

# Hurricane Preparedness Guide 2020

FOR BUSINESSES

**GENERAC®**



**Storm-ready starts today.**

Be ready to weather any storm with Generac.

# Hurricanes are a fact of life

As global leaders in energy technology solutions, Generac aims to provide preparation information for the upcoming hurricane season and power outages associated with the weather events. The Atlantic basin has the largest year-to-year variability of any of the global tropical cyclone basins. It is important to make forecast predictions to bring attention to the hurricane problem and consequences associated with the storms.

Hurricanes can cause mass devastation and have accounted for some of the most costly disasters in the world.

- **Hurricane Katrina, 2005:** According to the National Oceanic and Atmospheric Administration (NOAA), Katrina was “the single most catastrophic natural disaster in U.S. history”. The agency estimates it caused \$160 billion worth of damages. Federal data shows it took Mississippi utilities around 15 days to restore power to most of its customers.
- **Hurricane Harvey, 2017:** Harvey cut power from more than 1.67 million customers, as reported by the North American Electric Reliability Corporation. Power restoration was not completed in the hardest hit areas near Houston until September 8, which left many without power for 14 days. NOAA estimates the Category 4 storm cost about \$125 billion.
- **Hurricane Maria, 2017:** Hurricane Maria alone topped the largest outages in US history with 1,248 million customers without power. It took nearly a year to restore power to all residents in Puerto Rico. The disaster caused \$90 billion in damages.
- **Hurricane Sandy, 2012:** The Category 3 storm caused \$70 billion in damage. Hurricane Sandy left about 8.5 million customers without power, some for days and even weeks.
- **Hurricane Irma, 2017:** According to NOAA, Hurricane Irma made seven landfalls, four of which occurred as a Category 5 hurricane across the northern Caribbean Islands and as a Category 4 hurricane in the United States. The hurricane affected at least nine states, turning streets into rivers, ripping down power lines, and uprooting trees causing \$50 billion worth of damages. Around 6.7 million customer lost power, 100,000 of those were still without power nine days later.

Generac’s mission is to provide peace of mind when power is out or unreliable. With the growth of intense hurricanes in the Atlantic, people may feel a sense of fear and uncertainty during unprecedented times. Generac works to give every person and family the information needed to help prepare themselves, their homes and their families for when life is disrupted by power outages.

# The year ahead

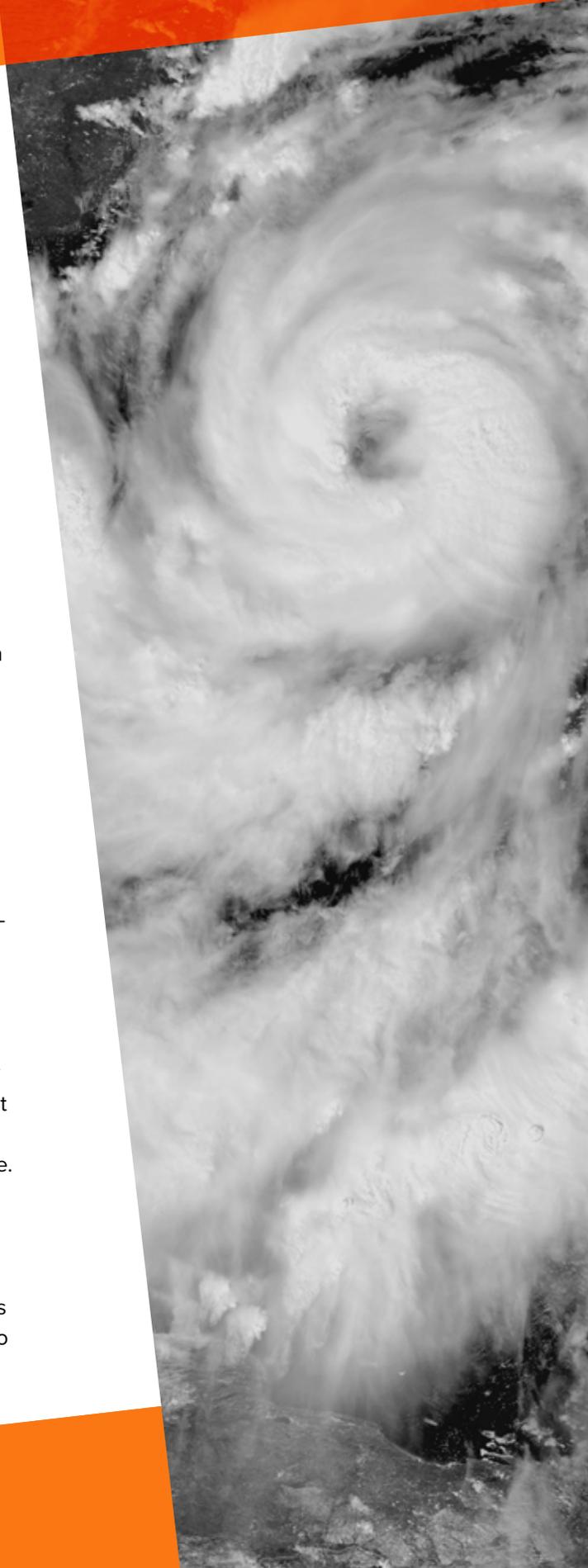
NOAA classifies a tropical cyclone as a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has a closed low-level circulation. Tropical cyclones are classified as follows:

