

What-to-do manual: Storms and Extreme Rain

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Severe thunderstorms don't get a name, they don't make the front page, and that's exactly why they're underestimated. They've caused week-long blackouts and losses on the scale of a major hurricane. Here is the official threshold that defines them, the lightning rule that actually works, and why moving water is more dangerous than it looks.

Before the crisis

What officially counts as a severe thunderstorm. The National Weather Service uses a specific threshold: hail at least **1 inch (2.5 cm)** in diameter —about the size of a quarter— **or** wind gusts of at least **58 mph (93 km/h)**. Wind of 40 mph or half-inch hail is classified as "near severe." It doesn't take a hurricane to tear off a roof.

- Sign up for **official alerts** from your weather service and check the forecast regularly. It's the first thing the NWS recommends.
- Designate a **safe room** with no windows: a basement, or the most central interior room of the house, on the ground floor.
- **Trim trees** near the house and power lines. A falling branch is the most common cause of damage and power outages.
- Secure or store anything loose in the yard: planters, furniture, sheeting, tools. At 58 mph, all of that goes airborne.
- Keep flashlights and a battery-powered radio within reach, not buried at the back of a closet.
- Check that your gutters and downspouts are clear before the rainy season.

Hail falls faster than you think

NOAA's National Severe Storms Laboratory publishes hail fall speeds: hail under 1 inch (2.5 cm) falls at **9 to 25 mph (14–40 km/h)**; 1 to 1.75 inches (2.5–4.5 cm), **25 to 40 mph (40–64 km/h)**; 2 to 4 inches (5–10 cm) produced by a supercell, **44 to 72 mph (70–116 km/h)**; and anything over 4 inches (10 cm), **more than 100 mph (160 km/h)**. That's why the advice isn't "cover the car" — it's get under a roof.

Source: NWS — National Weather Service (U.S.) — Official severe thunderstorm definition. <https://www.weather.gov/bgm/severedefinitions>

Source: NWS — National Weather Service (U.S.) — Thunderstorm safety (official fact sheet).

<https://www.weather.gov/media/owlie/ThunderstormSafety-OnePager-11-29-18.pdf>

Source: NSSL — National Severe Storms Laboratory (NOAA) — Hail: severe weather 101. <https://www.nssl.noaa.gov/education/svrwx101/hail/>

During the crisis

The thunder rule

The NWS puts it this way: **"When thunder roars, go indoors."** There's no need to count seconds or wait to see the flash. When you hear the first thunder, go immediately into a substantial building with electrical wiring and plumbing, or into a closed, hard-topped vehicle.

And the rule for when it's safe to go back out

Wait **at least 30 minutes after the last thunder you hear**. This is the part almost everyone skips, and it's when many injuries happen: the storm already looks far away and people head back out.

- **Sheltering under a tree can be deadly**, according to the NWS. In fact it's the second most common cause of lightning death.
- Indoors, stay away from windows and avoid contact with plumbing and corded electronics during the storm.

- If you're in an open field with no shelter, move away from tall, isolated objects and seek low ground, without lying flat on it.
- Stay clear of windows and skylights while hail is falling: overhead glass is the first thing that gives way.
- If water is rising, move up, not down — never go to the basement or an underground parking garage.

Turn Around, Don't Drown

The NWS figures: **just 6 inches (15 cm) of moving water is enough to knock an adult off their feet; 12 inches (30 cm) will carry away most cars; and 2 feet (60 cm) will float trucks and SUVs.** The CDC is even more conservative about vehicles: it warns they can be swept away or stranded in as little as 6 inches of moving water. The practical takeaway is the same either way: you don't cross moving water, on foot or in a car, even if you know the street.

Source: NWS — National Weather Service (U.S.) — Lightning safety tips. <https://www.weather.gov/safety/lightning-tips>

Source: NWS — National Weather Service (U.S.) — Thunderstorm safety (official fact sheet).

<https://www.weather.gov/media/owlie/ThunderstormSafety-OnePager-11-29-18.pdf>

Source: NWS — National Weather Service (U.S.) — Turn Around, Don't Drown. <https://www.weather.gov/safety/flood-turn-around-dont-drown>

After the crisis

- Go check for damage wearing **long pants, long sleeves, and sturdy shoes**: that's the NWS's literal recommendation, because of broken glass and sharp sheet metal.
- **Report downed power lines** to the authorities and stay away from them. Treat every line as if it were live.
- Call the emergency number if anyone is hurt, and give first aid only if you're trained to.
- Photograph damage to the roof, car, and interior before you move anything.
- Check the roof and gutters: hail opens up punctures that don't show until the next rain.
- If the power outage drags on, follow the guidance in the blackout guide: refrigerator food and generator use have their own rules.

