
- Schools often **remain in use** for many more years than other types of buildings and are assumed to be “safe” because of the vital public functions they provide
- Many times, as public facilities, schools are pre-designated as **community emergency shelters**, yet have not been designed for occupancy after a disaster occurs

FEMA

DROP! COVER! HOLD ON!

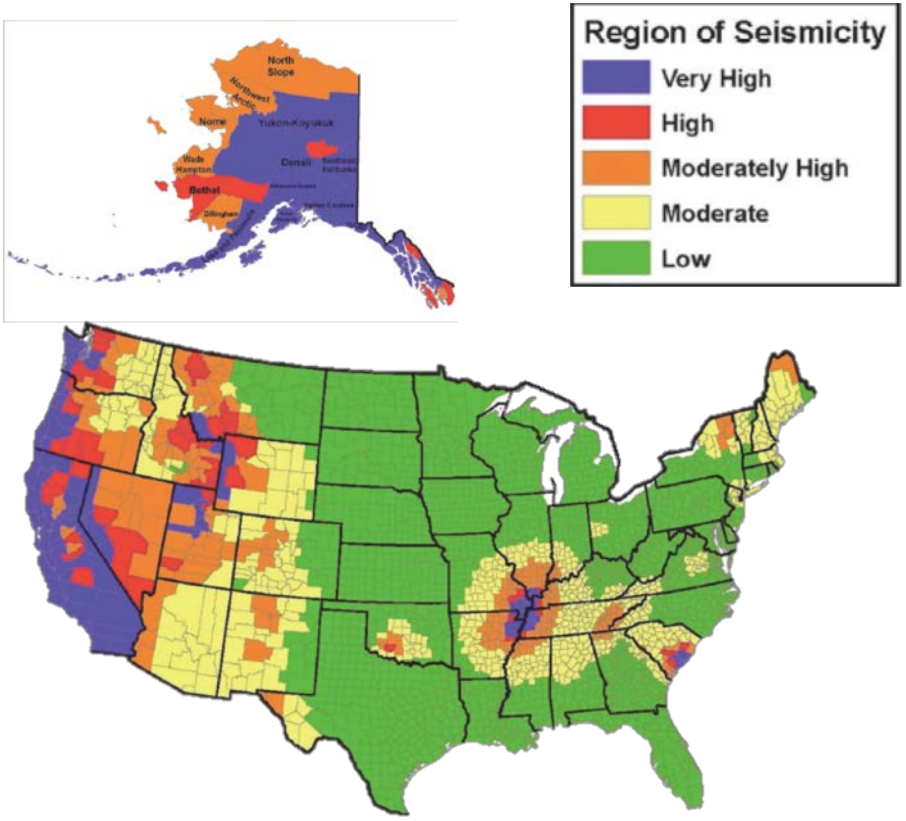
nehrp

Your Hazards Exposure

FEMA

DROP! COVER! HOLD ON!

nehrp



- **39 states** within the U.S. have a significant **earthquake hazard**
- Schools in the **moderate, moderately high, high, and very high regions** of seismicity should include earthquake risk in their school hazard safety plan

FEMA

DROP! COVER! HOLD ON!

nehrp

Floods

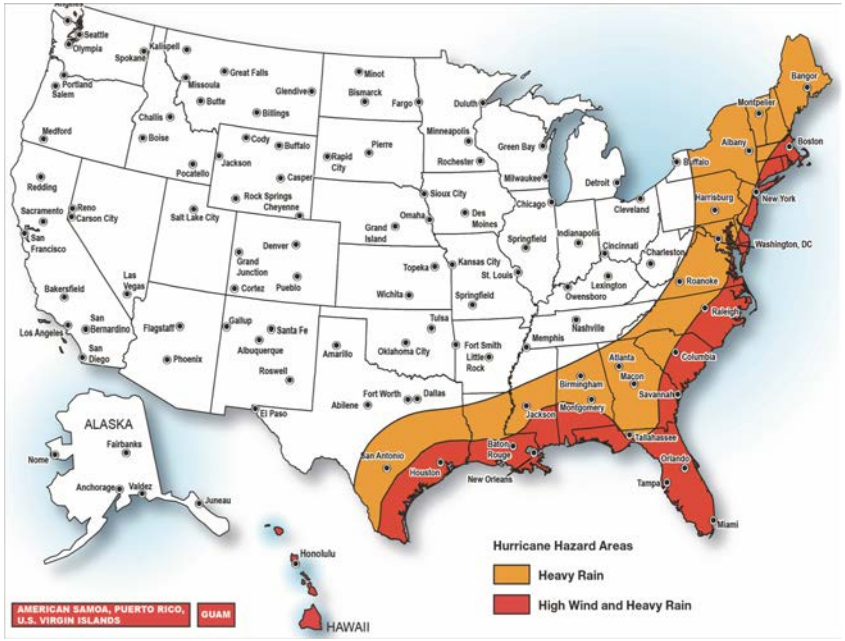
- All **50 states** experience **flood hazards**
- Coastal areas and places subject to extreme rains or weather related events are flood prone
- Over **6,000 schools** in the United States are located in a mapped **Special Flood Hazard Area (SFHA)**

FEMA

DROP! COVER! HOLD ON!

nehrp

Hurricanes (ASCE 2017)



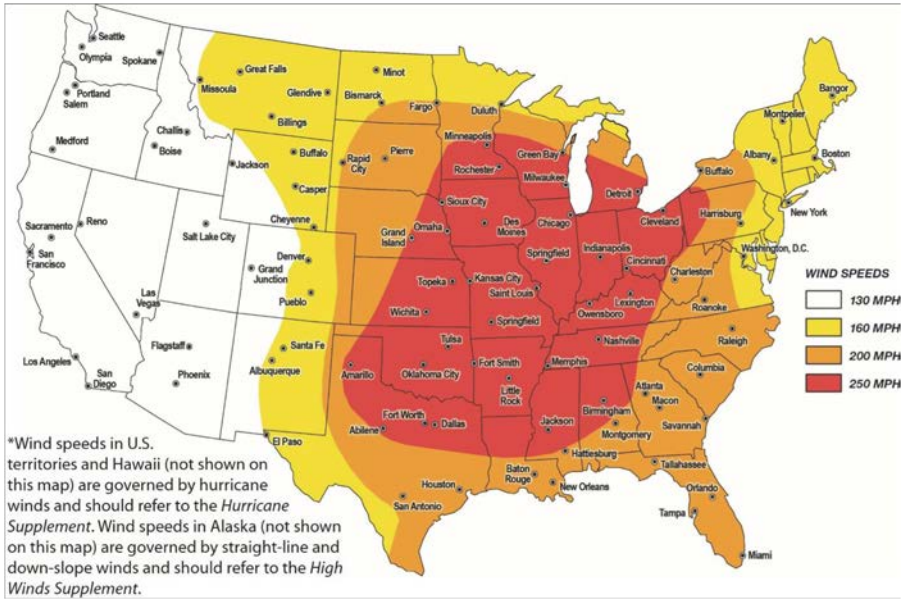
- **Hurricane hazard areas**
- Hurricane season runs from **June through November**
- Typical hurricane seasons produce about **six hurricanes. Active seasons may produce up to fifteen.**

FEMA

DROP! COVER! HOLD ON!

nehrp

Tornadoes (ICC 2014)



- Over **1,000 tornadoes** are recorded in the U.S. each year
- The most destructive, deadly, and strong **tornadoes** mostly affect the **central United States** and are rare in the West

FEMA

DROP! COVER! HOLD ON!

nehrp

Tsunamis (NTHMP 2015)

Location	Tsunami Hazard Level
Alaska	High to Very High
Hawaii	High to Very High
U.S. West Coast	High to Very High
American Samoa	High
Guam & N. Mariana Islands	High
Puerto Rico & U.S. Virgin Islands	High
U.S. Atlantic Coast	Very Low to Low
Alaska Arctic Coast	Very Low
U.S. Gulf Coast	Very Low

- **All coastal areas** can experience a tsunami
- The U.S. regions with the **highest tsunami hazard** level include Hawaii, Alaska, the West Coast states
- A **high hazard level** also exists for American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands
- A damaging tsunami occurs approximately **twice a year** worldwide

FEMA

DROP! COVER! HOLD ON!

nehrp

High Winds

- **Straight-line and down-slope winds** are high winds not caused by tornadoes or hurricanes
- Straight-line wind damage can occur **anywhere in the U.S.**
- Down-slope wind damage occurs in **mountainous areas**
- Damaging high winds can occur at any time

FEMA

DROP! COVER! HOLD ON!

nehrp

Guidebook: Natural Hazards + Supplements

1. Take the following steps to determine whether your school has a reasonable chance of experiencing each of the hazards below:
   - ☐ **Earthquakes:** Is your school in a moderate Region of Seismicity or higher per Figure 2-1? If so, read the *Earthquake Supplement*.
   - ☐ **Floods:** Is your school located behind a levee, in a storm surge inundation area, or in Flood Zone A, V, B, C, or X? Does your school have a history of flooding? If any of these are true, read the *Flood Supplement* and the *Flood Maps Appendix*.
   - ☐ **Hurricanes:** Is your school in the shaded region in Figure 2-2 or in Hawaii or a U.S. territory in the Caribbean or South Pacific? If so, read the *Hurricane Supplement*.
   - ☐ **Tornadoes:** Is your school within the tornado-prone region as defined in Figure 2-3? If so, read the *Tornado Supplement*.
   - ☐ **Tsunamis:** Is your school within a high or very high tsunami hazard level per Table 2-2? If so, read the *Tsunami Supplement*.
   - ☐ **High Winds:** All areas in the United States are susceptible to high winds, notably straight-line and down-slope winds. If you are not already reading the *Hurricane Supplement*, you should read the *High Winds Supplement*.
   - ☐ **Other Hazards:** If you think your school is located in an area that is prone to snow storms, volcanic eruptions, or wildfires, read the *Other Hazards Supplement*.
2. Incorporate risk management steps for the relevant hazards in your school's hazard safety strategy.

FEMA

DROP! COVER! HOLD ON!

nehrp

Natural Hazards Exposure Takeaway Messages

- Need to understand:

  (1) where the hazard typically occurs in your region and your community;

  (2) its frequency of occurrence and probable intensity;

  (3) warning time;

  (4) duration; and

  (5) the likelihood of follow-on hazards

- These five factors help to determine which hazards require **immediate attention** or **more long-term planning**; they also determine if mitigation efforts should address **multiple hazards**

FEMA

nehrp

Focusing Questions

Children are *required* to be in school, and their number one job is to *learn.*
Is school safety a priority in your community?

FEMA

DROP! COVER! HOLD ON!

nehrp

Focusing Questions

Children are *required* to be in school, and their number one job is to *learn.*
Is school safety a priority in your community?