- **Tropical Depression:** A tropical cyclone with maximum sustained winds of 38 mph (33 knots) or less.
- **Tropical Storm:** A tropical cyclone with maximum sustained winds of 39 to 73 mph (34 to 63 knots).
- **Hurricane:** A tropical cyclone with maximum sustained winds of 74 mph (64 knots) or higher.
- **Major Hurricane:** A tropical cyclone with maximum sustained winds of 111 mph (96 knots) or higher, corresponding to a Category 3, 4 or 5 on the Saffir-Simpson Hurricane Wind Scale.

## High-activity era

On average, the Atlantic hurricane season produces 12 named storms, of which six become hurricanes, including three major hurricanes. NOAA has determined the Atlantic remains in a period of increased hurricane activity. Every 25-40 years, a high-activity era produces more, stronger and longer-lived storms, dating back to the 1800s. It is part of a natural, cyclical pattern; a period of decreased activity usually follows, often lasting a similar amount of time. The current high-activity era began in 1995, according to NOAA. During this time, the number of major hurricanes produced in the Atlantic nearly doubled since the last low-activity period (1971 -1994). There has been an average of two hurricane landfalls in the Atlantic per season during this time.

In April, Colorado State University's Department of Atmospheric Science (CSU) released its prediction of an above average season for the Atlantic Basin in 2020. They are predicting 16 named storms, including eight hurricanes. Four of the hurricanes will become major storms of Category 3 to 5 during the June 1 to November 30 hurricane season.



# 2020 hurricane predictions

## Early season 2020 forecast

	Named Storms	Hurricanes	Major Hurricanes
<b>Normal</b>	12.1	6.4	2.7
<b>2019</b>	18	6	3
<b>2020 Predictions</b>	16	8	4

Source: Colorado State University, Department of Atmospheric Science

The chance that at least one major hurricane will make landfall in 2020 along the U.S. coastline is 69%, compared with an average over the last century of 52%, according to researchers. There is a 95% chance that at least one hurricane this year will make landfall in the U.S., with the average being 84%.

CSU said this forecast is based on a new extended-range early April statistical prediction scheme that was developed using 38 years of past data. Researchers said the current warm neutral ENSO event appears likely to transition to either cool neutral ENSO or weak La Niña during the summer/fall. The tropical Atlantic is warmer than normal, while the subtropical Atlantic is quite warm, and the far North Atlantic is irregularly cool. CSU said the irregularly cold sea surface temperatures in the far North Atlantic lead them to believe that the Atlantic Multi-decadal Oscillation is in its negative phase. While a cold far North Atlantic is typically associated with a cold tropical Atlantic that has not occurred this winter.



