2017 Hurricanes

Ryan Elkas & Haleigh Auck
3 Hurricanes
26 Days
2500 Loss locations
$100-$145 billion loss estimated industrywide
The majority of natural hazard loss is preventable.

Science

NatHaz Standards & Mapping

Engineering

Boots on the Ground

Mitigation Solutions

FM Approved Products
Hurricane Harvey Was a Flood Event ...
Hurricane Harvey Was a Flood Event …
Observation: Human Element Flood Mitigation is Good

- Sandbags at openings
- Raise key equipment
- Relocate valuables
Flood Mitigation
Physical Flood Mitigation is Better

- Install perimeter barriers
- Elevate key equipment
- Curbs at openings
Physical Flood Mitigation
Flood Abatement Products
Flooded in May 2015 and April 2016

- Office tower
- Outside the 500-year zone
- 4 ft. (1.2 m) of water in garage
- Building utilities located in garage
Office tower located outside 500 year zone

Experienced previous flooding

Building utilities (Central Plant Services) located in garage
- Recontoured garage entrance to minimize water entry
- Provided additional concrete walls at garage perimeter
- Installed FM Approved flood logs at 4 garage entries
- As back-up, sealed entry door to central plant and louvers with flood logs and engineered steel panels
Emergency Response Plan in Action
Emergency Response Plan in Action

During
Emergency Response Plan in Action

The Result
Flood losses experienced by FM Global clients who implemented appropriate solutions cost almost 5x less than those that did not.
FM Global clients completed physical improvements and reduced their loss exposure by an average of $23 million.
FM Global clients completed physical improvements and reduced their overall loss exposure by $820 million.
Hurricanes are cyclonic in nature, rotating around a central core.

The most destructive winds are just out from the center.

Media will always report highest number.
Protecting the Building
Another Wake-up Call

- Mechanical devices need regular maintenance and testing
- Fuel supplies are needed
Physical Wind Mitigation

- Window shutters
- Securing roofs and flashing
- Bracing dock doors
Partnering with FM Global, our clients have …

- Retrofitted roofs to FM Global standards
- Secured roof-top equipment
- Installed wind-rated loading dock doors
- Installed FM Approved hurricane shutters
- Installed roof drainage
- Installed emergency generators, and tested them

… reducing their downtime from months to days.
2017 Baseline visit: inadequate standing seam roof
Potential for business interruption: 2 months
2 Months later: client replaced the roof
Site Experienced 128 mph Sustained Wind Speeds
No roof damage
No downtime
It was a distraction … not a disaster!
Maria—Puerto Rico
Maria – Puerto Rico
Measuring Hurricane Damage in the Billions
One Client’s Experience with Hurricanes

- Highly sensitive manufacturing occupancy
- Large campus
- Over 15 buildings
It Started with Hurricane Hugo (1989) – Category 3

- Physical property restored in 3 days:
  - Roof covers delaminated
  - Air handling equip damaged
  - Transformer damaged

- But production was down until public utilities were restored 7 days later
Hurricane George (1998) – Category 1

- Widespread power outages
- Wake up call that emergency power needed on the island
Partnership with FM Global

3 Manufacturing buildings: 175 mph
6 Support buildings: 145 mph
Hurricane Maria: Category 5
Wind speed: 150 mph
Eye of the storm: 5 miles south
Maria was a distraction instead of a disaster.

All roofs but one (not upgraded) stayed intact. Some roof-mounted equipment tumbled. Plastic tarps limited damage.
Wind losses experienced by FM Global clients who implemented appropriate solutions cost almost 4x less than losses to those who did not.
FM Global clients completed nearly 1,300 wind recommendations.
FM Global clients completed physical improvements and reduced their loss exposure by an average of $22 million.
FM Global clients completed physical improvements and reduced their overall loss exposure by $28 billion.
The majority of natural hazard loss is preventable.
Return on Hurricane Risk Improvement

Every $1 spent on hurricane protection in the U.S. reduces loss exposure by an average of $105.

SOURCE: FM GLOBAL
9 Steps to Prepare for Windstorm and Flood

1. Know your specific risk

2. Know your insurance coverage

3. Locate out of harm’s way and design to minimize risk

4. For existing sites, fight flood using:
   a) Opening barriers for buildings with water-resistant walls
   b) Temporary perimeter barriers to surround structures not water-resistant
   c) Sandbags are an option if the above cannot be installed
   d) Plan for water leakage and use sump pumps and other devices to remove flood water that penetrates the protection
9 Steps to Prepare for Windstorm and Flood

5. Know what you can’t afford to lose and take action to protect those assets

6. Keep utilities and services operable

7. Develop a secure envelope from wind by securing roofs and protecting windows and doors.
   a) Secure roofs with additional mechanical fasteners, primarily in corners and perimeters of roofs.
   b) Reinforce windows and doors. Use wind-rated doors. Temporary bracing.
8. Have a comprehensive plan and implement it.


For additional information, download our Emergency Checklists for Wind and Flood at:

HOW WE FIGHT BACK

RESEARCH  ENGINEERING  MITIGATION