Are the schools in your community safe from natural hazards?

FEMA

DROP! COVER! HOLD ON!

nehrp

Focusing Questions

Children are *required* to be in school, and their number one job is to *learn.*
Is school safety a priority in your community?

Are the schools in your community safe from natural hazards?

Who is responsible for school safety in your community?

FEMA

DROP! COVER! HOLD ON!

nehrp

Focusing Questions

Children are *required* to be in school, and their number one job is to *learn.*
Is school safety a priority in your community?

Are the schools in your community safe from natural hazards?

Who is responsible for school safety in your community?

Will your schools be able to reopen if a disaster happens in your community?

FEMA

DROP! COVER! HOLD ON!

nehrp

Focusing Questions

Children are *required* to be in school, and their number one job is to *learn.*
Is school safety a priority in your community?

Are the schools in your community safe from natural hazards?

Who is responsible for school safety in your community?

Will your schools be able to reopen if a disaster happens in your community?

How can you help garner public support and funding resources to advance school safety efforts?

FEMA

DROP! COVER! HOLD ON!

nehrp

FEMA

DROP! COVER! HOLD ON!

nehrp

A Comprehensive Approach to Reducing Risk in Schools

- Must incorporate ***many actions and many actors*** when thinking about reducing risk
- School emergency management and preparedness practitioners work to ***build capacity:***
  - **Before the Hazard Event**
    - Prevention
    - Protection
    - Mitigation
  - **During the Hazard Emergency**
    - Response
  - **After the Event**
    - Recovery

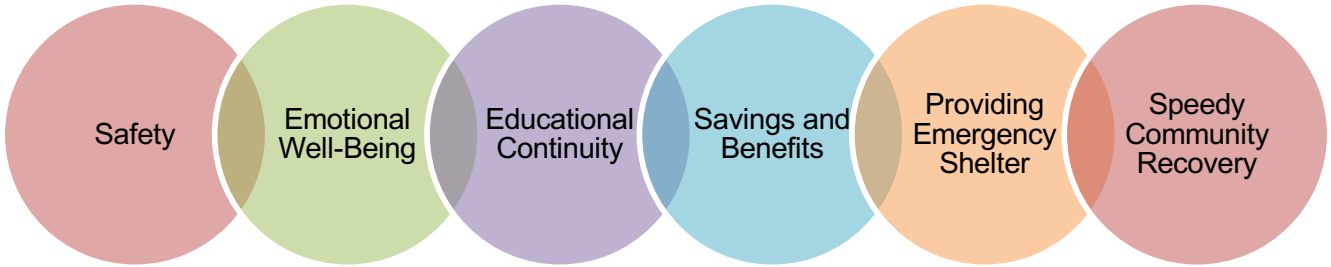
FEMA

DROP! COVER! HOLD ON!

nehrp

Why is a Comprehensive Approach So Important?

- **Safety:** minimizing casualties among students, teachers, and staff is of paramount importance
- **Emotional Well-Being:** natural disasters can be traumatic; therefore, when damage is minimized, trauma can be reduced
- **Educational Continuity:** prepared schools can prevent occupancy interruptions and school contingency plans can allow for temporary schooling in other locations
- **Savings and Benefits:** money spent on hazard mitigation upfront is a good long-term investment ($1 spent on mitigation may save between $3 to $7 in future costs)
- **Providing Emergency Shelter:** in many communities school buildings serve as evacuation sites and/or post-event recovery centers
- **Speedy Community Recovery:** the sooner children can return to school, the sooner parents and the overall community can get back to their normal routines



FEMA

DROP! COVER! HOLD ON!

nehrp

Where Can I Go for More Resources on a Comprehensive Approach to School Safety?

- The Guidebook contains many resources in the text of the 7 chapters, 7 supplements, 3 appendices, numerous call-out boxes and figures, and references

For state-specific emergency management resources, mandates, and partners, see the Readiness and Emergency Management for School (REMS) Technical Assistance website at http://rems.ed.gov/StateResources.aspx.

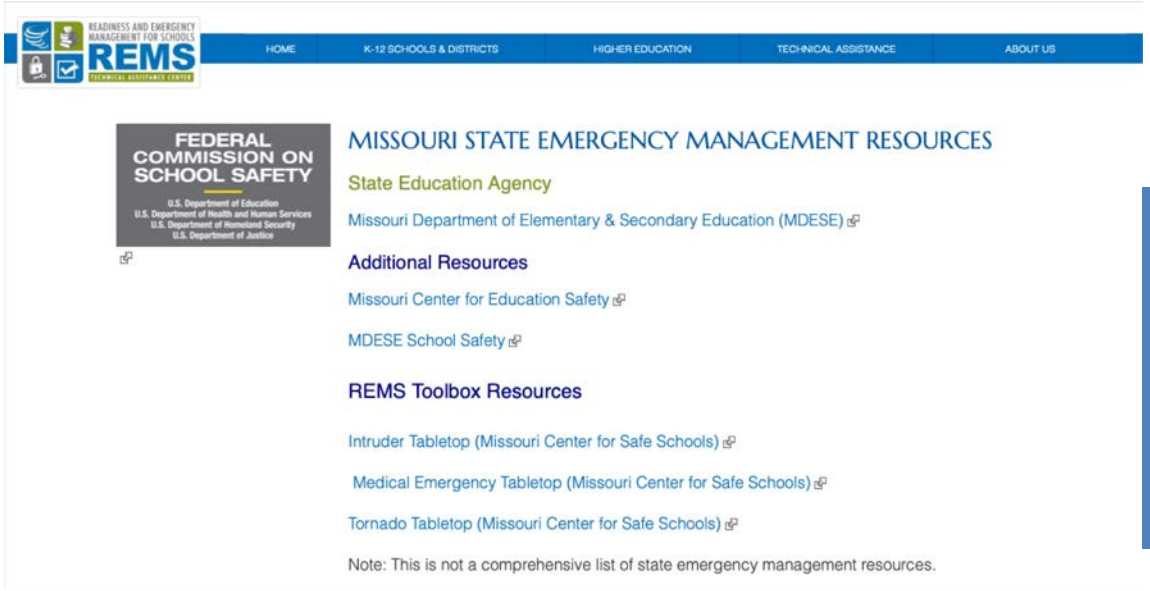
FEMA

DROP! COVER! HOLD ON!

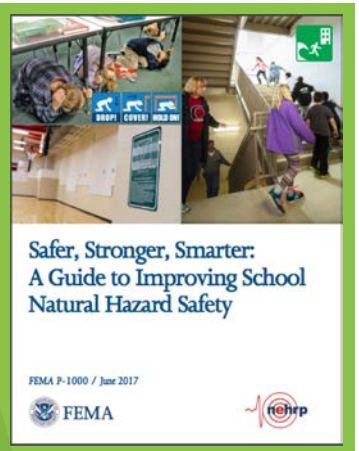
nehrp

Where Can I Go for More Resources on a Comprehensive Approach to School Safety?

- The Guidebook contains many resources in the text of the 7 chapters, 7 supplements, 3 appendices, numerous call-out boxes and figures, and references



For state-specific emergency management resources, mandates, and partners, see the Readiness and Emergency Management for School (REMS) Technical Assistance website at http://rems.ed.gov/StateResources.aspx.



FEMA

DROP! COVER! HOLD ON!

nehrp

Where Can I Go for More Resources on a Comprehensive Approach to School Safety?

- The Guidebook contains many resources in the text of the 7 chapters, 7 supplements, 3 appendices, numerous call-out boxes and figures, and references

For state-specific emergency management resources, mandates, and partners, see the Readiness and Emergency Management for School (REMS) Technical Assistance website at http://rems.ed.gov/StateResources.aspx.

FEMA

DROP! COVER! HOLD ON!

nehrp

Where Can I Go for More Resources on a Comprehensive Approach to School Safety?

- The Guidebook contains many resources in the text of the 7 chapters, 7 supplements, 3 appendices, numerous call-out boxes and figures, and references

For state-specific emergency management resources, mandates, and partners, see the Readiness and Emergency Management for School (REMS) Technical Assistance website at http://rems.ed.gov/StateResources.aspx.

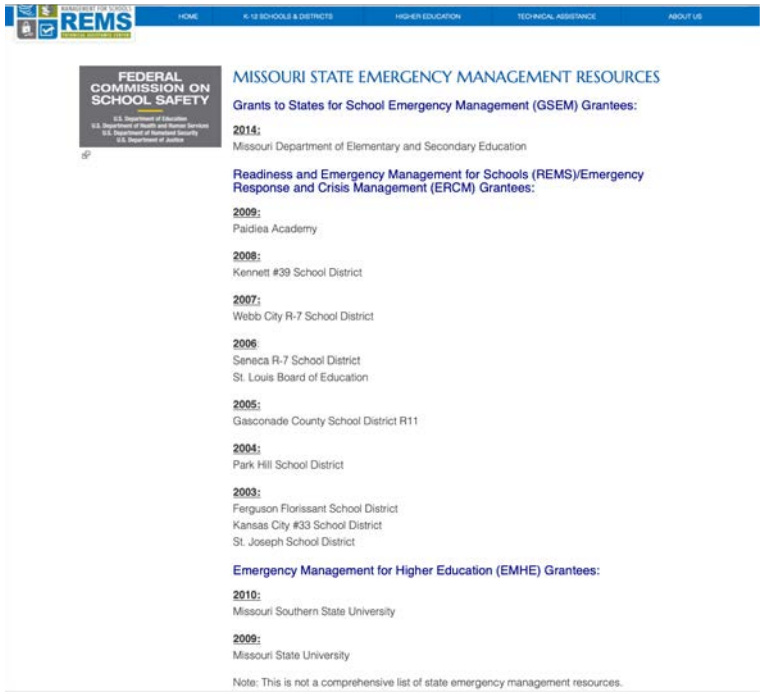
FEMA

DROP! COVER! HOLD ON!

nehrp

Where Can I Go for More Resources on a Comprehensive Approach to School Safety?