## The perfect storm

When El Niño is present, it reduces Atlantic hurricane activity due to increased vertical wind shear, changes in wind speed and direction with height that prevent hurricanes from building. Average conditions create a more favorable environment for tropical storm development. Sea surface temperatures are needed to fuel hurricanes, meaning the warmer the ocean, the more fuel available for the storms.

The National Hurricane Center and NOAA have not shared their 2020 Hurricane Season predictions at the time of publication of this guide. These predictions are still early and conditions can change by the time hurricane season begins on June 1. CSU and NOAA will update their predictions at the start of the season, and will likely update again mid-Summer.

# Hurricane trends

In 2019, Category 5 Hurricane Dorian was the most intense tropical cyclone on record to strike the Bahamas. After it devastated the island, Dorian proceeded up the coast of the U.S. Hurricane Dorian was the fifth Category 5 hurricane in the past four Atlantic hurricane season, joining Matthew, Irma, Maria and Michael. Category 5 winds can cause “catastrophic” destruction, according to the National Hurricane Center. The agency said a high percentage of homes will be destroyed, with total roof failure and wall collapse. These winds are also known to cause power outages can last for weeks to months.

Warmer oceans can lead to hurricanes with great potential intensities. With CSU’s 2020 hurricane prediction, this trend may continue. NOAA’s Geophysical Fluid Dynamics Laboratory said although they cannot say whether more or fewer hurricanes will occur in the future with global warming, the hurricanes that do occur near the end of the 21st century are expected to be stronger and have significantly more intense rainfall than under present-day climate conditions.



# Aftereffects of a hurricane

When a hurricane strikes a community, it leaves a path of destruction. As a result of high winds and flooding from storm surge, homes and businesses are destroyed or damaged. Public infrastructure may also be compromised from the impacts of a hurricane. The types of damage can vary depending on the strength of the storm. The following chart lays out what to expect.

## The Saffir-Simpson hurricane scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	<b>Very dangerous winds will produce some damage:</b> Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	<b>Extremely dangerous winds will cause extensive damage:</b> Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 MAJOR	111-129 mph 96-112 kt 178-208 km/h	<b>Devastating damage will occur:</b> Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 MAJOR	130-156 mph 113-136 kt 209-251 km/h	<b>Catastrophic damage will occur:</b> Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 MAJOR	157 mph or higher 137 kt or higher 252 km/h or higher	<b>Catastrophic damage will occur:</b> A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Data source: <https://www.nhc.noaa.gov/aboutsshws.php>

# How you can be prepared

With an anticipation of an above-average probability for major hurricanes making landfall, coastal residents are reminded that it only takes one hurricane-making landfall to make it an active season for them, and they need to prepare the same for every season, regardless of how much activity is predicted.

It is important to remember hurricanes can happen along any U.S. coast or in any territory in the Atlantic or Pacific oceans. Hurricanes can affect areas more than 100 miles inland and are most active in September. The Department of Homeland Security has guidelines that people should follow before, during and after an event.

## BE INFORMED

- Storm surge is historically the leading cause of hurricane-related deaths in the U.S.
- Water weighs about 1,700 pounds per cubic yard, so waves from surge can easily demolish building and cause mass destruction.
- Just one inch of water can cause \$25,000 of damage to your home. Homeowners and renter's insurance do not typically cover flood damage.
- Only use generators outdoors and away from windows.

## PREPARE NOW

- Based on your location and community plans, make your own plans for evacuation or sheltering in place.
- Become familiar with your evacuation zone, the evacuation route and shelter locations.
- Gather needed supplies for at least three days. Keep in mind each person's specific needs, including medication. Do not forget the needs of pets.
- Protect your property. Declutter drains and gutters. Install check valves in plumbing to prevent backups. Consider hurricane shutters. Review insurance policies.
- Take the "Power Outage Preparedness" quiz at [Generac.com](http://Generac.com) and note the score.
- Review [Generac.com](http://Generac.com) for the best generator option.
- Get a backup generator.
- Conduct maintenance on backup generator.
- In the event of an evacuation, or to run a portable generator, get gas.