First aid for someone struck by lightning

The NWS debunks a myth that costs lives: **a person struck by lightning does NOT carry an electrical charge.** The body doesn't store electricity, and it's safe to touch them and give first aid immediately. Hesitating in that moment is what kills.

Source: NWS — National Weather Service (U.S.) — Thunderstorm safety (official fact sheet).

<https://www.weather.gov/media/owlie/ThunderstormSafety-OnePager-11-29-18.pdf>

Source: NWS — National Weather Service (U.S.) — Lightning myths. <https://www.weather.gov/safety/lightning-myths>

Family plan

A family plan is not a pretty document: it is a handful of agreements made **today**, while everyone is calm, so you do not have to decide with your heart racing and no signal on your phone. It takes one conversation over the table and fits on a sheet of paper stuck to the refrigerator.

1. Decide where to meet, in two different places

One near home, for getting out quickly, and another outside the neighborhood, in case you cannot get back to the area. Everyone should know both by heart, children included, and it should not depend on anyone having a phone handy.

2. Name an out-of-area contact

One person in another city that everyone texts when they can. That person gathers information and passes it along, so no one has to go out looking for anyone else. It works because local lines get overloaded first, and because a text gets through where a call does not.

3. Assign responsibilities to specific people

Who grabs the emergency bag, who shuts off the gas and power, who helps the older person or someone with reduced mobility, who gets the pets out. A task with no owner is a task no one does.

4. Keep the list on paper

Phone numbers for family, the out-of-area contact, the doctor, the school, insurance, and emergency services. On paper, in the emergency bag, and in your wallet. A phone with a dead battery has no address book.

5. Practice it once

A fifteen-minute drill reveals what the conversation does not: that the emergency bag was buried in the closet, that no one knows where the gas shutoff is, that the child does not remember the meeting point. Repeat it at least once a year and whenever something important at home changes.

Talk to children without scaring them

Explaining what might happen and what you will do reduces fear instead of adding to it: panic comes from not knowing, not from knowing. Tell them the plan like a routine —"if this happens, we go there and meet mom"—, let them help pack the emergency bag, and tell them clearly that **if they are at school, the school takes care of them and no one comes running to get them**. And do not forget the pets: they are part of the plan too, with their food, water, and carrier.

Source: FCC and FEMA (U.S.) — Tips for Communicating During an Emergency.

https://www.fcc.gov/sites/default/files/fcc-fema_tips_for_communicating_during_an_emergency.pdf

Source: Ready.gov · FEMA (U.S.) — People with Disabilities. <https://www.ready.gov/es/discapacidad>

Source: Ready.gov · FEMA (U.S.) — Financial Preparedness. <https://www.ready.gov/financial-preparedness>

Food and water

The water number you need to memorize

The CDC sets it without ambiguity: **at least 1 gallon (3.8 liters) per person per day, for 3 days**. Ready.gov adds the nuances that save whoever heeds them: "**children, nursing mothers, and sick people may need more**", and "**with very high temperatures, water needs can double**". If someone in your home is pregnant, sick, or you live in a hot climate, that number is a floor, not a target.

How to store it so it works when you need it

The CDC calls for **approved food-grade containers** with a tight-fitting lid, made of a sturdy, unbreakable material —**never glass**— and with a narrow mouth for pouring. An explicit warning: **never use a container that has held toxic chemicals** such as bleach or pesticides. And what almost everyone forgets: **stored water should be replaced every 6 months**. To disinfect the container before filling it, use a teaspoon of unscented household bleach per liter of water, wait 30 seconds, and pour it out.

What food to keep on hand

Ready.gov recommends **several days of non-perishable food** and gives a concrete list: ready-to-eat canned meats, fruits, and vegetables —**and a can opener**—, protein or fruit bars, dry cereal or granola, peanut butter, dried fruit, canned juices, and pasteurized long-life milk. The rule when putting it together is simple: food your family will actually eat, that needs no cooking, and that you can rotate before it expires.