- The Guidebook contains many resources in the text of the 7 chapters, 7 supplements, 3 appendices, numerous call-out boxes and figures, and references



REMS

HOME | K-12 SCHOOLS & DISTRICTS | HIGHER EDUCATION | TECHNICAL ASSISTANCE | ABOUT US

FEDERAL COMMISSION ON SCHOOL SAFETY

MISSOURI STATE EMERGENCY MANAGEMENT RESOURCES

Grants to States for School Emergency Management (GSEM) Grantees:

2014:
Missouri Department of Elementary and Secondary Education

Readiness and Emergency Management for Schools (REMS)/Emergency Response and Crisis Management (ERCM) Grantees:

2009:
Paidiea Academy

2008:
Kennett #39 School District

2007:
Webb City R-7 School District

2006
Seneca R-7 School District
St. Louis Board of Education

2005:
Gasconade County School District R11

2004:
Park Hill School District

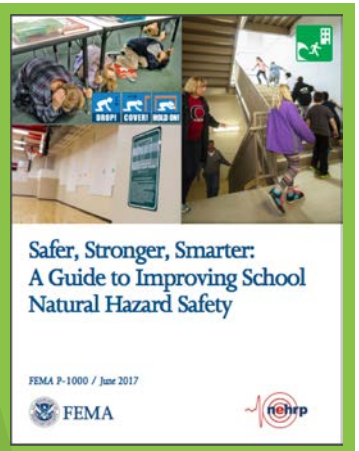
2003:
Ferguson Florissant School District
Kansas City #33 School District
St. Joseph School District

Emergency Management for Higher Education (EMHE) Grantees:

2010:
Missouri Southern State University

2009:
Missouri State University

Note: This is not a comprehensive list of state emergency management resources.

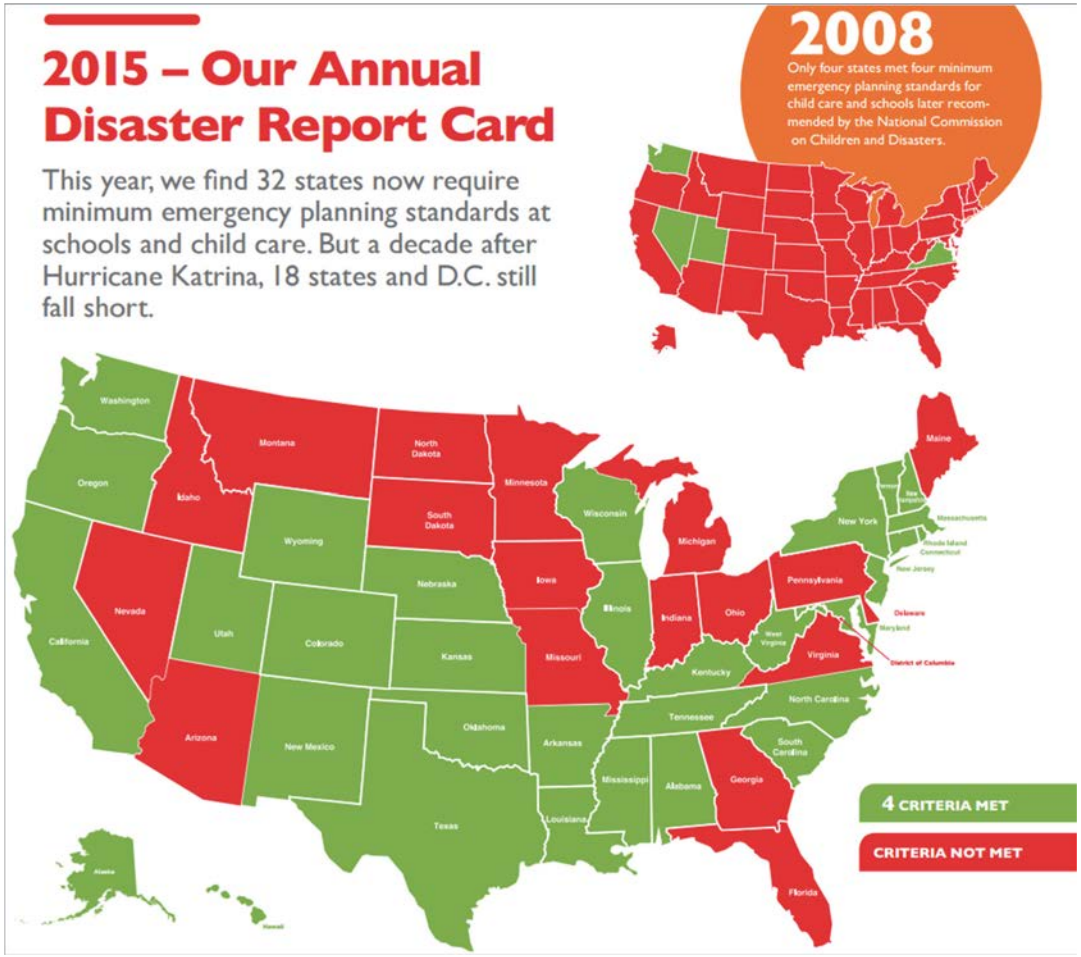


For state-specific emergency management resources, mandates, and partners, see the Readiness and Emergency Management for School (REMS) Technical Assistance website at http://rems.ed.gov/StateResources.aspx.

FEMA

DROP! COVER! HOLD ON!

nehrp



The 2015 **Save the Children** disaster report card assesses whether states have met four criteria:

(1) Evacuation and relocation plan for childcare centers;
(2) Childcare plan for reuniting families after disaster;
(3) Plan for children with disabilities and those with access and functional needs in childcare; and
(4) Multi-hazard plan for K-12 schools.

FEMA

DROP! COVER! HOLD ON!

nehrp

Next Steps, and Some Big Questions Ahead.

How Can We:

- Make School Buildings Safer?
  - Existing: Prioritize the Most Vulnerable Buildings First
  - New: Ensure Buildings are Built to Highest Standards and in the Safest Places
- Plan the Emergency Response?
- Plan for Short- and Long-Term Recovery?
- Engage the Whole Community in Comprehensive School Safety Planning?

FEMA

DROP! COVER! HOLD ON!

nehrp

Chapter 3: Making School Buildings Safer

FEMA

DROP! COVER! HOLD ON!

nehrp

Making School Buildings Safer

- **School buildings vary** in characteristics, size, age, condition, and construction materials
- **Building materials vary** from wood, concrete, steel, masonry or a combination of these materials
- **School settings** can be dense urban environments, rural, or suburban settings
- **School populations** are diverse (some schools may have large numbers of children with disabilities, for instance)
- The location of school buildings dictates what **natural hazards** might be a threat
- Given the above factors, each individual school will have a **unique situation,** warranting a corresponding mitigation plan that is **specific to the school's situation and background context**

FEMA

Well-designed, constructed, and maintained school buildings are critical for providing a safe and reliable learning and work environment.

Likely Hazard Warning Times

Hazard	Expected Warning Time	Expected Occupancy in a Hazard Event during School Hours
Earthquake	No warning or seconds of warning	Occupied, given the lack of warning time
Flood	Usually hours to days of warning; sometimes no warning, especially for flash floods	Evacuation in advance is likely in most cases Occupied in rare cases, such as flash floods
Hurricane	Days of warning	Evacuation in advance is likely in most cases Occupied if the school building is a designated hurricane evacuation shelter
Tornado	Minutes of warning	Occupied, given the lack of warning time In some cases, the school building will have a designated tornado safe room
Tsunami	Minutes of warning for local tsunami Hours of warning for distant tsunami	Evacuation in advance is likely in most cases Occupied if the school building is a designated tsunami vertical evacuation building
High Winds	Varies, minutes to hours of warning	Typically occupied, given the lack of warning time in most cases

In all cases, it is important to have school buildings that are hazard resistant to minimize damage and interruptions, and to ensure educational continuity

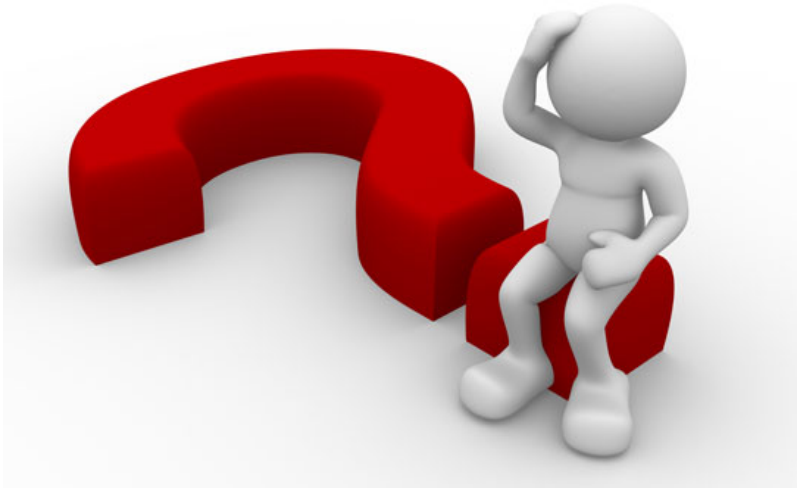
FEMA

DROP! COVER! HOLD ON!

nehrp

3.1.1: Level of Safety Provided by Building Codes

- *Is my school going to be safe if a disaster happens?*



In engineering, **life safety** is used to describe a level of design. The main goal behind life safety is to prevent fatalities and serious injuries in a building due to failure or collapse of structural elements, such as columns and beams.

FEMA

DROP! COVER! HOLD ON!

nehrp

3.1.1: Level of Safety Provided by Building Codes

- Many assume that government requires *all* school buildings to be safe and minimally damaged during a natural hazard event
  - But, this is not necessarily true for all cases
- Most local governments require *new schools* to be designed and constructed to meet local building codes, which generally are based on state and national model codes

FEMA

DROP! COVER! HOLD ON!

nehrp

3.1.1: Level of Safety Provided by Building Codes

- *Will students and staff be able to return to school after a disaster?*

FEMA

DROP! COVER! HOLD ON!

nehrp

3.1.1: Level of Safety Provided by Building Codes

- Put simply, just because a building is “built to code” does not mean that it will be fully functional or usable after a hazard event
  - *Note:* After a school building is constructed, structural changes over time to maintain or enhance resilience to natural hazards are *not* typically required
- Older school buildings are designed and constructed to meet the building codes that were in place at the time of construction. These older codes do not reflect modern knowledge about safe building design construction
- Building codes improve over time as experts learn from hazard events and building science research. Because of this, substantive changes have been made to building code standards and test methods since the 1990s

How old are your school buildings?

Over 40% of school buildings in the United States are over 15 years old (U.S. Department of Education, 2012), meaning that they were not designed and constructed to the latest building codes and standards, which require that schools be designed to withstand stronger loads. The average public school building is over 40 years old (NCES, 2014).

FEMA

DROP! COVER! HOLD ON!

nehrp

Case Study:
Cascadia Earthquake and Tsunami Risk Looms Large

FEMA

DROP! COVER! HOLD ON!

nehrp

The Cascadia subduction zone, widely referred to as the Cascadia fault, runs from northern Vancouver Island in Canada to northern California. The last known great Cascadia earthquake took place in 1700. Although hundreds of years have passed with no major activity along the fault line, many cities are at risk to earthquake (and tsunami) including Vancouver and Victoria, British Columbia; Seattle, Washington; and Portland, Oregon.

FEMA

nehrp

Seismic safety report card

Washington scores poorly compared to other West Coast governments, where retrofits of dangerous school buildings are a priority.

