

HAZARD ANNEXES

WHAT TO DO?

HOW-TO'S FOR EACH OF FAIRFAX COUNTY'S MOST PREVALENT HAZARDS

Fairfax County is vulnerable to a wide range of hazards (natural, human-caused, and everyday). These hazards threaten the safety of residents. They have the potential to damage or destroy property and disrupt the economy. While we cannot eliminate hazards, we can lessen their potential impacts.

Hazards may occur in isolation, or – more commonly – in ripple-effect clusters. For example, a hurricane may trigger a flood as well as power outages and medical emergencies. Or a thunderstorm may produce lightning that causes a structural fire.

The Northern Virginia Hazard Mitigation Plan and other sources were used to identify the hazards detailed below. These identified hazards are those that pose the greatest risk to the county (that is, the highest probability of causing the most severe impacts to exposed lives and property). The analyses are based on detailed reviews of prior hazard history, as well as forecasting and probabilistic modeling tools.

The hazard annexes are grouped by common characteristics, and do not imply any rank-order:

Natural hazards:

- ▶ Thunderstorm
- ▶ Hurricane or Tropical Storm
- ▶ Flooding
- ▶ Winter Storm or Extreme Cold
- ▶ Extreme Heat
- ▶ Tornado
- ▶ Earthquake
- ▶ Pandemic Influenza

Human-caused hazards (including accidents and intentional acts):

- ▶ Cyber Attack
- ▶ Civil Disorder
- ▶ Acts of Violence/Terrorism
- ▶ Hazardous Materials
- ▶ Chemical, Biological, Radiological, or Nuclear
- ▶ Dam Failure

“Everyday” emergencies:

- ▶ Structural Fire
- ▶ Power Outage/Blackout
- ▶ Medical Emergency

THUNDERSTORM

WHAT IT IS

Thunderstorms are large, localized weather events. Thunderstorms are most common in summer, but can occur in any season. All thunderstorms produce lightning and have the potential to produce tornadoes, strong winds, hail, wildfires, and flash flooding – the last of which is responsible for more fatalities than any other thunderstorm-related hazard.

Lightning is of particular concern because of its unpredictability – lightning often strikes beyond what is perceived to be the storm, sometimes occurring as far as 10 miles away from rainfall.

WHAT TO DO

Before (Preparedness/ Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered NOAA weather radio available.
- ❑ Prepare your home by cleaning gutters and drains.
- ❑ Remove dead or rotting trees or limbs that might fall.
- ❑ Secure or bring inside any outdoor objects that could blow away or become “missiles” and cause damage.
- ❑ Unplug any electronic equipment.
- ❑ Know if your residence/business is in a designated floodplain.
- ❑ Apply for flood insurance (note that FEMA flood maps do not reflect all risk from fast-moving flash or “sheet” flooding – the types that are often generated by heavy rains).
- ❑ As the threat approaches, decide where you will go – can you make it indoors, or is an enclosed vehicle your best option?
- ❑ Learn First Aid.
- ❑ Refer to “Power Outage/ Blackout” and “Medical Emergency,” below.

KEY TERMS

- ▶ A **Thunderstorm Watch** means there is a possibility of a thunderstorm in your area.
- ▶ A **Thunderstorm Warning** means a thunderstorm is occurring or will likely occur soon.

During (Response)

- ❑ Upon seeing lightning or hearing thunder, immediately move indoors or into an enclosed vehicle.
- ❑ Remain inside until 30 minutes after the last clap of thunder.
- ❑ If you are driving in low visibility, try to safely exit the roadway and park. Stay in the vehicle and close the windows.
- ❑ If you cannot get inside or reach a safe building, avoid high ground, tall or isolated trees, poles and masts, and large metal objects (including fences and bleachers).
- ❑ If you are in open water, head to shore immediately.

After (Recovery)

- ❑ Continue with activity or proceed where you are going when it is safe.
- ❑ Check in with family and friends by texting or using social media.

For more information on **LIGHTNING SAFETY**, check out <https://www.weather.gov/safety/lightning>

HURRICANES/ TROPICAL STORMS

WHAT IT IS

Hurricanes and tropical storms are violent weather systems with well-defined surface circulation. Threats from hurricanes include high winds, heavy rainfall, storm surge, coastal and inland flooding, rip currents, and tornadoes. Strong storms may be hundreds of miles across, with winds in excess of 150 mph, pushing storm surge floods of a dozen feet or more. Even storms that no longer carry hurricane-force winds may cause devastating flooding just due to rain (for example, Allison, Irene, Sandy, and Harvey).

Tropical storms rotate in a counter-clockwise direction around the eye. The rotating storm clouds create the “eye wall,” which contains the most destructive winds in the storm. The eastern half of an Atlantic hurricane typically carries the greatest risks in terms of wind and surge.

Hurricanes have winds of 74 mph and up, tropical storms 38-73, and tropical depressions less than 38. The Atlantic hurricane season runs from June 1 to November 30, with the peak occurring between mid-August and late October.

