

PREPARING YOUR OFFICE TO SURVIVE A DISASTER

BY WILLIAM MELBY, AIA, JULY 8, 2020

INTRODUCTION

As a long-time disaster response volunteer and chair of AIA California's Disaster Response Network, I have witnessed the damage that earthquakes, hurricane winds, and flooding can bring to a community and to a business. From that perspective, our firm has developed this comprehensive guide, so that other firms can plan for, anticipate, and get through a disaster with as little disruption as possible.

THIS GUIDE

For ease of use, this guide is divided into separate, single-focus chapters and formatted for viewing on mobile devices. I hope it is helpful to you.

TABLE OF CONTENTS

- Chapter 1 **PLANNING FOR A DISASTER**
- Chapter 2 **TRAINING FOR A DISASTER**
- Chapter 3 **RESPONDING TO A DISASTER**
- CONCLUSION**



This photo taken in Saint Bernard Parish LA after hurricanes Katrina and Rita is a reminder that even first responders will be coping with their own issues after a significant disaster. Firms must be prepared to be self-sufficient until others can get organized enough to mobilize to help them.

PLANNING FOR A DISASTER

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What To Plan For

Disasters come in various forms, but they share many common consequences, including property damage, serious injury, and loss of life. Should your office escape these calamities, there remains a number of other things that can cripple your operations.

Power interruptions are a common denominator in natural disasters. Fires, floods, earthquakes, wind events, ocean wave events and other disasters can produce power outages both locally and in areas removed from the original event. Unfortunately, the same can now be said of human-caused events, such as terrorist attacks. Even the threat of possible wildfires can result in a widespread, intentional power outage that can last for days.

Power interruptions are often accompanied by **loss of communication channels**, which not only affects business matters but can also isolate staff members from their families and loved ones.

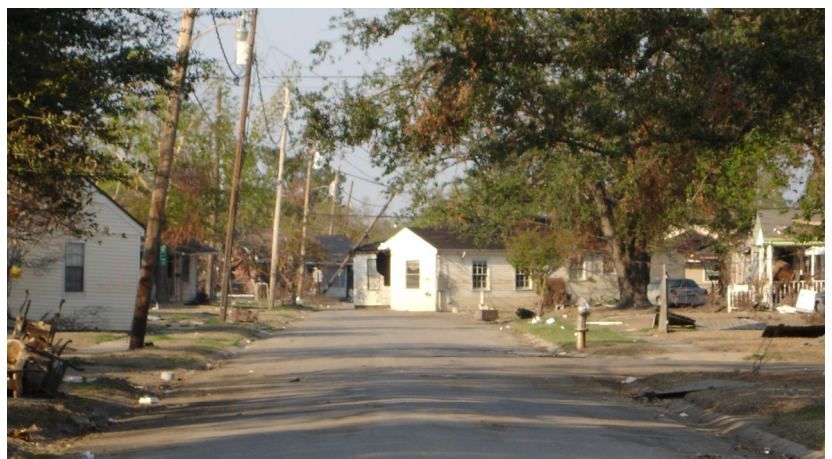
Disasters often cause significant **damage to roads and other transportation infrastructure**. Fires, downed power poles or trees, flood waters—and, after Katrina, even houses—block roads and train tracks. More significant damage, such as bridge or overpass collapse, can disrupt travel for a very long time. If you determine that travel is dangerous or impossible, you will have little option but to shelter in place, maybe more than just overnight. Response agencies recommend that you prepare to shelter in place for at least



This photo taken in Saint Bernard Parish LA after hurricanes Katrina and Rita illustrates how widespread damage to other businesses including your clients, partners, and suppliers can be.

Your plans need to include the possible disruption to your entire financial and supply chain structures.

“Your staff will not be able to concentrate on the office situation if they are consumed by worry regarding loved ones.”