	Law or policy on school seismic upgrades	Structural surveys of all at-risk schools	Dedicated funding for school seismic retrofits
British Columbia	YES	YES	$1.7 billion *(2004-2016)*
Oregon	YES	YES	$210 million *(2009-2016)*
California	YES	YES	$700 million *(1972-2016)*
Washington	NO	NO	NONE

Sources: Seattle Times reporting

FRANK MINA / THE SEATTLE TIMES

Across Washington State, about **386,000 students—or one in every three enrolled—live in earthquake-prone areas and attend schools built before seismic construction standards were adopted statewide.** In addition, about **31,000 students in Washington attend schools that are in tsunami inundation zones** (Doughton and Gilbert, 2016).

3.1.1: Level of Safety Provided by Building Codes

- Many community leaders now argue that aiming for only ***life safety*** in school buildings (using the basic building code) is not an adequate goal
- A better objective, especially for new school buildings, is ***immediate occupancy***
  - This means designing, constructing, and maintaining school buildings, in a special way, so they do not suffer significant damage and are more likely to be usable shortly after an event
  - And it is about more than the building! Immediate Occupancy standards also involve requirements that systems including lifelines (e.g., water, power and on-site emergency power and non-structural elements (e.g., fixtures) are designed and constructed to a higher standard.
  - This objective aims to minimize school disruption and improve community resilience because school resumption can be closely tied to community recovery

FEMA

DROP! COVER! HOLD ON!

nehrp

3.2: Existing School Buildings

- School district leaders interested in addressing their school's potential natural hazard risk should follow the following steps:
  - **(1)** engage a qualified engineering or architectural firm to determine the school building vulnerabilities;
  - **(2)** identify and evaluate a range of mitigation options and corresponding costs; and
  - **(3)** develop a plan to fund and implement mitigation actions
- Sometimes, a long-term program to fund and implement even incremental building improvements may be needed. Replacement of the existing facility with a new facility is also a possible mitigation option
- While some argue that knowing a building's vulnerabilities makes the owner legally liable to address them, deliberately ignoring a known risk can also make the owner and other responsible parties legally liable

FEMA

DROP! COVER! HOLD ON!

nehrp

New School Buildings: Key Steps

(1) Smart site selection

(2) Relevant building codes and resilient design

(3) Use of schools as community emergency shelters or recovery centers

FEMA

After nearly one-third of the town of **Joplin, Missouri**, was flattened when a massive EF5 tornado touched down, community leaders were dedicated to build back better. According to FEMA, the number of tornado safe rooms in Missouri has doubled since the Joplin tornado in May of 2011. The City of Joplin had 14 community tornado safe rooms as of May 2016, many of them located inside local schools. This will ensure that students, teachers, and members of the public have a safe place to go in the event of a tornado. (McTavish, 2016)

3.3.3: Schools as Emergency Shelters or Recovery Centers

- If local emergency officials and community leaders expect for a school building to serve as an emergency shelter or recovery center, this should be addressed in the conceptual design phase of a new school building
- Examples of using a school building as a community shelter or recovery space includes tornado safe rooms large enough for community members, official hurricane evacuation centers, or for community recovery functions after a natural hazard occurs
- Emergency shelter and recovery center requirements vary significantly by the hazard being addressed
- Therefore, you should consider the natural hazards that face your school and community specifically, and plan with those events in mind

FEMA

DROP! COVER! HOLD ON!

nehrp

Case Study:
Tsunami Risk and Response

FEMA

DROP! COVER! HOLD ON!

nehrp

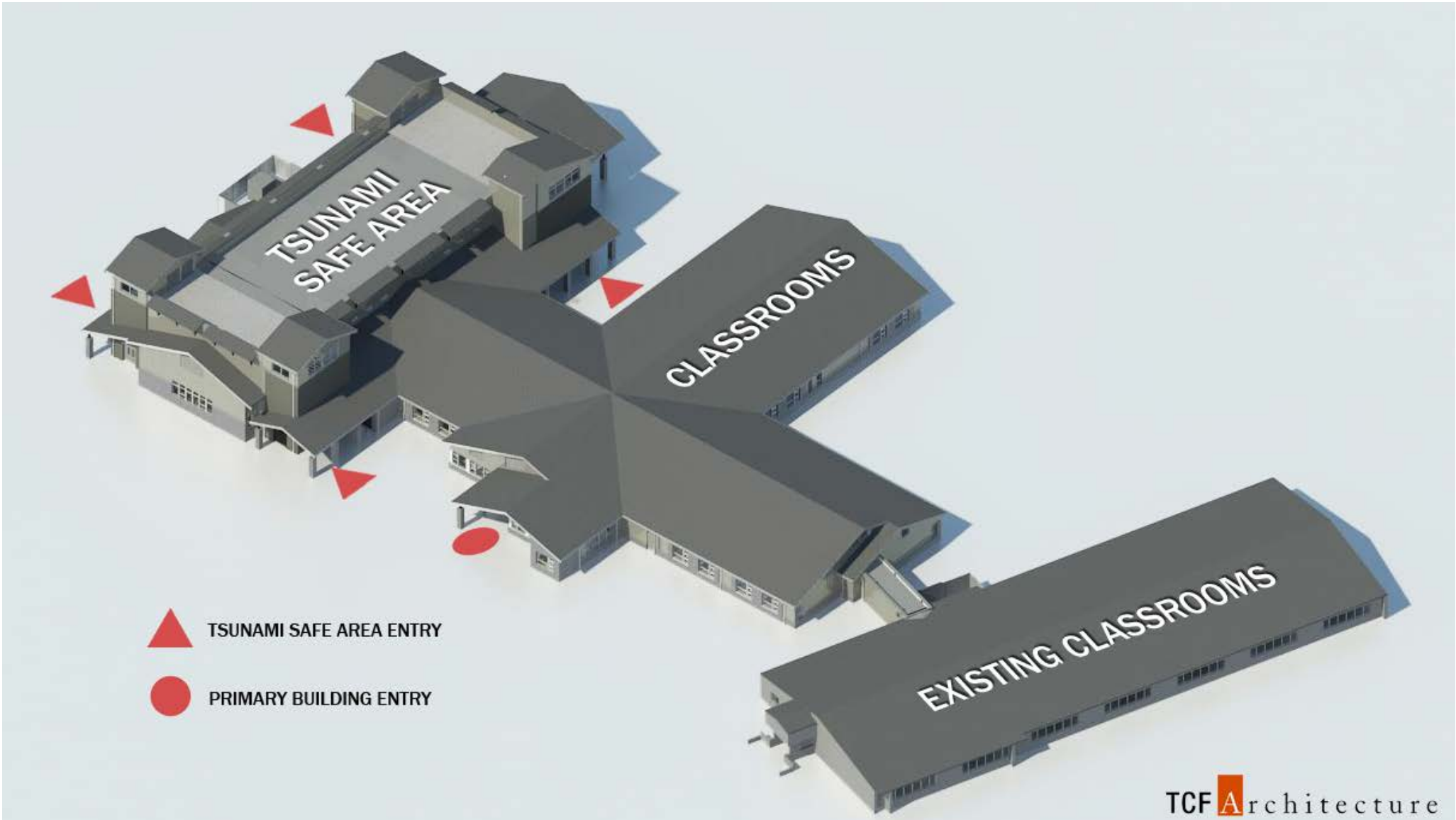
First U.S. Tsunami Evacuation Refuge

- Under its ***Project Safe Haven***, the State of Washington worked with Grays Harbor County and the Ocosta School District to get local funding to build a tsunami vertical evacuation refuge as part of a new/replacement elementary school
- The roof of the gymnasium serves as the refuge, which is sized for students and local population
- Total project cost: $13,800,000 (local bond)

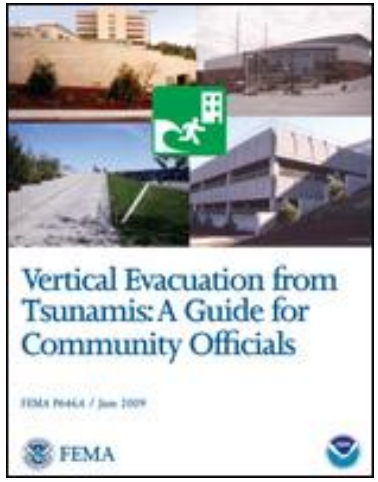
FEMA

DROP! COVER! HOLD ON!

nehrp


TSUNAMI
SAFE AREA
CLASSROOMS
EXISTING CLASSROOMS
TSUNAMI SAFE AREA ENTRY
PRIMARY BUILDING ENTRY
TCF Architecture

- A companion guide for State and local community officials on how to design and operate a tsunami refuge facility
- No specific Federal construction funds are available, but the guide describes how such a refuge facility could qualify for Federal grants
- Jointly funded by FEMA and NOAA; distributed as FEMA P-646A



FEMA

DROP! COVER! HOLD ON!

nehrp

3.4: Developing a Funding Plan

- In many cases, the scope and cost of work to be done will determine how much necessary political and funding support a school will receive
- **State Hazard Mitigation Officers** are a great resource to obtain information about federally funded projects and their costs (e.g., Hazard Mitigation Grant Program (HMGP) funds available after presidentially declared disaster (even if not for same hazard)
- For expensive school building projects, there are a variety of ways to raise the needed funds such as:
  - **(1)** school bond measures or other ballot initiatives;
  - **(2)** special fundraising campaigns online or through the community; or
  - **(3)** public-private partnerships between schools and companies or corporations that may be willing to donate time, materials, actual construction, or other goods

FEMA

DROP! COVER! HOLD ON!

nehrp

3.4: Developing a Funding Plan

- For federal support, school districts should think about participating in their local hazard mitigation planning process or developing a **FEMA-approved Natural Hazard Mitigation Plan**
- When districts have this type of plan in place, they become eligible for two federal grants that can be used to support school mitigation costs and strengthening existing school structure
- **Pre-Disaster Mitigation (PDM) Grant Program**
- **Hazard Mitigation Grant Program (HMGP) for post-disaster**
- These funding options are administered through state emergency management agencies
- Also, FEMA planning grants may be available to cover the expense of preparing these types of plans

More information can be found here: https://www.fema.gov/hazard-mitigation-assistance

FEMA

DROP! COVER! HOLD ON!

nehrp

Why a Funding Plan Matters

- By involving as many key stakeholders as possible the financial panning process, it is a way to build understanding about the importance of obtaining funds for school natural hazard safety
- School leaders should connect with other leaders like elected officials, members of the local business community, and anyone who has stake in having functioning schools within the community

Thanks to a federal grant, a new monolithic dome resembling the existing Beggs Event Center (shown here) will house Beggs School District's tornado safe room. (Photo source: Monolithic Dome Institute)

FEMA

DROP! COVER! HOLD ON!

nehrp

3.5: Importance of Quality Assurance Measures

- School buildings should be designed and constructed by highly qualified professionals, with appropriate materials, using an approved design
- One way to help ensure intended design goals are achieved is to practice *peer review* throughout the design stages of building schools
- Rigorous oversight of the construction process and inspection of building code compliance will greatly improve building performance in natural hazards
- Ongoing attention to maintaining the buildings and their resilience is needed to ensure schools remain safe in the many years that follow construction
- Knowledge of natural hazards and engineering can change with time, meaning, it is important to periodically consider hazard-resistant characteristics in your school buildings and update these components

In actual earthquakes, buildings that have had their designs reviewed for compliance with the code have resulted in superior performance (CSSC, 2007).

