WHITE PAPER

How K-12 Schools & Higher Education Can Prepare, Recover & Reopen

After Black Swan Weather Events

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The Education Facilities Manager bears the burden of responsibility for the safety of occupants, condition of facilities and preparedness and recovery following black swan weather events. Black swan weather events refer to the occurrence of an extreme weather event that significantly disrupts day-to-day life. Unlike the typical storm, black swan weather events are deadly, can happen at any time, and require careful preparedness and recovery processes. They may range from hurricanes to EF5 tornadoes, depending on location.

Regarding flooding, more than 2,000 schools are located in areas subject to frequent flooding, notes the PEW Charitable Trusts, and with rising sea levels, many more schools may be subject to extreme weather and flooding damage in coming years. In 2017, more than 8.5 million students were forced to miss school. That's one in six students in the country, reports USA Today.

Statistics for the onslaught of the 2018 hurricane season, given the severity of Hurricanes Michael and Florence, may rival this figure once the year is complete and final data is compiled. Without focusing on the political aspects of climate change, Education Facilities Managers and School District Officials need to start thinking about how future black swan events will affect students, faculty and their departments in K-12 schools and institutions of higher learning.

In this white paper, we'll delve deeper into the discussion on black swan weather event preparedness and response, including:

- **The role of preparation in mitigating disaster damage and cost**
- **Key considerations and best practices to streamline recovery**
- **Tips for reopening after recovery**

Preparation Is Crucial to Preventing Unforeseen Issues

Black swan weather events are impossible to predict accurately, but Facilities Managers attempting to prepare for the landfall of a hurricane have a unique advantage. In many cases, meteorologists can accurately determine where the eye will make landfall several days before the storm arrives. This gives Facilities Managers extra time to take additional preparation steps before it strikes.

For example, those centered in areas where the eye will make landfall may need to bag sand, place sandbags and ensure the safety of students and faculty as the initial weather bands move in.

8.5 Million

Total number of students who missed school in 2017 due to weather-related events.

What About Non-Hurricane Black Swan Weather Events?

For black swan weather events that occur suddenly, i.e., tornadoes and strong winds not associated with a hurricane or even wildfires, preparation becomes hyper-focused on evacuation plans and understanding the integrity and safe-zones within the facility. Although wildfires may not necessarily be an actual weather event, they are considered an influencer and factor in weather severity. As a result, planning for wildfires is part of effective black swan weather event preparation.

Preparation for non-tropical black swan weather events will require Education Facilities Managers, School District Officials, staff, teachers, and students to conduct emergency drills for shelter-in-place guidelines, evacuation routes and more. Drills should be age-appropriate and conducted at least once per semester. In addition, any evacuation drills should also be repeated for on-site personnel and students taking courses or completing extracurricular activities during the summer months.

6 Steps to Create a Disaster Preparedness Plan

1 Review the types of black swan weather events most likely to occur in your area

Reviewing the types of black swan weather events that are most likely to occur in your area, explains AccreditedSchoolsOnline.com. For instance, coastal cities may need to prepare for hurricanes. Schools of the Oklahoma plains should plan for tornadic storms, and those in the West will need to think twice about planning for wildfires.

2 Check all emergency exits for potential obstructions or risks that may arise during an evacuation

Checking all emergency exits for potential obstructions or risks that may arise during an evacuation. Clear pathways and brush should be removed at the beginning and periodically throughout the fire season, and in the event of tornadic activity, students should be aware of which exits are the safest if evacuation to an outdoor storm shelter or safe-area is necessary. It is important to note that some students caught outdoors or in school recreational facilities may need to move between buildings to take cover in such events.

3 Ensure fire extinguishers and sprinkler systems workappropriately

Ensuring fire extinguishers and sprinkler systems work appropriately. Fire extinguishers are essential to addressing the potential fires that may break out following a black swan weather event that does not require evacuation. Obviously, schools will be closed when a hurricane is going to strike, but tornadoes and wildfires may occur suddenly and require the use of a fire extinguisher to keep students and faculty safe.

4 Replace the HVAC system filters that may become clogged more frequently

Replacing the HVAC system filters that may become clogged more frequently, increasing energy use, when local regions are experiencing smoke from wildfires. This may occur even when fires occur 100+ miles away from the facility.

5 Remember the role of communication

Remembering the role of communication. How everyone communicates is essential to preventing loss of life from black swan weather events. This includes communication between faculty, students and parents.

6 Adjust or shutdown automated system controls

Adjusting or shutting down of automated system controls. Specific equipment, such as automated building and HVAC equipment, may need to be shut down for the duration of the storm. Even though systems may be online when the storm strikes, leaving a system's automated schedule running will effectively increase energy use and may contribute to additional damage.