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# How you can be prepared

## BEFORE LANDFALL

- Turn on your TV or radio in order to get the latest weather updates and emergency instructions.
- Restock your emergency preparedness kit. Include food and water sufficient for at least three days, medications, a flashlight, batteries, cash and first aid supplies.
- Plan how to communicate with family members in the case of power outages.
- Review evacuation zone, evacuation route and shelter locations.
- Keep your car in good working condition. Stock your vehicle with emergency supplies and a change of clothes.
- Bookmark your city or county website for quick access to storm updates and emergency instructions.
- Bring loose, lightweight objects inside that could become projectiles in high winds.
- Cover all your home's windows.
- Charge your cell phone so you will have a full battery.
- Turn your refrigerator or freezer to the coldest setting and open only when necessary. If you lose power, food will last longer. Keep a thermometer in the refrigerator to be able to check the food temperature when the power is restored.

## DURING A HURRICANE

- If power is lost, unplug all outlets to reduce the chance of damage due to a power surge.
- If flooding nears the home, turn off electricity.
- If told to evacuate, do so immediately. Do not drive around barricades.
- If sheltering during high winds, go to a FEMA safe room, ICC 500 storm shelter, or a small, interior, windowless room or hallway on the lowest floor that is not subject to flooding.
- If trapped in a building by flooding, go to the highest level of the building. Do not climb into the attic. You may become trapped by rising floodwater.
- Listen for current emergency information and instructions.
- Use a generator outdoors only and away from windows.
- Do not walk, swim or drive through floodwaters. Just six inches of fast-moving water can knock you down, and one foot of moving water can sweep your vehicle away.
- Stay off bridges over fast-moving water.

## AFTER A HURRICANE

- Listen to authorities for information and special instructions.
- Be careful during cleanup. Wear protective clothing and work with someone else.
- Do not touch electrical equipment if it is wet or if you are standing in water. If it is safe to do so, turn off electricity at the main breaker or fuse box to prevent electric shock.
- Avoid wading in floodwater, which can contain dangerous debris. Underground or downed power lines can also electrically charge the water.
- Save phone calls for emergencies. Phone systems are often down or busy after a disaster. Use text messages or social media to communicate with family and friends. Document any property damage with photographs. Contact your insurance company for assistance.

# Preparing for an extended power outage

Businesses can be uniquely affected by catastrophic events and that is why it is essential that leaders of businesses and organizations proactively prepare for disaster. We rarely think about power availability until it is unavailable. Most businesses require electricity to operate and without it, operation can be hurt or can come to a complete halt all together. According to a study by NOAA, weather and climate-related disasters cost the U.S. economy \$80 billion in 2018 and have cost the nation about \$100 billion per year over the last five years.

About 70-percent of power outages in the U.S. are weather related and the effects of a power outage can be detrimental. Power outages can cause:

- Decrease Productivity
- Disturbance of Operations
- Lost Customers
- Damaged Equipment
- Increased Liability
- Stored Computer Data Lost



# Preparing for an extended power outage



A report from Frost & Sullivan Research found that in the past year, 50-percent of companies experienced an outage lasting longer than one hour. According to a survey done by Information Technology Intelligence Consulting, 98-percent of organizations say one hour of downtime costs them over \$100,000.

The time to purchase or arrange for a backup generator is before a major storm or disaster strikes and, it pays to make sure your generator is properly maintained before storms hit. During a storm or right after, professional assistance may be unavailable, power lines can be knocked down and access roads may be blocked. Procedures should be in place to ensure regular maintenance and that all safe operating practices are followed. Preparation well in advance and immediately before a hurricane can help limit damage, keep workers safe and get you back to business more quickly.