FEMA

DROP! COVER! HOLD ON!

nehrp

Chapter 4: Planning the Response

FEMA

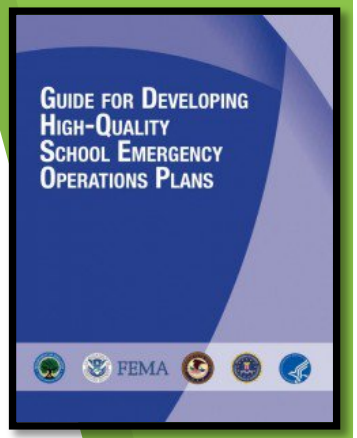
DROP! COVER! HOLD ON!

nehrp

Planning Principles

The *School EOP Guide* (U.S. Department of Education, 2013) identifies the following as key principles in developing a comprehensive school EOP:	
Planning must be supported by leadership	Planning provides for the access and functional needs of the whole school community
Planning uses assessment to customize plans to the building level	Planning considers all setting and all times
Planning considers all threats and hazards	Creating and revising a model EOP is done through a collaborative process

More information on these principles can be found at: http://rems.ed.gov/K12PlanningPrinciples.aspx



FEMA

DROP! COVER! HOLD ON!

nehrp

4.1: Purpose of a School Emergency Operations Plan

- Every school should develop and maintain an EOP that clearly states **what actions need to be taken before, during, and after an emergency event**
- The EOP should include **who is responsible** for those actions, and contingencies for different situations that could arise
- All **relevant staff** need to know about and be trained for their emergency roles
- If part of the campus will be used as a **shelter** (for students and/or community members) during or following a natural hazard event, considerations such as adequate water, food, and medicine, as well as plans for adequate power supply need to be made
- EOPs should include school preparedness and mitigation strategies and activities, as well as safety policies and protocols for **diverse people and places**
- **EOPs protect financial investments and build a culture of safety**

FEMA

DROP! COVER! HOLD ON!

nehrp

4.2: Recommended Process to Develop an EOP

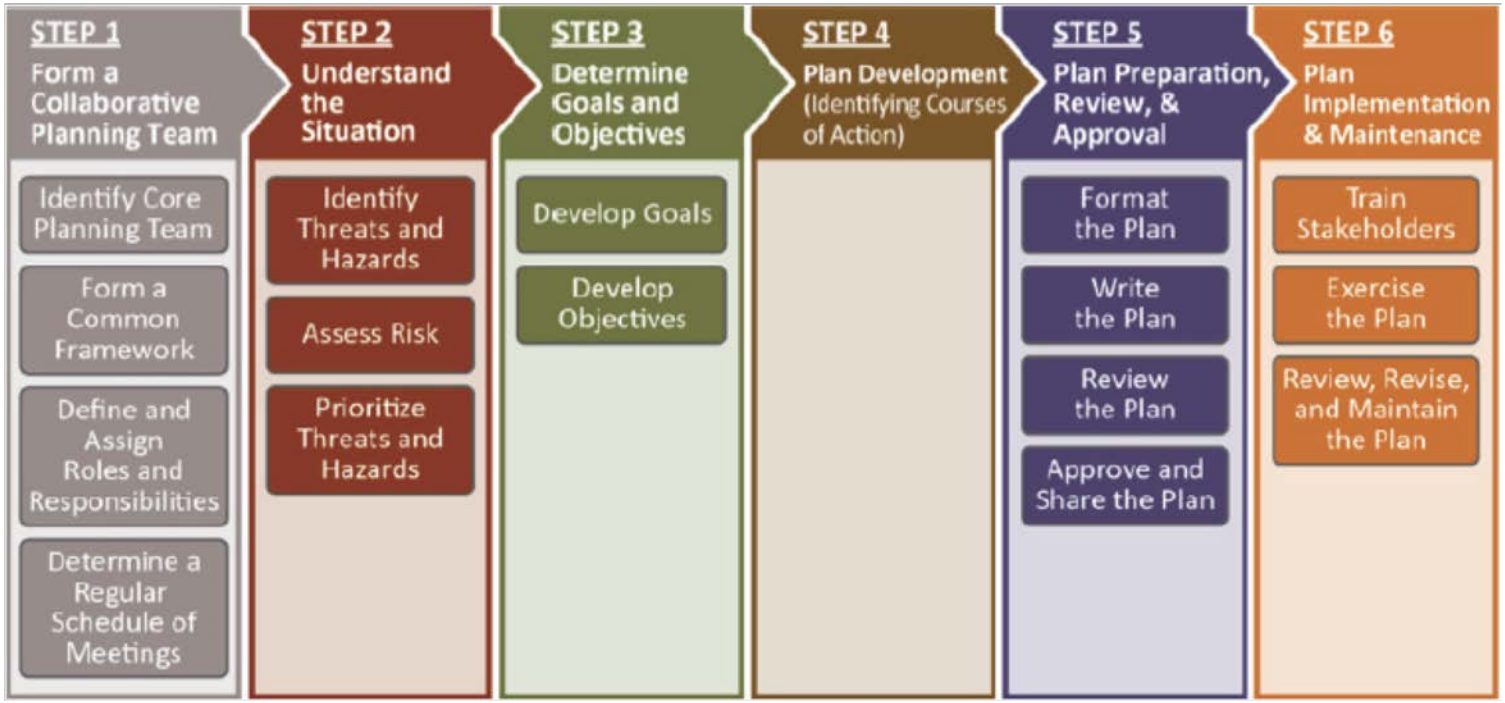
- An EOP should be developed by a diverse group of stakeholders and a clear structure
  - In a disaster, there needs to be a chain of command and responsibility, so everyone knows their tasks and who to turn to for assistance. Potential stakeholders include: **(1)** administration; **(2)** teachers; **(3)** staff; **(4)** students; **(5)** parents; **(6)** representatives from diverse communities (disability, ethnic/racial, religious, etc.); and **(7)** school support staff
- Involving students in developing a school EOP builds student leadership, engages youth in planning and promotes student preparedness
- Critical collaboration is needed with local emergency responders, business and community groups, parents, and other stakeholders
- The U.S. Department of Education recommends all schools implement the **National Incident Management System (NIMS)**
- Part of NIMS, is the **Incident Command System (ICS),** which includes an organizational structure, roles and responsibilities, and standard procedures
- ICS assists schools in the effective coordination within the school and with first responders

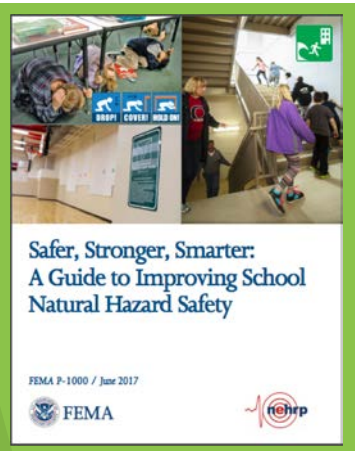
EOP ASSIST 2.0 is a valuable software resource designed to help schools create and update high-quality EOPs. More information can be found at: https://rems.ed.gov/EOPASSIST.aspx

FEMA

nehrp

Six Step Process to Develop, Review, Approve, and Maintain a School EOP

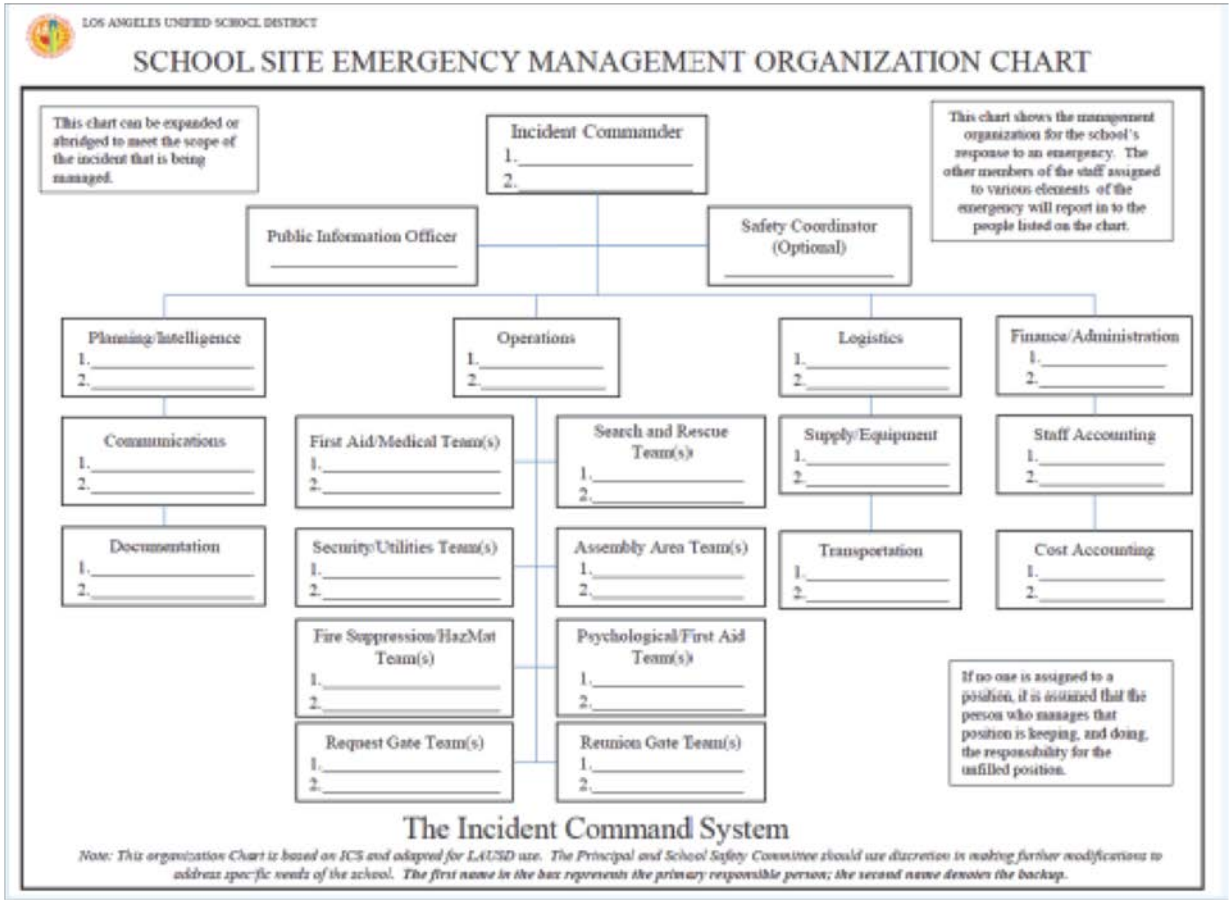




FEMA

nehrp

Example Incident Command System Chart



FEMA

DROP! COVER! HOLD ON!