No power, the food clock is running: 4 hours and 48 hours

The official figures come from FoodSafety.gov, part of the USDA: **a refrigerator keeps food safe for up to 4 hours** if you do not open it, and **a full freezer holds for about 48 hours (24 if half full)**. The discard threshold: any perishable food—meat, poultry, fish, eggs, leftovers—that has been **at 4 °C (40 °F) or above for 2 hours or more must be thrown out**. A full freezer holds twice as long as a half-full one, so filling the empty space with bottles of water before a forecast storm is money saved. And the line every agency closes with: **"when in doubt, throw it out"**. Do not taste it to find out.

- Keep the refrigerator and freezer **closed**: every time you open one, you waste hours of stored cold.
- **Throw out any food that has touched floodwater**, even if the container looks intact. This is an explicit Ready.gov instruction.
- Keep a manual can opener. It is the item people forget most, and without it your pantry is useless.
- If you buy bottled water, keep it **sealed in its original container**, in a cool, dark place.

Source: CDC — Centers for Disease Control and Prevention (U.S.) — How to Create and Store an Emergency Water Supply.

<https://www.cdc.gov/water-emergency/about/how-to-create-and-store-an-emergency-water-supply.html>

Source: Ready.gov · FEMA (U.S.) — Water. <https://www.ready.gov/water>

Source: FoodSafety.gov · USDA and HHS (U.S.) — Food Safety During a Power Outage.

<https://www.foodsafety.gov/food-safety-charts/food-safety-during-power-outage>

Source: Ready.gov · FEMA (U.S.) — Food. <https://www.ready.gov/food>

Power and communications

The generator rule: 6 meters, no negotiating

The CPSC does not soften it: **"using a generator indoors CAN KILL YOU IN MINUTES"**, because **"generator exhaust contains carbon monoxide, a poison you cannot see or smell"**. The official distance, repeated by the CDC and CPSC: **only outdoors, more than 20 feet (6.1 meters) from any window, door, or vent**. The same goes for pressure washers, charcoal grills, and camp stoves. A battery-powered carbon monoxide detector is cheap and the only thing that warns you in time.

When the cell network is overloaded: text, do not call

The joint FCC and FEMA guide explains why: **"text messages may get through when your call does not"**, even if delivery is delayed when the network is congested. And it asks for something almost no one does: **"limit non-emergency calls"**, because every call takes up space that emergency communications need. Also save a contact under the name **"ICE"** (In Case of Emergency), the convention rescue personnel look for on someone else's phone.

How to stretch your battery

The same guide recommends **lowering screen brightness and turning off apps** to conserve charge. In an emergency your phone stops being entertainment and becomes your only line to the outside world: treat it like your water supply.

The battery-powered radio is still irreplaceable

The FCC and FEMA recommend **a battery-powered radio or a portable television** to follow emergency bulletins during power outages. It is the only channel that depends on neither your electricity nor the cell network.

The alerts you already have and did not know about

In the United States, **Wireless Emergency Alerts** are free messages that go straight to your phone for severe weather, AMBER alerts, and threats to safety in your area. Two things worth knowing: **you do not need to sign up—phones have supported them since 2012— and they are not affected by network congestion**, so they get through when calls no longer do. Find out what the equivalent system is in your country, and do not mute it.

- Have at least one light source that does not depend on the grid: a battery-powered or hand-crank flashlight, or a rechargeable lamp.
- Charge phones and backup batteries **before** the forecast event arrives, not after the power is already out.
- Keep a list of important phone numbers **on paper**: if your phone dies, your contacts die with it.
- Agree with your family that after an emergency **everyone texts the same contact** instead of calling each other.

Source: CPSC — Consumer Product Safety Commission (U.S.) — What to Know About Portable Generators and Carbon Monoxide.

https://www.cpsc.gov/s3fs-public/468-WhattoKnowGenerators_2022.pdf

Source: FCC and FEMA (U.S.) — Tips for Communicating During an Emergency.

https://www.fcc.gov/sites/default/files/fcc-fema_tips_for_communicating_during_an_emergency.pdf

Source: FEMA (U.S.) — Wireless Emergency Alerts (fact sheet). <https://www.ready.gov/sites/default/files/2020-08/wea-fact-sheet.pdf>

Health and special needs

This is the section that decides who has a hard time and who has a dangerously hard time. An emergency does not suspend diabetes, high blood pressure, pregnancy, or dependence on an oxygen concentrator: **what gets cut off is access to the pharmacy, the clinic, and electricity**. Everything that follows needs to be prepared beforehand, because once the emergency hits, there is no more room.