Hurricane Katrina reminds us that roads can not only be closed by road damage but by all sorts of natural and manmade objects blocking the road.

three days but also warn that a shelter-in-place could last as long as three weeks.

Your staff will not be able to concentrate on the office situation if they are consumed by **worry regarding loved ones**. If your firm's website is hosted off-site, as many are, set up in advance a Family Status Page that can be activated in the event of a disaster. On this page, employees and their family members can post their status and reassure each other. It will be an employee benefit that they will remember for the rest of their lives.

A sudden power outage—or sudden restoration of power—can cause the **loss of electronic documents**, as can hardware damage caused by shaking, wind, or/and water (not to mention bad actors). Whatever the cause, the most straightforward way to recover your data will be through in-house or cloud-based electronic back-ups. Flash-drive copies are inexpensive enough for the smallest office and can be stored off-site; on the down side, they require someone to regularly update them, which is subject to diminishing attention over time. Better are cloud-based backups, which put your data in the hands of experts in locations that are not likely to be affected by the same disaster you may be experiencing. Work closely with your I.T. professional to develop your backup plan; best practices change quickly in this realm. Consider, as well, that some essential data—like staff family and emergency contact information—may best be stored the old-fashioned way, on paper, ready to hand.



This photo was taken in Ridgecrest CA after a series of earthquakes in 2019. Although the building structure itself did not suffer damage, portions of the ceiling system failed, causing dangerous conditions for occupants and a considerable amount of debris throughout the room.



After the Ridgecrest California Earthquakes in 2019, even undamaged buildings sustained significant content damage.

What To Have On Hand

If the unthinkable does happen to you, your first task will likely be first aid. Easily accessible **first aid supplies** are essential, as are a **tool kit** and **several pairs of work gloves**, so that you can safely deal with broken glass and other hazards. Check your tool kit, gloves, and first aid kit on a regular basis, and restock items that may be getting low. You will use them more than you think.

To confirm that everyone is safe, you will need a non-electronic way of keeping track of who is in the office, such as an **in-out whiteboard**. **Flashlights** and **walkie-talkies** will enable you to retrieve colleagues who find themselves in dark, windowless spaces, such as restrooms, when the lights go out. Always store **unopened batteries** for any battery-powered devices.

Should you have to shelter in place, you will quickly discover you have a few basic, shared needs: **communication, water, food, thermal comfort, and sanitation supplies**. Staff members may have **personal necessities**, as well, such as essential medications.

If you cannot establish a way to communicate with individuals outside of your location, **battery-powered or hand-crank radios** will provide information on conditions and expectations. Since radio signals travel a great distance, they should be able to receive reports from outside the disaster area. Again, stock **unopened batteries**. If you have a television, a battery backup to power it, and the proper antenna, you may be able to get a TV signal, as well.

Water cooler bottles are a good source of safe drinking water. Have your supplier stock additional bottles and rotate them through your cooler normally.

Food is more difficult for the average office to stock in the quantities needed to shelter in place. It must be non-perishable and easy to prepare. It may need to be consumed cold. Unless it is made for long-term storage, it must be rotated at least once a year. The *Healthline* website recommends **dried and canned beans, nut butters, canned vegetables, commercial jerky, granola and protein bars, and canned soups** for short-cycle storage.

Rotating food to keep it within its safe consumption periods can be difficult. You may want to consider an every-six-month purchase, with a simultaneous donation of the previous items to a food bank or charity. They should be well within their shelf life and would be appreciated by an organization that can distribute them quickly. Such generosity is good both for PR and for employee morale.

Another option may be to rotate the food in and out of your supply by offering it to staff. You could provide staff with **protein or breakfast bars, granola, dried fruit snacks, or peanut butter**. Replenish the items as they are consumed. Discussions with staff may yield innovative ideas for stockpiling and rotating shorter-term foods.

You may also consider dried food with very long shelf lives. *Healthline* reports that some **freeze-dried meals** can be stored for up to 30 years. They have a long shelf life but may require water to rehydrate, so they are not optimal if you believe that water may be in short supply.