nehrp

4.3: Overview of Structure and Content of an EOP

- School EOPs should be user-friendly and agreed upon by all parties that will play a role in the EOP
- The specific structure should be one that works best for your school and particular context
- A traditional format example is given in the Department of Education's *School EOP Guide;* this structure of plan includes:
  - **(1)** The Basic Plan
  - **(2)** Functional Annexes and
  - **(3)** Threat- or Hazard-Specific Annexes

Courses on EOP development are provided by request by the U.S. DOE's Readiness and Emergency Management in Schools Technical Assistance Center. Visit http://rems.ed.gov/

FEMA

DROP! COVER! HOLD ON!

nehrp

Example Structure of a School EOP

Basic Plan

1. Introductory Material
1.1. Promulgation Document and Signatures
1.2. Approval and Implementation
1.3. Record and Changes
1.4. Record of Distribution
1.5. Table of Contents
2. Purpose, Scope, Situation Overview, and Assumptions
2.1. Purpose
2.2. Scope
2.3. Situation Overview
2.4. Planning Assumptions
3. Concept of Operations
4. Organization and Assignment of Responsibilities
5. Direction, Control, and Coordination
6. Information Collection, Analysis, and Dissemination
7. Training and Exercises
8. Administration, Finance, and Logistics
9. Plan Development and Maintenance
10. Authorities and References

Functional Annexes

NOTE: This is not a complete list, but it is recommended that all EOPs include at least the following functional annexes:

1. Communications
2. Evacuation
3. Shelter-in-Place
4. Lockdown
5. Accounting for All Persons
6. Reunification
7. Continuity of Operations (COOP)
8. Security
9. Recovery
10. Health and Medical

Threat- or Hazard-Specific Annexes

NOTE: This is not a complete list. Each school's annexes will vary based on its hazard analysis.

1. Hurricane or Severe Storm
2. Earthquake
3. Tornado
4. Hazardous Materials Incident
5. Mass Casualty Incident
6. *Active Shooter*
7. Pandemic or Disease Outbreak

FEMA

DROP! COVER! HOLD ON!

nehrp

4.4: Legislative Considerations in Developing EOPs

- There are local, state, and federal laws that impact emergency planning
- It's important for schools to abide by laws that regulate their state and community, as well as federal laws
- Federal laws to consider include:
  - **(1)** Americans with Disabilities Act;
  - **(2)** Title VI, Civil Rights Act of 1964;
  - **(3)** Family Education Rights and Privacy Act (FERPA); and
  - **(4)** Health Insurance Portability and Accountability Act (HIPPA)
  - **(5)** Title IX
  - **(6)** Elementary and Secondary Education Act

For state-specific mandates, see the REMS infographic at http://rems.ed.gov/StateResources.aspx, which provides information by state

FEMA

DROP! COVER! HOLD ON!

nehrp

Chapter 5: Planning the Recovery

FEMA

DROP! COVER! HOLD ON!

nehrp

The Four Most Fundamental Kinds of Recovery

The *School EOP Guide* (U.S. Department of Education, 2013) identifies the following as fundamental aspects of recovery:
(1) Academic Recovery: This considers school openings and closings, alternate sites if the school building cannot be used, and alternate education if students cannot physically reconvene at their school
(2) Physical Recovery: This entails documentation of school assets, records management, inspections, damage assessments, public access, and security
(3) Fiscal Recovery: This includes funding for recovery efforts, records, legal aspects, and donations management
(4) Psychological and Emotional Recovery: This includes mental health services, memorials, and event commemorations

FEMA

DROP! COVER! HOLD ON!

nehrp

Planning the Recovery

- Recovery typically refers to putting a disaster-stricken community or organization back together
- This phase can often be more time consuming and challenging than many expect
- By planning ahead, speed and effectiveness of post-disaster recovery can be increased greatly in schools and their communities

FEMA

DROP! COVER! HOLD ON!

nehrp

5.1.1: Post Disaster Building Assessment

- The first step after a disaster, is to have an ***expert assessment*** of the building performed; making sure the buildings are safe to re-enter and use is of the upmost importance
- Local building officials or other trained experts can perform these assessments
- Different technical standards exist for different natural hazards. However, two products published by the Applied Technology Council (ATC) are often used in the process:
  - ATC-20-1 Post-Earthquake Safety Evaluation of Buildings
  - ATC 45 Safety Evaluation of Buildings after Windstorms and Floods

School leaders should reach out to local building professionals to **pre-arrange school building evaluations after a disaster.** Local building professionals will likely be very busy following a hazard event and might not be immediately available for inspection without prior arrangement. When schools are being used as shelters these fast-track evaluations are crucial.

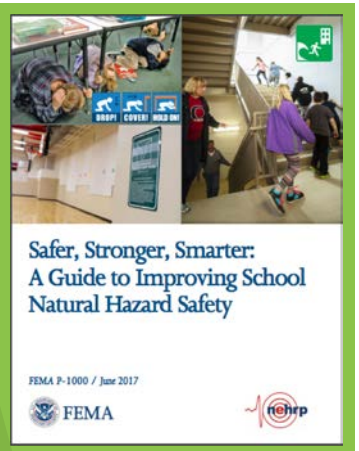
FEMA

DROP! COVER! HOLD ON!

nehrp

5.1.2: Documenting the Damage

- Proper documentation is necessary to receive appropriate insurance or other reimbursements for the damage that has been done
- Once the damage has been documented, the owner has the responsibility of making sure the damage does not get any worse (such as mold forming in flooded areas) and may proceed with repairs without waiting on insurance adjusters
- Documentation should be conducted by a registered building design professional, as they know what types of damage are cause for the most concern



(Photo source: Michael Mahoney, FEMA)

FEMA

nehrp

5.1.3: Building Back Better

Build Back Better

Disaster Risk Reduction	Community Recovery	Effective Implementation
Resilient Physical Assets	Psychological and Social Recovery	Institutional Mechanism
Multi-hazard based Land-Use	Business Recovery	Legislation and Regulation
DRR Education and Awareness		Monitoring and Evaluation

FEMA

DROP! COVER! HOLD ON!

nehrp

5.1.4: Adaptability

- **Contingency plans** should be made by school leaders in the possible event that they cannot reoccupy their school buildings within a reasonable time period after a natural disaster
- These can range from modular classrooms, to sharing other school campuses, to online classrooms to facilitate educational continuity
- Contingency plans should reflect the likelihood of building damage based on *pre-event hazard vulnerability evaluations*
- Having back-up facilities or online systems help ensure educational continuity for students during a time where disruption and damage can be widespread

FEMA

DROP! COVER! HOLD ON!

nehrp

5.1.5: Schools as Emergency or Recovery Shelters

FEMA

DROP! COVER! HOLD ON!

nehrp

5.1.5: Schools as Emergency or Recovery Shelters

- Schools oftentimes can be designated as shelters during the emergency and early recovery period due to their unique facility spaces
  - (i.e. gyms, auditoriums, cafeterias)
- Serving this role for the community can also interfere with plans to resume school and get back to the classroom
- Administrators should check with local emergency managers, American Red Cross officials, and other shelter providers to determine how schools may be included in current community emergency and recovery plans
- Contingency plans should entertain the possibility of continuing instruction while school facilities are also under public use during an emergency

FEMA

DROP! COVER! HOLD ON!

nehrp

5.2: Focusing on Routine and Mental Health

- Health, safety, and the well-being of students and staff during the recovery period and thereafter, should be a top priority
- People can move in and out of vulnerable conditions, meaning that recovery is not just simply a linear, straightforward path for everyone
- Resources should be dedicated to ensure that students and staff receive the proper support needed to recover fully

FEMA

5.3: Financing the Recovery

- Prioritizing detailed legal and financial recordkeeping is critical for schools, as they are needed for reimbursements and possible legal reasons
- These records are usually needed when accessing databases or files is extremely difficult or impossible
- Thus, planning in advance to ensure these records are backed up, stored offsite, and accessible is invaluable to recovering well
- Donation management also can become a large part of the financial recovery process
- Whether these donations are monetary or material goods, clearly articulating what schools *do and do not* need, is helpful in ensuring the donated materials are helpful to student success and school operations

FEMA

DROP! COVER! HOLD ON!

nehrp

5.3.1: Federal Resources

- **The Stafford Act:** authorizes the delivery of federal technical, financial, logistical, and other assistance to states and localities during declared major disasters and emergencies; FEMA coordinates these resources if it is beyond the capacity of state and local governments
- **FEMA's Public Assistance (PA) program:** supplemental federal grants for debris removal, emergency protective measures, repair, replacement, or restoration for publicly-owned facilities or some not-for-profit institutions following emergencies declared by the President
  - *Note:* The PA program also provides assistance for hazard mitigation measures during the recovery process. More information may be found on FEMA's website: https://www.fema.gov/public-assistance-policy-and-guidance

FEMA

DROP! COVER! HOLD ON!

nehrp

5.3.1: Federal Resources

- **FEMA's Hazard Mitigation Grant Program (HMGP):** may provide funds for mitigation measures to help reduce future losses after a disaster strikes
- Private schools may not be eligible for FEMA's PA program or HMGP, however, the U.S Small Business Administration might consider these schools for low-interest disaster loans for repairs or replacements of property of equipment during a declared disaster
  - More information: https://www.sba.gov/loans-grants/see-what-sba-offers/sba-loan-programs/disaster-loans

FEMA

DROP! COVER! HOLD ON!