1. Keep a reserve of your medications, and know which ones hold up

Ready.gov calls for **a several-day supply of prescription medications**. For those that need refrigeration, the CDC is blunt: **once the power has been out for a day or more, discard any medication that requires refrigeration**, unless its label says otherwise.

2. The insulin exception, worth knowing word for word

The FDA documents that insulin in the manufacturer's original vials or cartridges —opened or unopened— **can stay unrefrigerated between 15 and 30 °C (59 and 86 °F) for up to 28 days and still work**. It loses effectiveness at extreme temperatures, and the longer the exposure, the less effective it becomes. In an emergency **"you may still need to use insulin that was stored above 30 °C"** —that is better than not using it at all— but as soon as proper storage is available again, those vials **should be discarded and replaced**.

3. If someone depends on electric medical equipment, there is one step almost no one takes

Ready.gov says it explicitly: you can **ask your power company to put you on a priority list for service restoration**. That step is free, can be done on any ordinary day, and changes the order in which you get reconnected. Add a backup battery for an electric wheelchair and for any assistive device, and talk with your doctor about how to keep the equipment running during a power outage.

4. Keep a copy of medical information, not just the pills

A list of medications with dosages, allergies, diagnoses, doctors' contact information, and —for infants— the vaccination record. A prescription bottle cannot always be refilled at a pharmacy in another city; a written list can solve that.

Pregnancy and newborns

The CDC calls for **prenatal vitamins and other medications** in the kit, plus supplies in case delivery happens without being able to reach a hospital: clean towels, clean sharp scissors, a bulb syringe, gloves, two clean white shoelaces to tie the cord, clean sheets, sanitary pads, soap or alcohol, and garbage bags. For infants: diapers, wipes, ointment, bottles, and formula. One detail that matters: **ready-to-feed formula is the safest option in an emergency**, because it does not need to be mixed with water and comes in sterile, single-use containers.

Disability, reduced mobility, and older adults

Ready.gov stresses **planning accessible transportation in advance** for evacuating or getting around, and including a service or support animal with its food, water, and supplies. That plan should be worked out with specific, named neighbors, not left vague.

The blow that comes later: mental health

The CDC names the normal reactions after a disaster —**fear, anger, sadness, worry, numbness, frustration, trouble sleeping, or nightmares**— and recommends taking care of your body, staying in touch with other people, and taking breaks from the news. In the United States and its territories, the **Disaster Distress Helpline is available 24 hours a day: 1-800-985-5990**, with service in Spanish. Asking for help here is not weakness: it is part of recovery, just like repairing the roof.

Source: Ready.gov · FEMA (U.S.) — People with Disabilities. <https://www.ready.gov/es/discapacidad>

Source: CDC — Centers for Disease Control and Prevention (U.S.) — What to Do to Protect Yourself During a Power Outage. <https://www.cdc.gov/natural-disasters/response/what-to-do-protect-yourself-during-a-power-outage.html>

Source: FDA — U.S. Food and Drug Administration — Information Regarding Insulin Storage and Switching Between Products in an Emergency. <https://www.fda.gov/drugs/emergency-preparedness-drugs/information-regarding-insulin-storage-and-switching-between-products-emergency>

Source: CDC — Centers for Disease Control and Prevention (U.S.) — Emergency Kit Checklist: Pregnant Women, Infants, and Children. <https://www.cdc.gov/children-and-school-preparedness/resources/emergency-kit-checklist-pregnant-women-infants-and-children.html>

Source: CDC — Centers for Disease Control and Prevention (U.S.) — Coping With Disaster or Traumatic Event. https://www.cdc.gov/natural-disasters/media/pdfs/2024/08/coping_with_disaster_2_english.pdf

Home and belongings**Photograph before you throw anything away. It is the rule that recovers the most money**

The official insurance instruction is literal: **"photograph and video the interior and exterior of your property, taken before you throw anything away"**. After that, you need to **report the loss to your insurer right away**, and **keep receipts, statements, and contractor invoices**, which is what ensures your claim payment arrives on time. Cleaning up before documenting is, in practice, giving up your claim.

1. Before you go back in: look, smell, and listen from outside

The CDC lays it out this way: **if you smell gas or suspect a leak, shut off the main valve, open all the windows, and get out immediately**. If there is standing water inside and you can cut the power from a dry spot, do it. And one simple warning that prevents explosions and fires: **use battery-powered flashlights, not candles, gas lanterns, or torches**.