If you do find yourself caught off-guard, or under-budgeted, before a hurricane, emergency generators can be acquired as contingency rentals. Business owners may want to familiarize themselves with generator sets available for rent and have a power generation company contact on standby in case of an outage. Be particularly prepared in hurricane-prone areas. Soon after the first details of a threat of a hurricane hit the news, other businesses will race to claim a generator as well. In order to ensure you will have your power needs met, it is important to reserve the unit before a storm hits.

You can prepare your business for an event by having a Comprehensive Emergency Power Plan that ensures business continuity with a standby generator. No matter what your need, Generac's business is protecting yours from the damage of power outages. You can rely on Generac standby generators to protect your bottom line and give you peace of mind.

## SUMMARY

Being prepared is an ongoing process of improvements. Processes should be reviewed and checked regularly. Preparing to a standard will provide a uniform and consistent basis for developing and implementing action plans within the organization and proper preparedness will help your corporation minimize loss or revenue, data or productivity. The disruption of operations for a few hours or a few days can deeply affect your organization internally and externally. Making the choice to prepare today can protect your corporation tomorrow.



# Terms to know

**Advisory:** Official message issued by storm warning centers with details on location, intensity, movement and precautions for storms.

**Direct Hit:** Locations that experience the center and eye wall of a hurricane.

**El Niño, La Niña, ENSO:** El Niño and La Niña are warming and cooling phases of a recurring climate pattern in tropical Pacific (aka El Niño-Southern Oscillation or ENSO). The pattern shifts every two to seven years, creating disruptions in temperature, wind and precipitation. These changes affect the number and intensity of hurricanes.

**Flash Flood:** A rapid flooding in low-lying areas that may be caused by heavy rain as seen with many hurricanes and tropical storms.

**Flood Warning:** Issued when a flood is imminent or already happening.

**Hurricane/Typhoon/Cyclone:** A cyclone, typhoon and hurricane are all the same type of storm – a tropical cyclone that has reached 74 mph or more – just given different names based on where in the world it hits.

**Hurricane Eye:** The center of a hurricane.

**Hurricane Eye Wall:** Extreme winds surrounding the hurricane eye. An Extreme Wind Warning can be issued as the eye approaches.

**Hurricane Warning:** Issued 36 hours in advance of expected hurricane force winds (sustained at 74 mph). The warning may stay in effect if dangerously high water or dangerously high water and waves continue, even if winds dip below hurricane force.

**Hurricane Watch:** Issued 48 hours in advance of possible hurricane force winds (sustained at 74 mph or higher). Hurricane preparation becomes more difficult when winds reach tropical storm force.

**Indirect Hit:** Locations that do not experience a direct hit from a hurricane or tropical storm, but do experience the hurricane force winds.

**Landfall:** When the eye of the storm meets with the coastline.

**NOAA:** National Oceanic and Atmospheric Association, an agency within the Department of Commerce that works to understand and predict changes in climate, weather and oceans. The National Weather Service (NWS) is a branch under NOAA.

**Reallmpact Scale:** Developed by AccuWeather and used for the first time during the 2019 hurricane season. Measures storms on a scale of one to five based on flooding, rain, high winds, storm surge and economic impact.

**Saffir-Simpson Hurricane Wind Scale:** Most popular and recognized hurricane rating system, created in late 1960s and expanded in 1970s. Measures hurricanes on a scale of one to five based on sustained wind speed.

**Storm Surge:** An abnormal rise in sea level due to a hurricane or other severe storm. This is often the greatest threat to loss of life and property damage.

**Storm Tide:** A combination of normal high tide and storm surge, measuring the total seawater level during a storm.

**Tornado Warning:** Due to the high winds and cyclical nature of hurricanes, tornadoes can form. A Tornado Warning may be issued before, during or after hurricanes. A warning means it may occur within 36 hours.

**Tropical Storm:** A tropical cyclone with maximum sustained wind speed ranging from 39 to 73 mph.

**Wind Shear:** Strong high-atmospheric winds typically found during El Niño that blows the tops off storms, decreasing the likelihood they turn into tropical storms or hurricanes.

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