nehrp

5.4: Planning for the Next One

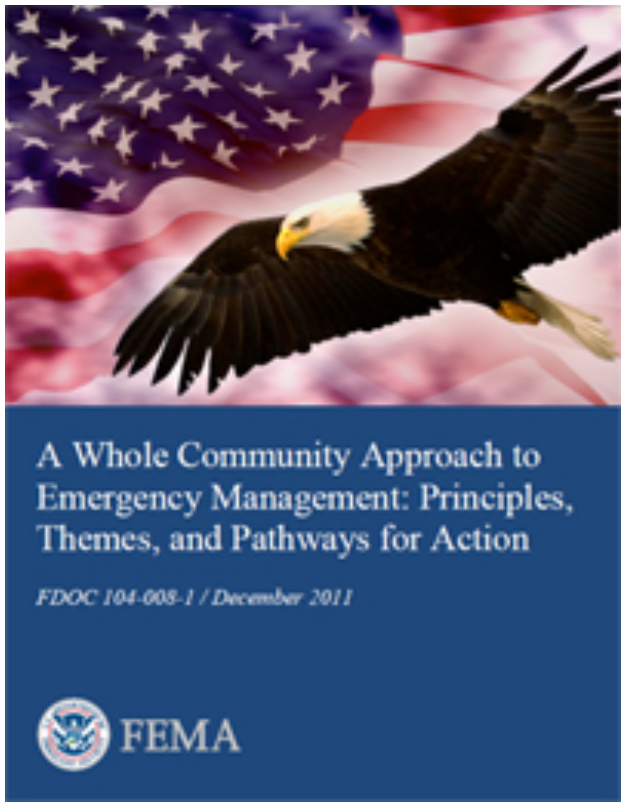
- It is important to dedicate time to evaluate the process and procedures used for emergency preparedness, response, and recovery even after full recovery has been obtained
- Examining and evaluating what worked and what did not work, will help revise plans and improve their overall functionality
- They should incorporate**: (1)** updates to all contact information for key leaders; **(2)** new and updated resource lists; **(3)** revisions to key response activities; **(4)** changes to school buildings, bus routes, and the broader community; **(5)** changes to school policy and procedures; **(6)** lessons learned; and **(7)** any issues that were overlooked in the original plan
- Also, encouraging stakeholder engagement and keeping detailed notes about the actual response and recovery will help improve these actions in the future

FEMA

DROP! COVER! HOLD ON!

nehrp

Chapter 6: Engaging the Whole Community



FEMA

DROP! COVER! HOLD ON!

nehrp

6.1: The Whole Community Approach

- A **“whole community”** approach to emergency management recognizes that all resources and diverse segments of the community must be fully engaged in order to most effectively prepare for, protect against, respond to, recover from, and mitigate against *all* hazards
- All members of the community need to have a voice, as community members and leaders are best situated to identify local assets, capacities, interests, needs, and goals

FEMA

DROP! COVER! HOLD ON!

nehrp

6.1: The Whole Community Approach

- The **foundational principles** of this approach include:
  - **(1)** understanding an meeting the actual needs of the whole community;
  - **(2)** engaging, empowering, involving all parts of the community; and
  - **(3)** strengthening what works well in communities on a daily basis
- Engaging the community prior to a hazard event can help build **cultures of preparedness** for schools and school leaders
- Communities that collaborate in advance of disaster recover faster due to prior work and established relationships

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2: Engage Community Partners

- Children and Youth
- Elected Officials
- Labor Bargaining Units
- Private Sector Industry and Local Businesses
- Education Professionals
- Local Community Organizations
- Emergency Management Professionals
- Schools and Higher Education
- Parents and Caregivers
- Local, Tribal, State, Federal, Territorial Leaders
- Media
- Design Professionals
- Faith-Based and Non-Profit Groups
- Public Agencies

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2: Engage Community Partners

- Community relationships need to be built and actively maintained over time, not just during a hazard event
- Engagement can be achieved by involving local partners and community stakeholders in a variety of events that focus on preparation and education regarding natural hazards
- Commemorations, drill participation (i.e. the Great ShakeOut) with local partners, annual events, weekly gatherings, or other creative approaches are good ways to involve community stakeholders
- Schools should consider engaging a variety of stakeholders, which are further described in the next several slides

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.1: Children and Youth

- Children and youth are vital stakeholders in any school-based community preparedness, response, or recovery effort
- Research shows children express the desire to learn about hazards and engage in activities that help adults, help other young people, and help themselves
- Schools can incorporate natural hazard information and risk response into curricula
- Programs outside of school hours can also incorporate disaster preparedness for youth
- Involving youth in safety preparedness and disaster response builds student leadership and increases overall community resilience
- Schools should place a high priority on involving children and youth in mitigation, preparedness, response, and recovery activities

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.1: Children and Youth

- Children should *never* be asked to take on roles that will place them in harm's way; however, adequately trained, empowered students can step up to assist during a disaster if they are given the tools and trust of adults
- Assemblies, after-school activities, student clubs, school exhibits, competitions, and safety drills are good ways to engage students in developing school hazard safety strategies

Teen Community Emergency Response Team (Teen CERT) engages youth in natural hazard planning. Schools can use Teen CERT to engage youth in school emergency management planning and promote student preparedness. FEMA established Teen CERT to equip high school students with basic response skills and an understanding of emergency preparedness concepts.

CERT basic training includes skills such as fire safety, light search and rescue, team organization, and disaster medical operations.

6.2.2: Design Professionals

- Architects and engineers can be valuable partners in helping to explain the fundamentals of building safety
- Professionals can determine a building's vulnerabilities and provide recommendations for prioritizing actions (such as retrofit options) for improving the safety of a school
- Professionals can also provide guidance on new school construction
- They serve a critical role in assessing the safety and severity of building damage following a hazard event

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.3: Educational Professionals

- Educational professionals may include: **(1)** school district leadership teams; **(2)** school board members; **(3)** school administrators and staff; **(4)** teachers; **(5)** members of the school security, safety or crisis team; **(6)** agency-appointed mental health agents; **(7)** grief counselors; **(8)** risk managers/legal counsel; and **(9)** educational spokespersons
- These professionals can offer resources and guidance on policy, funding, stakeholder relationships, continuity of academic programs, and much more
- Education leaders can help craft school emergency management plans and work through the preparedness planning process

FEMA

6.2.4: Elected Officials

- Elected leaders run on platforms associated with schools and education
- These officials may include: **(1)** school board members; **(2)** mayors; **(3)** city managers; **(4)** legislators; **(5)** city council members; and **(6)** county commissioners
- Leaders can engage with school system representatives to build awareness and support for planning, preparedness, response, and recovery activities
- Elected officials are called upon to represent their constituencies, making a close partnership with school leaders important

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.5: Emergency Management Professionals

- Emergency management professionals provide invaluable information to schools regarding preparedness, response, and mitigation activities
- School leaders should be well connected to leaders from fire departments, law enforcement agencies, emergency medical services, and emergency management
  - The connections are vital to ensure thast school plans align with local emergency management plans
- These first responders may provide lifesaving assistance in a hazard event, and can assist in the recovery process

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.6: Labor Bargaining Units

- Labor bargaining units include organizations such as the National Education Association (NEA) and American Federation of Teachers (AFT), as well as state and local unions
- Unions can help guide school districts on work-related and human resource issues during the planning process
- During the recovery process, unions can help in recovery by spearheading drives to gather relief fund donations and offer disaster relief grants for union members

A call-to-action posted on the donations page of the AFT website urged union members throughout the country to donate to help union members hit by the 2016 Louisiana flood disaster and other hazard events

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.7: Local Business and Industry

- Members of the private sector often donate to school efforts
- Cultivating relationships with local businesses and industry in the community can help secure contributions for mitigation, response, or recovery costs
- Parents may be business owners – and may need to focus on that aspect of recovery as they are also focusing on children's recovery

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.8: Local Community Organizations

- Community- and faith-based organizations that focus on social service provisions and the collective good often play an active role in identifying resources and supporting preparedness outreach activities
- Organizations that often assist with this include:
  - **(1)** the American Red Cross Disaster Action Teams (DAT);
  - **(2)** Community Emergency Response Teams (CERT);
  - **(3)** Salvation Army; and
  - **(4)** Voluntary Agencies Active in Disaster (VOAD)
- Schools should also engage with local and regional community groups

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.9: Local Hospitals

- Hospital administration, staff, and clinicians are vital players in assisting in a coordinated and integrated response and recovery, particularly during large-scale emergencies
- Hospital staff can provide valuable guidance on healthcare risks and prevention planning, as well as collaborate on medical response protocols and procedures

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.10: Local Jurisdiction Public Agencies

- Local agencies can provide specialized services to key community facilities, such as schools
- These agencies are focused broadly on health, vitality, and sustainability of local communities, making them natural partners to schools
- Relevant public agencies may include:
  - **(1)** public works;
  - **(2)** planning;
  - **(3)** public health;
  - **(4)** social services;
  - **(5)** healthcare; and
  - **(7)** child and family support services

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.11: Media

- Developing solid relationships and strategic partnerships with key media representatives and social media influencers is crucial
- Media professionals have enormous power in terms of informing the public of pressing issues and shaping local political and social agendas
- School officials should be prepared for local, and even national media outlets to take an interest in school safety issues
- Media professionals are not experts in natural hazards and may be limited in their understanding of hazard events
- Timely and regular release of clear and consistent information should be provided to the formal press and all interested individuals covering events
- All information should come from a single point of contact
- Access to school spokespersons, leaders, and other experts should be provided
- Access to impacted facilities, staff, and students should be closely regulated

FEMA

DROP! COVER! HOLD ON!

nehrp

6.2.12: Parents and Caregivers

- Parents, grandparents, and caregivers are key stakeholders in children's lives
- They provide a wide range of expertise, educational awareness support, and resources for preparedness activities
- Parents can also support school safety through legislative channels, Parent Teacher Associations (PTAs)

Parents at an Oregon school formed a "Rock and Roll Committee" to draw attention to seismic issues. The group researched the structural integrity of the school. They then hosted a dinner event to educate the community about hazard risk and preparedness and advance a hazard safety agenda.

FEMA

DROP! COVER! HOLD ON!

nehrp

6.3: Communicating with the Community

- It's important that schools conduct preparedness campaigns, special events, educational classes, social media dialogues, and other pre-disaster engagement before an event occurs to build a school- and community-based culture of safety
- Building a clear, consistent, actionable message through trusted voices builds awareness and buy-in
- Best practices for communicating with stakeholders include:
  - **(1)** engagement with formal and informal stakeholders;
  - **(2)** use of innovative, personalized outreach and trusted communicators;
  - **(3)** linking of community activities with disaster preparedness activities; and
  - **(4)** sustained coordination and sharing of resources

FEMA

nehrp

6.3: Communicating with the Community

- Key topics to communicate include:
  - **(1)** notifications of planning efforts;
  - **(2)** awareness about risks;
  - **(3)** explanation of emergency response protocols and procedures;
  - **(4)** tools and technology platforms used by school officials and responders;
  - **(5)** school and community resources available during hazard event; and
  - **(6)** updates on ongoing mitigation or reconstruction projects

FEMA

DROP! COVER! HOLD ON!

nehrp

Moving Forward

- Getting a copy of the FEMA P-1000 Guide!
- Next actionable step(s)
- Taking the FEMA P-1000 Guide back to your community: partnerships and stakeholders?