Remember, too, that you will need **utensils** to open, prepare, and consume the food.

For most shelter in place scenarios, you must also consider thermal needs. Blankets are important if power is unavailable for heating, especially if windows are broken and outside air can enter your office freely. **Stadium blankets or camping survival blankets** are easy to store and could save lives.

The items you may be least likely to think about are sanitation supplies. A warehouse store-size bag of **toilet tissue**, although bulky, can come in very handy. If toilets are not functioning, a simple **five-gallon bucket or two with lots of trash bag liners** can be used for sanitation purposes. A **disinfectant cleaner** is a good idea, as well.

Encourage staff members to maintain an up-to-date stock of **essential medications, disposable menstrual products**, and other personal necessities, enough for a period of up to three weeks.

TRAINING FOR DISASTER

BY WILLIAM MELBY, AIA, JULY 10, 2020



A disaster plan is of little help if you can't execute it. Knowing what to do and how to do it will lower everyone's stress level, reduce further damage and injury, and hasten your return to operations.

In our office, training takes place at two levels. Everyone participates in general training, and selected office leaders train in taking responsibility for overseeing the staff response. Depending on the size of your office, you may assign such oversight responsibilities in various ways; we have four response leaders and four alternates.

Our Response Leader #1 takes charge of **assessing available communication resources**. She assigns staff to check the channels of communication: office phones, fax lines that don't go through the phone system, office Internet, and cell phone service. If Internet access is available, she assigns a staff member to research the extent and predicted duration of a power outage.

Response Leader #2 assures **employee safety**, including checking the in-out whiteboard to account for staff. If an employee has gone to the restroom, which in our building is remote and windowless, he sends someone with a walkie-talkie and a flashlight—with fresh batteries—to search for them. He directs other staffers to maximize available lighting by opening window blinds (if it's daytime and the windows are not themselves a hazard) and installing new batteries in our battery lanterns and placing them throughout the office.

Response Leader #3 oversees the **inventory of available equipment**, such as laptops, battery backups, and cell phones. She also assures that appliances like desktop computers and monitors, TVs, plotters, and printers are unplugged to protect them against power-surge damage when power returns.

Response Leader #4 writes **notifications for clients, builders, and staff** to be transmitted on available channels and launches our Family Status Page.

Those are the leadership responsibilities in the event of a disaster. We have also assigned individuals to be responsible for **maintenance of equipment and supplies** in anticipation of a disaster. One conducts periodic testing of battery backups for our network, network switches, and office phone system. Another periodically confirms that our stock of portable device batteries is up-to-date; restocks our first-aid kit, tool kit, and gloves as needed; and rotates our food supplies.

Our general staff training begins with the potentially self-inflicted disaster of **ransomware or other malware**. Our IT person teaches how to spot suspicious emails and what to do should you fall for one: don't panic, and inform him. He also reviews the **vulnerabilities of computer equipment to power loss and surge** and how to minimize those hazards. With senior staff, he explains the best **strategies for power conservation**—how to make the best use of limited battery backups—and essential document preservation.

Safety is, of course, our paramount concern, so we train our staff in **accounting for one another**, in **the use of first aid supplies**, in **surveying the office for hazards**, and in **building evacuation** to our designated place of assembly.

Disaster Drills are a useful part of the preparation and verification of your plan. Each year, our firm participates in the Great ShakeOut, a California statewide disaster drill based on an imagined earthquake. Each year, we learn more about the effectiveness of our disaster planning and our disaster training efforts. Because of our location, earthquakes are the primary disaster concern, but

drills can be tailored to the disasters most likely to occur in your area.