Of course, a disaster plan will naturally include a breakdown of the next steps after the disaster strikes, recovery.

Swift, Thorough Recovery Is Key to Building and Asset Stability

Recovery processes begin as soon as the storm passes. After the evacuation of occupied facilities, if necessary, the Facilities Manager and the Energy Specialist, if requested, will conduct a comprehensive inspection of the building. This immediate response is essential to reducing the damage and disruption caused by black swan weather events. For example, Chris Cloudman, Energy Specialist at Cenergistic, was among the individuals to work with schools in Florida to make the initial sweep through education facilities after Hurricane Matthew struck.

Why Leaving Systems Running Throughout and Immediately After a Storm Strikes is a Bad Idea

The apparent path to minimizing disruption in a hurricane is to leave HVAC systems running throughout the duration of the storm. Unfortunately, high humidity levels following a storm and cooled air may result in the condensation of water vapor, which may cause additional water damage in the facility.

Once power is restored, systems would be brought back online, as well as the IT networks within the buildings. This is in conjunction with communication with the emergency response and command team at the facility for making informed decisions about when to bring students and faculty back to the campus.

Repairing Damage and Preparing for Reopening

After determining the needs of the facility, school leaders will begin the process of working with contractors and service providers to clean up the mess and address any damage that occurred. There are a host of other concerns that will need to be addressed too.

For example, contractors will need to be vetted, scheduled and managed. Funds for recovery may require the completion of paperwork and meetings with the Federal Emergency Management Agency (FEMA).

It is also essential that work performed ensures a safe, mold-free campus for students upon return. Therefore, additional inspection of wall-interiors and electrical wiring is necessary.

Such measures will keep occupants comfortable during recovery, provided staff may enter the building.

Building Occupants Deserve Safe Facilities Upon Reopening

Reopening of schools seems like a turnkey process after completing repairs and conducting a final quality inspection. However, black swan weather events take a community-wide toll. Even with a clean school ready to accept students through its doors, the community damage may make reopening difficult.

The Value of Communication in Reopening

When the school does reopen, a process should be used to notify students, faculty, and parents about reopening locations, time and entryways to use. Automated alert systems make excellent resources for reaching everyone at once. However, the wise Facility Manager should also notify the media of closures and reopening facts to disseminate instructions further.

Remember Air Quality in the Weeks Following Reopening

One of the most significant problems with black swan weather events goes back to the growth of mold and poor air quality. Following repairs and construction, it's easy to assume the facility is safe. Unfortunately, the damage from a storm may not become evident until days, if not weeks, later. As a result, Facilities Managers should follow a few additional best practices for ensuring the safety of occupants after reopening, including:

- The installation and inspection of fire alarms, smoke and carbon monoxide (CO) detectors, and air purifiers. Air purifiers will work in tandem with the ventilation system to keep the air quality at healthy levels and inhibit the buildup of condensation and growth of mold.
- Proper use of the ventilation system for removing chemicals and vapors that may derive from new construction. For example, the fumes produced by latex paint, although not necessarily harmful in ventilated areas, can trigger allergic reactions or respiratory problems. These issues may exist well-after the paint has dried too. This is why it is essential to consider the types of recovery measures taken even after the school reopens.

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Communication Is Key

Stay in contact with students and occupants. Black swan weather events are emotionally-charged situations, and students may experience additional anguish and anxiety in the weeks following reopening. During this time, schools should limit the amount of stimulation, such as lowering the volume of fire alarms and properly notifying students of drills before they occur. This is different from the typical process of conducting a drill as a surprise, the same way it would happen naturally.

Take stock of lessons learned and improvements needed to the emergency preparedness plan. Every disaster response and recovery will offer learning opportunities. The best-laid plans could still falter, but understanding what did and did not "go right" in preparation for and response to black swan events can reduce their impact in the future.

Black Swan Weather Events Will Return – Now's the Time to Act

Perfect conditions would mean not worrying about black swan weather events, but their likelihood of occurrence is almost inevitable. Failure to plan for them will result in massive disruptions, extensive damage and even loss of lives. Failure to plan creates a grim future, but school leaders that take the time to prepare for such events can dramatically reduce their adverse effects.

Cenergistic aids schools in understanding how to approach asset controls and to plan for black swan weather events. The on-premise Energy Specialist and the Cenergistic team are not fearful of getting their boots dirty; they will help the school get ready, respond to and recover from such events. At the same time, Cenergistic's experience in managing energy and on-site activities can effectively reduce the consequences that arise from poor HVAC and lighting system management.

Learn more about the value of planning for black swan weather events by submitting your queries online or calling 1-855-798-7779.