To Download, Visit: https://www.fema.gov/media-library/assets/documents/132592

To Order Free Hard Copies, Call: (800) 480-2520

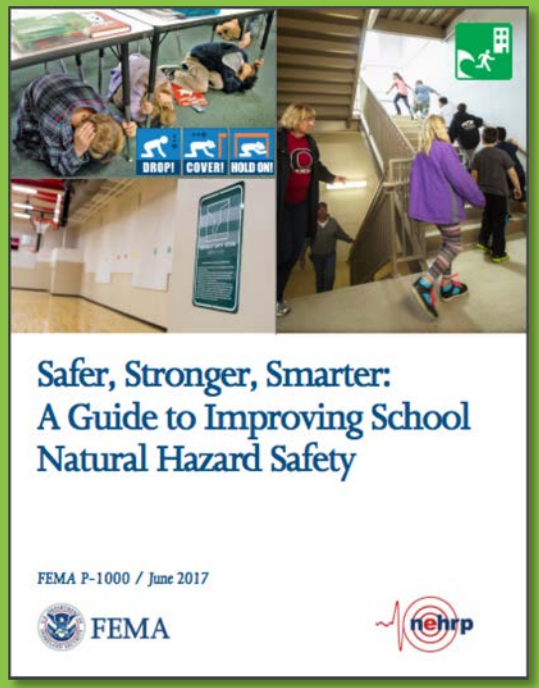
FEMA

DROP! COVER! HOLD ON!

nehrp

Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety

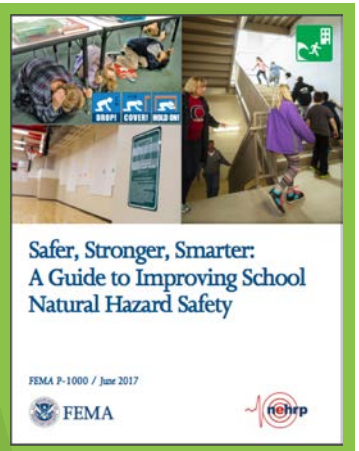
Supplements



FEMA

nehrp

Supplement E: Earthquakes



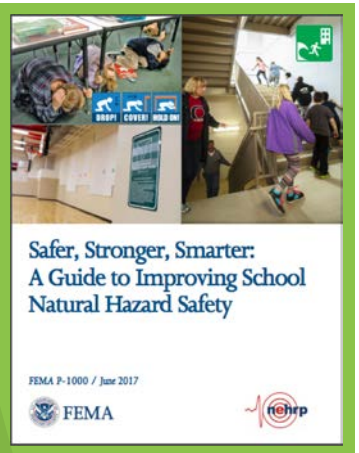
- This supplement addresses existing and new schools located in earthquake zones in the United States and its territories
- After reading this supplement, school administrators, school emergency managers, teachers, and other school leaders should be able to:
  - **(1)** determine the level of of seismicity in which their school is located;
  - **(2)** understand key elements if seismic vulnerability assessments for existing schools and potential new school sites;
  - **(3)** identify building and mitigation options for great seismic resilience;
  - **(4)** create or update a school emergency operations plan (EOP); and
  - **(5)** identify aspects that should be considered to facilitate school recovery following an earthquake

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement E: Earthquakes



E.1: Overview of Earthquakes

E.1.1: Earthquake Impact on Schools

E.2: Is Your School in an Earthquake-Prone Region?

E.2.1: Determining the Severity of the Hazard

E.2.2: Determining Your School's Vulnerability

E.3: Making School Buildings Safer

E.3.1: Existing School Buildings

E.3.1.1: School Building Site

E.3.1.2: Vulnerable Building Types

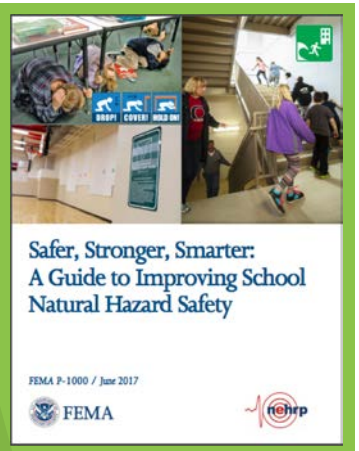
E.3.1.3: Risk Reduction Measures

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement E: Earthquakes



E.3.2: New School Buildings

E.3.2.1: Site Selection

E.3.2.2: Building Code and Expected Performance

E.3.2.3: Schools as Shelters

E.3.3: Nonstructural Systems and Contents

E.3.3.1: Building Code Provisions

E.3.3.2: Vulnerabilities of Nonstructural Components

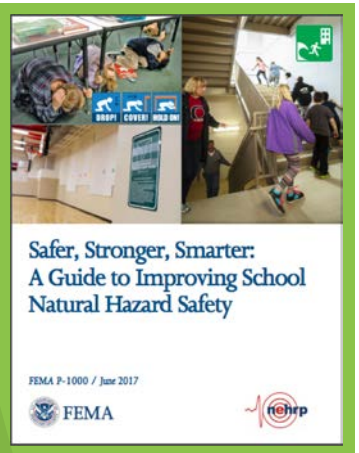
E.3.3.3: Nonstructural Risk Reduction Measures

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement E: Earthquakes



E.4: Planning the Response

E.4.1: During the Earthquake

E.4.1.1: Recommended Protective Actions

E.4.1.2: Reactions to Avoid

E.4.2: Immediately Following Shaking

E.5: Planning the Recovery

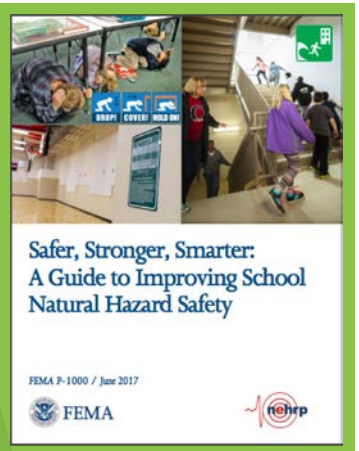
E.6: Recommended Resources

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement F: Floods



- This supplement addresses existing and new schools located in the flood-prone areas in the United States and its territories
- After reading this supplement, school administrators, school emergency managers, teachers, and other school leaders should be able to:
  - **(1)** know where to find flood hazard maps, and determine if their school facility is in a flood-prone area;
  - **(2)** understand key elements of flood vulnerability assessments for existing and potential new school sites;
  - **(3)** understand how to improve flood resistance and incorporate it into the design of new facilities;
  - **(4)** create or update a school disaster plan with specific considerations for floods; and
  - **(5)** identify aspects that should be considered to facilitate school recovery after a flood
- These slides provide an outline of the Flood Supplements included in your *Guide*

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement F: Floods

F.1: Overview of Floods

F.1.1: Flood Impacts on Schools

F.2: Is Your School in a Flood-Prone Region?

F.2.1: Flood Hazard Maps

F.2.1: Levees and Other Flood Control Structures

F.3: Making Buildings Safer

F.3.1: Existing School Buildings

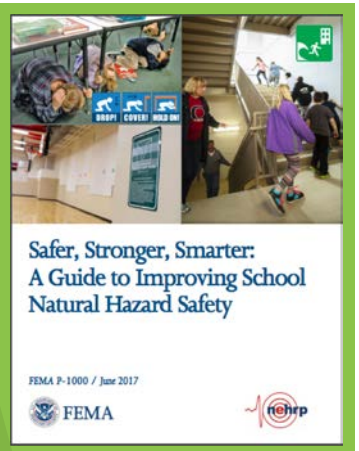
F.3.2: New School Buildings

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement F: Floods



F.3.2.1:Building Codes and Standards

F.3.2.2: Federal Executive Orders Related to Floods

F.4: Planning the Response

F.5: Planning the Recovery

F.6: Recommended Resources

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement TO: Tornadoes

- This supplement is applicable to all schools located in tornado-prone regions
- After reading this supplement, school administrators, school emergency managers, teachers, and other school leaders should be able to:
  - **(1)** determine if a school is in a tornado-prone region;
  - **(2)** determine geographical areas where tornado safe rooms/shelters are required, and where they are recommended;
  - **(3)** determine if an architect or engineer should be retained to identify best available tornado refuge areas;
  - **(4)** create or update a school disaster plan with specific considerations for tornadoes; and
  - **(5)** identify aspects that should be considered to facilitate school recovery following a tornado
- These slides provide an outline of the Tornado Supplements included in your *Guide*

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement TO: Tornadoes

TO.1: Overview of Tornadoes

TO.1.1: Tornado Impacts on Schools

TO.1.2: Important Terminology

TO.2: Is Your School in a Tornado-Prone Region?

TO.3: Protecting Occupants within School Buildings

TO.3.1: Existing School Buildings

TO.3.2: New School Buildings

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement TO: Tornadoes

TO.3.2.1: Tornado Safe Room/Shelter Cost

TO.3.2.2: Tornado Safe Room/Shelter Timeline

TO.4: Planning the Response

TO.5: Planning the Recovery

TO.6: Recommended Resources

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement W: High Winds

- This supplement provides guidance for existing buildings, and guidance for new schools in the planning stage, and applies to all schools outside of hurricane-prone regions, focusing on straight-line and down-slope winds
- After reading this supplement, school administrators, school emergency managers, teachers, and other school leaders should be able to:
  - **(1)** identify opportunities of having yearly inspections by maintenance personnel;
  - **(2)** understand the importance of having yearly inspections;
  - **(3)** create or update a school disaster plan with specific considerations for high winds; and
  - **(4)** identify aspects that should be considered to facilitate school recovery following a high wind event
- These slides provide an outline of the High Wind Supplements included in your *Guide*

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement W: High Winds

W.1: Overview of High Winds

W.2: Is Your School in a Region Exposed to High Winds?

W.3: Making Buildings Safer

W.3.1: Existing School Buildings

W.3.2: New School Buildings

W.4: Planning the Response

W.5: Planning the Recovery

W.6: Recommended Resources

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement X: Other Hazards

- This supplement will briefly describe additional common hazards and is not intended to provide complete guidance, but only to provide general information and point toward additional resources
- Hazards discussed in this supplement are:
  - **(1)** snow storms;
  - **(2)** volcanic eruptions; and
  - **(3)** wildfires
- These slides provide an outline of the Other Hazards Supplements included in your *Guide*

FEMA

DROP! COVER! HOLD ON!

nehrp

Supplement X: Other Hazards

X.1: Snow Storms

X.2: Volcanic Eruptions

X.3: Wildfires

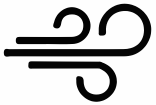
X.4: Recommended Resources

FEMA

DROP! COVER! HOLD ON!

nehrp

Thank you!



FEMA

nehrp