We originally participated in the drills in a very basic way: we told staff to shelter under their desks and cover their heads. A few found that they had piled so much stuff beneath their desks that they did not fit, leaving themselves vulnerable to injury from flying or falling objects. We also asked them to account for coworkers who may not have been in the office. After the drills, we showed videos produced by the Great ShakeOut organization, explaining the proper actions to take during an earthquake, and we held a short debriefing session. We found these drills to be helpful both for training purposes and for making subtle changes to our plan, but we came to believe a periodic Deep Drill would be useful. This has proven to be true.

We do **Deep Drills** every few years, to really validate the strength of our plan. We also do it to educate recently hired staff about the realities of a disaster situation. We let staff know when the drill will take place, so they can plan conferences, site visits, or other distracting events around it, but we give them no more specific information.

Just before the drill, management surveys the office for potential hazards, and we always find new ones. These can include large or heavy objects like big-screen TVs, bookcases, file cabinets, or water coolers



ShakeOut.org is a very good source of information for any firm wishing to use drills to train their staff. Although this site is designed for the threat of earthquakes, it is applicable for many different typed of disasters.

We tape instruction cards to the underside of work desks, for employees to discover when they shelter under them. The cards describe each employee's imagined situation. For example, one employee may see, "Your leg has been broken when the large stack of heavy books piled on your desk fell on it." Others may see, "The window beside your desk has shattered, covering the area in broken glass," or, "Fallen light fixtures and ceiling tiles have trapped you under your desk." Still others find notes that say, "You have survived the initial earthquake and may try to help others." Each scenario encourages staff to be creative in dealing with their unique situations.

As staff shelter under their desks, management hangs large posters indicating the office-wide conditions, such as, "The electrical power has been cut off," or, "Ceiling tiles and light fixtures litter the floor and desktops." To simulate a power loss, and if we can do so safely, we turn off lights in areas without windows. Management watches to see if staff can creatively navigate through the office and find and properly utilize our emergency supplies. We position a staff member in the restroom or have one away from the office at a client meeting, to see if staff can account for the missing people.

Some years, the drill will include an evacuation of the building. Do employees really know where to gather? Has the path of travel or the gathering place changed in a way that would warrant changes to our plan? Are all employees accounted for?

After the drill, we gather to discuss what we learned and how our plan can be improved. The entire Deep Drill process can take as little as an hour or so, but it can yield priceless insights on your disaster plan, the safety of employees, and your resilience in the event of a real disaster.

I think you will discover that employees find these drills to be fun. They appreciate the firm's efforts to protect their safety and their livelihood. When they see that small changes they recommend are actually being implemented, morale will likely improve.

Broken Glass

This area of the building has experienced a large amount of glass breakage. Broken glass is all over the floor



RESPONDING TO A DISASTER

BY WILLIAM MELBY, AIA, JULY 10, 2020

In the Immediate Aftermath

The principal steps in responding to an actual disaster mirror those laid out in the previous Chapter on Training. The first priority is **safety**:

Provide sufficient lighting, including daylight, if it's safe to uncover windows, and battery-powered lanterns.

Administer first aid.

Account for all staff, consulting your in-out whiteboard and retrieving anyone who may be in other areas of the building, especially dark spaces.

Identify and mitigate hazards, such as broken glass, obstructions, and things likely to topple in an aftershock. You can “MacGyver” needed safety measures with office supplies and a simple tool kit. Cardboard banker’s boxes or trash bags and shipping tape can be used to cover a hole in a window. Office furniture can be used to cordon off areas that appear unsafe.

The second priority is **short-term communication**:

Assess communication channels. Check landlines and fax lines first, since they usually don’t go through an electricity-dependent system. Gather staff and try cell phones from different carriers. Cell phone service is usually one of the first utilities to come back online. See if you can connect laptops to the Internet through cell phone hot spots.

Using whatever channels are available, let

outsiders know your status, particularly if staff members need medical attention or daily medications. If you can do nothing else, post this information for first responders in a window.

Establish communication between staff and their loved ones. Activate your Family Status Page.

