

# Invest in Resilient Public School Infrastructure

## Keep Children and Communities Safe

Since 2005 (Hurricane Katrina) the Federal Emergency Management Agency (FEMA) has spent billions of dollars restoring K-12 school facilities. According to a recent Congressional Research Service (CRS) report a total of \$5.7 billion has been allocated to rebuild K-12 educational institutions between FY2005 and FY2017. Close to \$4 billion alone was spent to help schools impacted by Hurricane Katrina in 2005. Unfortunately, school facilities are still in harms way.

There were 59 Presidential disaster declarations alone in 2017. In 2018, Hurricanes Florence and Michael devastated the Carolina's and the Florida Panhandle while two wildfires in California - the Camp Fire and the Woolsey fire near Malibu -- had a direct impact on thousands of students, teachers, administrators and school facilities. The Camp Fire in Paradise, California destroyed 8 of the 9 school buildings in the town and almost 90 percent of the students, teachers and administrators lost their homes as well. According to the Calmatters newsletter (<https://calmatters.org>) the intensity of both fires created air quality so hazardous that 180 school districts with a combined enrollment of 1.1 million students were forced to close. More than 1 in 6 students in the state were affected by the closures.

Severe weather conditions and natural disasters are increasingly a fact of life for public school officials. On the **West Coast**, earthquakes and the possibilities of tsunami are a concern from Washington State to California. In the **South**, Texas, Louisiana, Florida and the Carolinas regularly contend with hurricanes and flooding. The years 2004 and 2005 produced the most destructive hurricane seasons in the history of the country, as six hurricanes made landfall each year, compared to an average of 1.8 per year during the preceding century and a half.<sup>1</sup>

In the **Midwest**, numerous school districts in central Texas, northern Iowa, and from central Kansas and Nebraska east to western Ohio are part of what is collectively known as Tornado Alley.<sup>2</sup> On average there are 1,000 tornadoes a year, 20 are considered violent and one is usually considered extreme.<sup>3</sup> In the **Northeast**, school officials are now keenly aware after Hurricane Sandy that they must be much more prepared for future natural disasters.



# IMPACT of the Disasters

With 100,000 public schools, in multiple buildings, spread across multi-acre sites, it is not surprising that America's public schools find themselves in the path of natural disasters. Our public schools need to keep our children safe, but public school facilities also play a major role in saving lives of others during the disasters and in helping communities recover afterward. **Improving existing public school facilities to withstand severe weather conditions and designing new resilient facilities needs to be key part of the nation's and the federal government's infrastructure policy going forward.**

According to a 2017 FEMA School Natural Hazard Safety report, "*older school facilities are particularly vulnerable to natural disasters and in most cases school administrators do not have the financial resources to address these vulnerabilities*"<sup>4</sup> even though they have "*a moral, and in many cases, legal responsibility to make these schools more resilient to disaster.*"<sup>5</sup> **The average American school is now 44 years old and most were designed to meet outdated building codes and standards.** These older schools are more vulnerable to natural disasters, and their students are more likely to experience adverse effects, such as dislocation and prolonged school closures.

- 372,000 students were dislocated in **Louisiana** in 2005, as a result of Hurricane Katrina, and an estimated 160,000 were dislocated for months and years afterwards.<sup>6</sup> Katrina severely damaged 110 of the 126 schools in New Orleans, forcing the previous school district to be completely reorganized.<sup>7</sup>
- Hurricane Sandy damaged scores of schools in the **metro New York City area** in late October of 2012. In the immediate aftermath of the storm, NYC closed all 1,750 of its schools for a week. Two weeks after Hurricane Sandy, 86 New York City schools remained closed. 57 schools serving 34,000 students had to be relocated, causing attendance to drop from 91% to 33% for several

weeks. Attendance at the relocated schools only inched up to 71% by mid-November.<sup>8</sup>

- In **Texas**, 1 million students were impacted, including missed school time, and school facilities in over 100 school districts were damaged by Hurricane Harvey in 2017.<sup>9</sup> Scores of schools in Houston were damaged as a result of Harvey and four schools were permanently closed and rebuilt at a cost of \$126 million. A total of 22,000 children were temporarily made homeless.<sup>10</sup>
- In the aftermath of Hurricane Maria in 2017, the Governor of **Puerto Rico** closed 283 schools.<sup>11</sup> 22,000 children left Puerto Rico for the mainland, with more than half enrolling in Florida schools alone, primarily in Orange and Osceola counties.<sup>12</sup>
- In June 2016, flooding caused \$130 million in damages to **West Virginia** schools,<sup>13</sup> and in the same year flooding in **Louisiana** closed schools temporarily in 22 parishes across in the state.<sup>14</sup> Six months after the August 2016 floods schools in Louisiana had already received \$60 million in disaster relief from FEMA.<sup>15</sup>
- According to a Pew Charitable Trust Report released in 2017, the risk of flooding is widespread, including the **Atlantic Coast, Gulf Coast, Mississippi River** corridor and southwestern **Arizona**. Inland counties in **Florida, North Carolina, Louisiana** and **Virginia** are also at high risk.<sup>16</sup> 6,353 schools serving 4 million students are located in the 100 most flood-prone counties in the nation.<sup>17</sup> Almost a quarter of these districts are in 24 parishes in Louisiana alone.<sup>18</sup>
- In October 2017, wildfires in **California** burned 245,000 acres in nine counties. In Sonoma County alone, four public schools were damaged or destroyed and another four were surrounded by debris, making them difficult to access. More than 1,200 school students and over 200 school staff lost their homes, and 13 school sites/programs were directly impacted.<sup>19</sup>