2. Ventilate before you settle in

The CDC recommends going in briefly to open doors and windows, and **letting the house air out for at least 30 minutes** before staying inside.

3. Shutting off utilities: when to do it, and the mistake you cannot make

Gas has a rule with no exceptions: if you shut it off for any reason, **only a qualified professional can turn it back on. Never turn it back on yourself**. **Electricity** is shut off by switching off the individual circuits first and the main breaker last —the order matters, because an electrical spark can ignite gas if there is a leak—. **Water** should be shut off if pipes may have cracked, because that contaminates the house supply, and should not be turned back on until authorities confirm it is safe to drink.

4. Go back only when authorities say it is safe

It sounds obvious, and it is the instruction people break most often: **go back home only when authorities say it is safe**. Structural damage is not always visible from the street.

- Make a photo inventory of what is in each room today: it takes twenty minutes and is worth its weight in gold for a claim.

- Keep that inventory and your policies **outside the house** —in the cloud or with a family member— because a file that gets soaked along with the house is useless.
- If you have to leave, take your documents with you, not your furniture.
- Do not sign anything with a contractor while you are in shock: check the money section for the warning signs of fraud.

Source: FEMA · NFIP (U.S.) — Starting Your Recovery (National Flood Insurance Program fact sheet).

https://agents.floodsmart.gov/sites/default/files/media/document/2025-07/fema-nfip-starting-your-recovery_fact-sheet-10-2021.pdf

Source: CDC — Centers for Disease Control and Prevention (U.S.) — Safety Guide for Reentering a Flooded Home.

<https://cdc.gov/floods/safety/reentering-your-flooded-home-safety.html>

Source: Hawaii Department of Human Services (U.S.) — Utility Shutoff and Safety (official emergency preparedness guide).

<https://humanservices.hawaii.gov/communications/are-you-ready/utility/>

Money and income

Cash in small bills: the detail people discover too late

Ready.gov recommends it for a concrete reason: **"it is important to keep small bills on hand because ATMs and credit cards may not work during a disaster"**, right when you need to buy supplies, fuel, or food. No power means no card reader, and without a card reader a large bill is useless if no one has change.

The documents you need to protect today

The official recommendation is to keep insurance policies, deeds, property records, and other important papers **in a safe place outside the house**. FEMA publishes the **Emergency Financial First Aid Kit** for this, organized into four sections: household identification, financial and legal documentation, medical information, and contacts. Its rule for paper: **a fireproof and waterproof box or safe**, a bank safe-deposit box, or in the hands of someone you trust. For digital files: **password-protected files** on an external drive or in secure storage outside the home. And if you pay everything online, print your account records periodically.

An emergency fund, even a small one

The CFPB avoids magic formulas: **"the amount you need depends on your situation"**, but **"even a small amount can provide some financial security"**. Its underlying argument is the one that matters: without that cushion, a single unexpected expense **can grow far larger than the original bill through interest and fees**, because it forces you to rely on credit.

After the disaster come the people who rob you with paperwork

The CFPB describes the exact pattern: **"be wary of contractors who go door to door and of people who offer unsolicited 'opportunities' or use high-pressure tactics to force you to decide on the spot"**. Its concrete rules: **never pay by wire transfer, gift card, cryptocurrency, or cash**, because that makes it harder to get your money back; **do not make the final payment until the work is finished to your satisfaction**; and always ask **"can you show me your ID and your contractor's license?"** and **"can you give me three recent references from this area?"**. One fact that cuts off many scams at the root: **no FEMA worker or federal or state official ever asks for or accepts money**. Scammers pose as government employees, insurance adjusters, police officers, or bank employees.

Source: Ready.gov · FEMA (U.S.) — Financial Preparedness. <https://www.ready.gov/financial-preparedness>

Source: FEMA · Operation Hope (U.S.) — Emergency Financial First Aid Kit (EFFAK).

https://www.fema.gov/sites/default/files/documents/fema_effak-toolkit.pdf

Source: CFPB — Consumer Financial Protection Bureau (U.S.) — How to Avoid Scams and Fraud After a Disaster.