Put client and builder notifications onto your website and social media as soon as possible.



Search and Rescue workers should arrive first to look for victims of the disaster. They will help trapped, stranded or injured individuals. Before they leave they will mark their finding on the building in a recognizable code. This example is from the response to hurricane Katrina in St. Bernard LA.

Assess equipment and backup power supply.

Gather available equipment, such as laptops and battery backups, and make a list of available cell phones.

Unplug appliances, such as desktop computers and monitors, TVs, plotters, and printers, to protect them against power-surge damage when power returns.

Battery backups will work for only a limited time, so make the most of it. Copy important documents for your deadline project to flash drives.

Assess travel conditions and the extent and predicted duration of the power outage, using the Internet, if available, or by listening to the radio. Is it safe for employees to return home?

Call an office-wide huddle to review what you've discovered, what's been taken care of, and what remains to be done. Instruct staff to check the office website for updates before returning to work the next day and to use cell phones only for important communications, to preserve battery life.

In the Days to Follow

After staff leaves for the day, assemble management to discuss what will happen tomorrow and beyond.

How can the limited power supply be maintained for up to a week? What are the highest priority projects and deliverables? How should limited resources, like laptops and battery power, be allocated? Who will make best use of them?

What critical business functions must be completed, and what resources are needed? Can you make tax payments and other legally required transactions? If not, can you move a staff person to an out-of-area consultant's office to use their facilities?



This photo from Saint Bernard LA illustrates that simple materials and simple repairs can get you through until permanent repairs can be made. Remember, permanent repairs may take a while, because building materials will probably be in very short supply.

Is there work for all staff? Can employees who have power at home recharge battery backups at night? Can they do meaningful work from home? Should you even ask staff to drive to work without traffic signals?

Consider what can be done without power. Can architects work on service quality items like master specifications and details? Can they do so on paper? Should management work on strategic business planning or staff education?

You can also use this time to update the disaster plan while the lessons are fresh. How would things have been different if you had no cell service?

Document Recovery

If the disaster has caused loss of documents, first turn to your electronic backups. (If you've lost documents at the hands of bad actors, consult your IT professional before restoring files to your system. Unless you know exactly when the infection occurred, you can't be sure which files are infected, and some malicious files have time delay mechanisms. Promptly notify clients, consultants, and anyone else with whom you've shared data.)



Second responders, like me, arrive after first responders have cleared the area to assess buildings for structural safety .

If your own electronic backups are not available, copies of your documents may be in other organizations' files. Clients, technical consultants, and government agencies may all have copies of your documents or data. Your accountant, attorney, or other business consultants should have copies of e-file data and other business documents. Checking account and credit card information can be downloaded from electronic banking locations. If you e-file your tax payments, these records can be downloaded, as well.

And don't forget old-fashioned paper files. Again, clients, consultants, and government agencies may have copies. If you need electronic versions, they can be scanned using OCR (optical character recognition) into many file formats. Review scanned files carefully, since OCR will occasionally misread characters; don't depend entirely on Spell Check, which may bypass a correctly spelled word that is, unfortunately, not the word you originally wrote.



The damage to your business may seem overwhelming at first, but businesses do get through disasters.



Even under the worst conditions people can retain a sense of humor.

CONCLUSION



As the photo of a New Orleans business after Hurricanes Katrina and Rita show, with some basic preparation and a little creativity, a business can survive through the worst of times.

Basic preparation, training, and good communication can make a big difference when disaster strikes. Consider the issues highlighted above, as well as issues specific to your area and firm, as you prepare a plan. In the event of an emergency, you will be glad you did. The continued existence of your firm could depend on it.

For a comprehensive guide to disaster planning, see *Emergency Management Guide for Business and Industry: A Step-by-Step Approach to Emergency Planning, Response and Recovery for Companies of All Sizes* <https://www.fema.gov/media-library/assets/documents/3412>, FEMA 141/October 1993.