# [Re]Building America's School Infrastructure To Be Resilient

Schools are often central to community emergency/ incident management systems, serving as emergency shelters, command and control centers, and centers for aid distribution. They need to be designed and built to be fully functional during and in the aftermath of a disaster to fulfill these major responsibilities.

- Going forward, **new school facilities** designated as emergency shelters and disaster recovery centers should be specifically designed for greater resiliency to function during and after natural disasters. A 2017 report, *Natural Hazard Mitigation Saves: Interim Report 2017* recommends building to exceed the 2015 International Building Code (ITSC)<sup>20</sup>
- For **existing schools**, facility experts recommend: 1) assess vulnerabilities of the facility; 2) incorporate best practices<sup>21</sup>; and 3) develop community and school emergency operations plans.<sup>22</sup>
- Post-disaster studies recommend **reopening schools** as quickly as possible to provide stability for students, allowing parents to either help with disaster relief or go back to work. This suggests that schools should be given a high priority as communities seek to rebuild.<sup>23</sup>

- **Tornadoes:** Use FEMA mitigation funds to develop community safe rooms in public schools. Since a tornado destroyed one-third of buildings and homes in Joplin, Missouri in 2011, the city of 52,000 has built 14 community safe rooms that can hold hundreds of people, many of them located in public schools.<sup>24</sup>
- **Flooding:** Site selection is key to mitigate against flooding. Floodplains should be avoided in construction, if at all possible. Alternatively, use FEMA mitigation funds to flood proof buildings in order to dry out quickly. Mitigation funds can also be used to protect or move core equipment like generators and air conditioning.<sup>25</sup>
- **Hurricanes:** Build new schools to exceed the 2015 International Building Code where possible or meet the most up-to-date building code. Retrofit and strengthen existing buildings, and develop community-wide emergency operations plans.<sup>26</sup>

The National Clearinghouse for Educational Facilities (NCEF) [www.ncef.org/](http://www.ncef.org/) has an extensive data base, offering a wide assortment of issue briefs and reports on preparing schools for natural disasters designing resilient schools to withstand natural disasters.

## An Appropriate Federal Role

Since 1989, FEMA has funded more than 1,000 K-12 mitigation projects,<sup>27</sup> which have provided funds for flood proofing, safe wind retrofits and community-safe room construction, holding between 400 to 800 people.<sup>28</sup> But local and state government have pre-designated many more schools as emergency shelters; most have not been designed or constructed to the standards that will ensure that they can even be safely occupied during a disaster.<sup>29</sup>

A recent study by the National Institute of Building Sciences, *Natural Hazard Mitigation Saves:2017 Interim Report*, states that every \$1 spent on mitigation at the front end saves \$6 in federal disaster relief after a disaster, and every \$1 spent on exceeding the existing building code saves \$4.<sup>30</sup> But between 2005 and 2014, the federal government spent less than \$600 million in the FEMA pre-disaster mitigation program<sup>31</sup> and \$277.6 billion on disaster assistance.

- **Public school facilities need to be in any federal infrastructure funding plan.** Existing schools should be retrofitted for greater resiliency. New schools should be designed so that they serve communities in times of a natural disaster.
- **The Department of Homeland Security should designate schools as the 17th area of critical infrastructure.**



- FEMA should help school districts and states take advantage of the **Hazard Mitigation Grant Program**, to make their school facilities more resilient before natural disasters.

The scale of the problem is huge. Schools are in every community across America and their design and construction is a first step in preparing for future natural disasters. **Schools must be constructed to withstand severe weather conditions – both to keep children out of harm's way when disasters strike and to serve as emergency disaster and recovery centers.**