<https://www.consumerfinance.gov/ask-cfpb/how-do-i-avoid-scams-and-fraud-after-a-disaster-en-1529/>

What you can sell

Severe storms rarely destroy an entire house; what they do is **find every weak point**: the leak, the clogged drain, the badly trimmed tree, the circuit with no protection. That's where the demand is.

- **Waterproofing and leak repair**, the most requested and most seasonal service.
- **Clearing and maintaining drains, gutters, and downspouts** ahead of the season.
- **Preventive trimming** of branches over power lines, roofs, and parking areas.
- **Surge protectors and voltage regulators** to protect appliances from power surges.
- **Bailing out water** in yards, basements, and storefronts after every storm.
- **Drying and cleaning interiors** with mud or seepage.

Raising prices because people are desperate can be illegal

When a state of emergency is declared, many countries limit by law how much the price of basic goods can rise. In **California**, the limit is **10% above the pre-emergency price** for 30 days —and **180 days for repair and cleanup services**—, with penalties of up to one year in jail and a \$10,000 fine. **Texas** does not set a fixed percentage but penalizes "exorbitant" pricing with fines of up to \$20,000 per violation. In **Mexico**, the Ley Federal de Protección al Consumidor (Federal Consumer Protection Law) requires sellers to honor the price offered and any maximum prices set by authorities, and PROFECO can impose fines. In **Brazil**, the Código de Defesa do Consumidor (Consumer Defense Code) prohibits "raising a price without just cause." Charging a fair price for hard work is legitimate; taking advantage of desperation is not.

Source: ILO — International Labour Organization — Labour Overview of Latin America and the Caribbean 2025 (executive summary). https://www.ilo.org/sites/default/files/2025-12/Executive%20Summary_Labour%20Overview%202025_LAC_ILO.pdf

Source: PROFECO — Federal Consumer Protection Agency (Mexico) — Ley Federal de Protección al Consumidor (Federal Consumer Protection Law), articles 7, 8, and 128. https://www.profeco.gob.mx/juridico/pdf/Ley_fed_protec_consum.pdf

Source: California Attorney General (USA) — Price gouging during declared emergencies. <https://oag.ca.gov/consumers/pricegougingduringdisasters>

Source: Presidency of the Republic (Brazil) — Código de Defesa do Consumidor (Consumer Defense Code), art. 39, X (raising prices without just cause). https://www.planalto.gov.br/ccivil_03/leis/l8078compilado.htm

Businesses and self-employment

It helps to start with one figure to size up what we're talking about: according to the ILO, informality **affects nearly half of the employed population of Latin America and the Caribbean, around 47%**, with huge differences between countries — under 30% in Uruguay and Chile, over 70% in Bolivia and Peru. For millions of families in the region, "looking for a job" and "starting something on your own" are the same sentence. What follows is not a promise of income: it is a map of what people actually do when a crisis hits, with the requirements and the risks laid out plainly.

Seasonal preventive maintenance, not emergency repair

The best business here isn't fixing the leak with the house already flooded, it's **selling the checkup beforehand**: clearing gutters, checking the waterproofing, and trimming branches at the start of the rainy season. You can sell it as an annual package at a lower price than the emergency repair, which benefits the client and gives you predictable income. Start with small buildings and businesses, which keep accounts and understand the savings.

Bailing and drying

With a submersible pump, hoses, fans, and a vehicle, you can handle the same-day emergency. Before entering a flooded basement or storefront, OSHA's rule applies without exception: **assume any line or appliance in contact with water is energized** until you've confirmed the power is off.

Three jobs you should NOT improvise

Mold: the EPA sets the threshold at **10 square feet (about 3 ft × 3 ft)**; above that, or if the water came from sewage, it recommends hiring an experienced professional. Even below that threshold, you need an **N-95** respirator, long gloves, and non-vented goggles. **Chainsaw:** NIOSH is unequivocal that only a trained person should use one, and OSHA warns about kickback from the tip. **Electrical and gas lines:** OSHA instructs you to assume every downed line is energized, and NIOSH advises staying **10 feet (3 meters)** away from them. That work belongs to certified personnel, not on-the-job learning.

United States — SBA disaster loans

For areas with a declared disaster. The **Economic Injury Disaster Loan (EIDL)** provides working capital for affected small businesses and nonprofit organizations; the **physical damage loan** covers losses not covered by insurance. Combined cap of **\$2 million**, interest **not exceeding 4%** if you cannot obtain credit elsewhere, terms of up to 30 years, and the first payment deferred 12 months. There is also a line for homeowners (up to \$500,000) and for renters for personal property (up to \$100,000).