## REFERENCES

1. Smith, S. K., & McCarty, C. (2005). The Demographic Impact of the 2004 Hurricane Season in Florida. Bureau of Economic and Business Research, 9.
2. NOAA, Tornado Alley <https://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology/tornado-alley>
3. Ibid.
4. Safer, Stronger, Smarter: A Guide to Improving School Natural Safety Hazard (2017, June). FEMA. <https://www.fema.gov/media-library/assets/documents/132592>.
5. Ibid.
6. Safer, Stronger, Smarter: A Guide to Improving School Natural Safety Hazard. ( June, 2017). FEMA. <https://www.fema.gov/media-library/assets/documents/132592>.
7. Glatter, H. (2017, August 30). How Schoolchildren Will Cope with Hurricane Harvey. The Atlantic. <https://www.theatlantic.com/education/archive/2017/08/how-schoolchildren-will-cope-with-hurricane-harvey/538395/>
8. Chakrabarti, R., & Livingston, M. (2012, December 19). The Impact of Superstorm Sandy on New York City School Closures and Attendance. Federal Reserve Bank of New York. <http://libertystreeteconomics.newyorkfed.org/2012/12/the-impact-of-superstorm-sandy-on-new-york-city-school-closures-and-attendance.html>
9. Kindelan, K. (2017, August 31). More Than 1 Million Public School Students Estimated to be Affected by Hurricane Harvey. ABC. <https://abcnews.go.com/US/million-public-school-students-estimated-impacted-hurricane-harvey/story?id=49511399>
10. Subberwal, K. (2017, August 31). Harvey's Impact on Students Could be Felt "For Generations." Huffington Post. [https://www.huffingtonpost.com/entry/hurricane-katrina-harvey-schools\\_us\\_59a725d7e4b0a8d14572e0ec](https://www.huffingtonpost.com/entry/hurricane-katrina-harvey-schools_us_59a725d7e4b0a8d14572e0ec)
11. NBC News, (2018, April 6) Puerto Rico to close 283 schools amid sharp enrollment drop after hurricane and economic crisis <https://www.nbcnews.com/news/latino/puerto-rico-close-283-schools-amid-sharp-enrollment-drop-after-n863246>
12. 305 Schools Face Closure as Hurricane-hit Puerto Rico Tackles Budget Crisis. (2018, February 1). Their World. Retrieved from <https://theirworld.org/news/puerto-rico-schools-face-closure-hurricane-maria-budget-deficit>
13. West Virginia Lawmakers Quickly OK Flood Cost Bill. (2016, September 20). The Intelligencer. <http://www.theintelligencer.net/news/top-headlines/2016/09/west%E2%80%88virginia-lawmakers-quickly-ok-flood-cost-bill/>
14. Fothergill, A., & Peek, L. (2016, August 29). Staying Afloat: Lessons From Hurricane Katrina for the Children Affected by the Flooding In... Pacific Standard. <https://psmag.com/news/staying-afloat-lessons-from-hurricane-katrina-for-the-children-affected-by-the-flooding-in>
15. <http://www.brproud.com/news/local-news/total-now-at-60-million-for-louisiana-schools-affected-by-august-flood/648757177>
16. Pew Charitable Trusts Issue Brief Flooding Threatens Public Schools Across the Country. <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2017/08/flooding-threatens-public-schools-across-the-country>
17. Ibid.
18. Ibid.
19. Reis, M & Taylor, L (January, 2018) California Dept of Education Coming Together: How we responded to the Wildfires and what we have learned
20. National Institute for Building Sciences (NIBS) <https://www.nibs.org/page/mitigationsaves>
21. Mitigation Best Practices, FEMA <https://www.fema.gov/media-library/resources-documents/collections/490?page=2>
22. Safer, Stronger, Smarter: A Guide to Improving School Natural Safety Hazard. ( June, 2017). FEMA. <https://www.fema.gov/media-library/assets/documents/132592>.
23. Fothergill, A., & Peek, L. (2016, August 29). Staying Afloat: Lessons From Hurricane Katrina for the Children Affected by the Flooding In... Pacific Standard. Retrieved from <https://psmag.com/news/staying-afloat-lessons-from-hurricane-katrina-for-the-children-affected-by-the-flooding-in>
24. Ibid.
25. Ibid.
26. Ibid.
27. Creating Safer Schools with Hazard Mitigation. (2017, September 5). FEMA. Retrieved from <https://www.fema.gov/media-library/assets/images/155577>
28. Safer, Stronger, Smarter: A Guide to Improving School Natural Safety Hazard. ( June, 2017). FEMA. <https://www.fema.gov/media-library/assets/documents/132592>.
29. Safer, Stronger, Smarter: A Guide to Improving School Natural Safety Hazard. ( June, 2017). FEMA. <https://www.fema.gov/media-library/assets/documents/132592>.
30. FEMA Releases Draft National Mitigation Investment Strategy for Public Comment. (2018, January 11). Pew Charitable Trust. Retrieved from <https://www.fema.gov/news-release/2018/01/11/fema-releases-draft-national-mitigation-investment-strategy-public-comment>
31. FEMA Releases Draft National Mitigation Investment Strategy for Public Comment. (2018, January 11). Pew Charitable Trust. <https://www.fema.gov/news-release/2018/01/11/fema-releases-draft-national-mitigation-investment-strategy-public-comment> and <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2017/08/flooding-threatens-public-schools-across-the-coun>



The [Re]Build America's School Infrastructure Coalition (BASIC) includes non-partisan organizations and individuals who support federal funding to help underserved public school districts modernize their facilities.

We believe that ALL children should attend healthy, safe, and educationally appropriate school facilities. B.A.S.I.C. is fighting to secure significant Congressional support to prioritize public school infrastructure into the nation's larger infrastructure agenda and **invest \$100 billion to modernize our public school facilities over 10 years** — creating an estimated 1.8 million American jobs.