Mexico — what actually exists today

FONDEN stopped taking on new commitments on January 1, 2021. What operates today in emergencies is **PAEAN**, run by Civil Protection, and it is worth knowing exactly what it is and is not: it delivers **relief supplies** — food kits, water, blankets, roofing sheets, cleaning materials — when a state's own capacity is overwhelmed. **It is not a reconstruction fund or a loan for your business.** For capital, look at state, municipal, or development-bank programs, always verifying on the official website: fraud schemes that use its name circulate around these programs.

Brazil — Pronampe for micro and small businesses

A credit line for **microenterprises** (annual revenue up to 360,000 reais) and **small businesses** (from 360,000 to 4.8 million). The amount can reach up to **60% of the previous year's gross revenue** for businesses with more than one year in operation, and up to 50% for new ones. The maximum rate is the SELIC rate plus up to 6% per year.

Source: EPA — Environmental Protection Agency (USA) — Mold Cleanup in Your Home (10-square-foot threshold).

<https://www.epa.gov/mold/mold-cleanup-your-home>

Source: OSHA — Occupational Safety and Health Administration (USA) — Keeping Workers Safe during Disaster Cleanup and Recovery (FS-3698).

https://www.osha.gov/sites/default/files/publications/OSHA_FS-3698.pdf

Source: NIOSH — National Institute for Occupational Safety and Health (USA) — Hurricane and Flood Key Messages (Publication 2025-106).

<https://www.cdc.gov/niosh/docs/2025-106/pdfs/2025-106.pdf>

Source: SBA — Small Business Administration (USA) — Economic Injury Disaster Loans.

<https://www.sba.gov/funding-programs/disaster-assistance/economic-injury-disaster-loans>

Source: SSPC — National Civil Protection Coordination (Mexico) — Guidelines for the Program for Emergency Response to Natural Hazards (PAEAN).

<https://sidof.segob.gob.mx/notas/docFuente/5626632>

Source: Federal Government (Brazil) — Novo Pronampe — credit for micro and small businesses.

<https://www.gov.br/memp/pt-br/programa-acredita/novo-desenrola-brasil/novo-pronampe>

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Three lightning myths the NWS debunks

"Lightning never strikes the same place twice." False: it strikes tall, isolated objects repeatedly — the Empire State Building gets hit about 23 times a year. **"If it's not raining, you're safe."** False: lightning can strike more than 3 miles (5 km) from the center of a storm. **"You're protected under a tree."** False, and it's also the second most common cause of lightning death.

Two derechos: severe wind with no name, and damage on the scale of a major hurricane. A derecho is a line of storms that produces destructive winds along a swath hundreds of miles long.

August 10, 2020, Midwest — \$11 billion

Winds over 100 mph (160 km/h) traveled roughly **770 miles (1,240 km) in 14 hours** across Iowa, Illinois, Minnesota, Indiana, and Ohio. It caused 4 deaths and, according to NOAA, **\$11 billion** in losses — the costliest event of its kind in the U.S. in four decades. **The lesson:** a single severe wind event, with no name and no track cone on TV, produced losses on the scale of a major hurricane. Severe thunderstorm warnings deserve to be taken just as seriously as hurricane warnings.

June 29, 2012, Ohio Valley — heat killed more than the wind did

Gusts measured up to 91 mph (146 km/h) in Fort Wayne, with isolated gusts above 100 mph (160 km/h), along a path of roughly **700 miles (1,100 km) through ten states** plus Washington, D.C. The official NWS assessment counts **13 direct deaths and 34 indirect deaths**, 47 total, and more than **4 million customers without power**, some for over a week. **The lesson, and it's the most important one in this guide:** most of the deaths were caused by **heat after days without power**, not the wind. A plan for a prolonged power outage matters just as much as sheltering during the storm itself.

Related guides on this site:

- Flooding — when rain outpaces drainage.
- Power outage — the days without electricity that follow.
- Drought and extreme heat — heat with no air conditioning.
- Hurricane — the version with a name and advance warning.

Source: NWS — National Weather Service (U.S.) — Lightning myths. <https://www.weather.gov/safety/lightning-myths>

Source: NOAA Climate.gov — 2020 billion-dollar disasters. <https://www.climate.gov/disasters2020>

Source: NWS — National Weather Service (U.S.) — Official assessment of the June 29, 2012 derecho. <https://www.weather.gov/media/publications/assessments/derecho12.pdf>

Frequently asked questions

When is a thunderstorm considered severe?

The U.S. National Weather Service defines it by two thresholds: hail at least one inch (2.5 cm) in diameter, or wind gusts of at least 58 mph (93 km/h). Wind of 40 mph or half-inch hail is classified as near severe.

How long should you wait after a thunderstorm before going back outside?

The National Weather Service recommends waiting at least 30 minutes after hearing the last thunder. Its rule for going indoors is just as simple: when thunder roars, go indoors — lightning is close enough to strike you, so take shelter immediately.

What should a family emergency plan include?

Two meeting points—one near home and one outside the neighborhood—, an out-of-area contact everyone texts to gather information, assigned tasks with names attached (who grabs the emergency bag, who shuts off gas and power, who helps people who need support, who gets the pets out), and a list of important phone numbers on paper. It is worth practicing at least once a year.

How much water should you store per person for an emergency?

The CDC recommends at least 1 gallon (3.8 liters) per person per day for 3 days. Ready.gov warns that children, nursing mothers, and sick people may need more, and that with very high temperatures water needs can double. Stored water should be replaced every 6 months.

How long does food last in the refrigerator during a power outage?

According to FoodSafety.gov, part of the USDA, a refrigerator keeps food safe for up to 4 hours if it stays closed, and a full freezer for about 48 hours (24 hours if half full). Any perishable food that has been at 4 °C or above for 2 hours or more should be discarded. The official rule is: when in doubt, throw it out.

How far from the house should a portable generator be placed?

Only outdoors, more than 20 feet (6.1 meters) from any window, door, or vent, according to the CDC and CPSC. The CPSC warns that using a generator indoors can kill in minutes, because its exhaust contains carbon monoxide, a poison you cannot see or smell. The same rule applies to pressure washers, charcoal grills, and camp stoves.

Is it better to call or text during an emergency?

Text. The joint FCC and FEMA guide explains that text messages may get through when a call does not, even if there is a delay when the network is congested, and it asks people to limit non-emergency calls so they do not tie up the network that emergency services need.

Does insulin go bad if the power goes out?

Not right away. The FDA documents that insulin in the manufacturer's original vials or cartridges, opened or unopened, can stay unrefrigerated between 15 and 30 °C for up to 28 days and still work, though it loses effectiveness at extreme temperatures. In an emergency it is better to use it than to go without, but as soon as proper storage is available again, those vials should be discarded and replaced.

What should you do if someone at home depends on medical equipment that needs electricity?

Ready.gov recommends asking the power company to put your address on a priority list for service restoration, keeping a backup battery for electric wheelchairs and assistive devices, and talking with your doctor about how to keep the equipment running during a power outage. This is something to arrange beforehand, not during the emergency.

Can you start cleaning your house after a disaster?

Before you throw anything away or clean anything, you need to photograph and video the interior and exterior of the property and report the loss to your insurer right away, according to the official guide from FEMA's National Flood Insurance Program. You should also keep receipts, statements, and contractor invoices. Cleaning before documenting usually means losing the claim.

Can you turn the gas back on yourself?

No. The official emergency preparedness guide is explicit: if you shut off the gas for any reason, only a qualified professional can turn it back on. Also, when shutting off electricity, switch off the individual circuits first and the main breaker last, because an electrical spark can ignite gas if there is a leak.

Why should you keep cash on hand for an emergency?

Because ATMs and card readers depend on electricity and network access, and they tend to stop working right when you need to buy water, fuel, or food. Ready.gov recommends keeping a small amount of cash at home, in a safe place and in small bills, since change may not be available during an emergency.

How can you tell if a contractor offering to repair your house is a scam?

The CFPB flags as red flags going door to door, offering unsolicited opportunities, or pressuring you to decide on the spot. It recommends never paying by wire transfer, gift card, cryptocurrency, or cash, not making the final payment until the work is finished to your satisfaction, and asking for ID, a contractor's license, and three recent references from the area. Also, no FEMA worker or federal or state official ever asks for or accepts money.

Is it true that lightning never strikes the same place twice?

No, that's false. The National Weather Service notes that lightning repeatedly strikes tall, isolated objects: the Empire State Building gets hit about 23 times a year. It's also false that no rain means no danger — lightning can strike more than 3 miles (5 km) from the center of a storm.