KEY TERMS

- ▶ A **Hurricane/Tropical Storm Watch** means conditions are possible within the next 36 hours.
- ▶ A **Hurricane/Tropical Storm Warning** means conditions are expected within 24 hours.
- ▶ **Short Term Watches and Warnings** are warnings that provide detailed information on specific hurricane threats, such as flash floods and tornadoes.
- ▶ The **Saffir-Simpson Hurricane Wind Scale** rates hurricanes' maximum sustained winds on a scale of 1 to 5 (hurricane categories are only loosely correlated to other related threats, such as rain and storm surge).
- ▶ **Sustained Winds** are defined as a one-minute wind average, measured at 33 ft. above the surface.
- ▶ **Storm Surge** is an abnormal rise of water generated by a storm, over and above any predicted tides.

WHAT TO DO

Before (Preparedness/ Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered NOAA weather radio available.
- ❑ Decide early whether you will evacuate, and where you will go if you are ordered or decide to leave.
- ❑ If you evacuate, bring your go bag with you, whether to an emergency shelter or other refuge.
- ❑ Prepare your home (shut off utilities, secure property, etc.).
- ❑ Ensure you have insurance, and inventory your personal property.
- ❑ Secure or bring inside any outdoor objects that could blow away or become “missiles” and cause damage.
- ❑ Consider strapping and other structural hardening if your property is particularly vulnerable.
- ❑ Learn First Aid.
- ❑ Refer to “Power Outage/ Blackout” and “Medical Emergency,” below.

During (Response)

- ❑ Listen to radio and television for official, up-to-date information.
- ❑ Find a safe room within your home (an interior room, closet, or bathroom).
- ❑ Do not go outside until the National Weather Service's National Hurricane Center confirms the storm has left the area.

After (Recovery)

- ❑ Return home when local officials say it is safe.
- ❑ Avoid walking or driving through floodwaters.
- ❑ Check in with family and friends by texting or using social media.



WHAT IT IS

Flooding is one of Fairfax County's most common hazards. Depending on its depth and velocity, flooding can be a nuisance or a disaster. Be prepared for flooding no matter where you live, but particularly if you are in a low-lying area, near a body of water, downstream from a dam, or in other areas known to flood in previous storms.

WHAT TO DO

Before (Preparedness/ Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered NOAA weather radio available.
- ❑ Decide early whether you will evacuate, and where you will go if ordered to or opt to leave.
- ❑ Prepare your home by cleaning gutters and drains.
- ❑ Disconnect electrical appliances.
- ❑ Know if your residence or business is in a floodplain.
- ❑ Apply for flood insurance. Consider this even if you are not in the 100-year floodplain (the FEMA-designated "Special Flood Hazard Area") – many recent floods have exceeded the 100-year and even 500-year marks!
- ❑ Learn First Aid.
- ❑ Refer to "Medical Emergency," below.

During (Response)

- ❑ Listen to official information.
- ❑ If you encounter rising water, move to higher ground immediately.
- ❑ Do not touch electrical equipment if you are wet or standing in water.
- ❑ Always stay clear from floodwaters.
- ❑ Do not drive through flooded roads, even if you have a vehicle with high clearance and even if the water appears to be shallow – "turn around, don't drown."
- ❑ Stay away from downed power lines to avoid the risk of shock or electrocution.

KEY TERMS

- ▶ A **Flood Watch** means there is a possibility of flooding or a flash flood in your area.
- ▶ A **Flood Warning** means a flood is occurring or will likely occur soon. If you are advised to evacuate do so immediately.
- ▶ A **Flash Flood Watch** means flash flooding is possible. Be prepared to move to higher ground. A Flash Flood could occur without any warning.
- ▶ A **Flash Flood Warning** means a flash flood is occurring. Seek higher ground immediately; do not wait for instructions.
- ▶ A **100-year flood** (or "base flood") is a flood that has a 1 percent chance of being equaled or exceeded in any given year, according to FEMA's flood maps. A base flood may also be referred to as a 100-year storm, and the area inundated during the base flood is sometimes called the 100-year floodplain, which generally correlates to the "Special Flood Hazard Area" where federal flood insurance is required in order to obtain a mortgage. It should be noted that a "100-year flood" refers to the annual probability of such an occurrence, not the predicted interval between such floods.
- ▶ A **500-year flood** is a flood that has a 0.2-percent chance of being equaled or exceeded in any given year, according to FEMA's flood maps. The area inundated during a 500-year flood is sometimes called the 500-year floodplain. It should be noted that a "500-year flood" refers to the annual probability of such an occurrence, not the predicted interval between such floods.

After (Recovery)

- ❑ Return home when local officials say it is safe.
- ❑ Avoid walking or driving through floodwaters.
- ❑ Do not drink from floodwaters.
- ❑ Do not drink or wash with water from a flooded household well until it is tested and found to be safe to use.
- ❑ Eliminate standing water where mosquitoes may breed.
- ❑ Do not eat any food that may have come into contact with flood water. "When in doubt, throw it out."
- ❑ Remove all porous items that have been wet for more than 48 hours and that cannot be thoroughly cleaned and dried. These items can remain a source of mold growth and should be removed from the home.
- ❑ Check in with family and friends by texting or using social media.

To find out if your property is in
FLOOD ZONE, go to
msc.fema.gov/portal/search

WINTER WEATHER/ EXTREME COLD

WHAT IT IS

Winter weather includes ice, heavy snow, and extreme cold conditions. These can cause power outages and loss of heat and communications services – sometimes for many days. The greatest threat from winter weather is often from secondary impacts, such as traffic accidents on icy roads. Hypothermia and frostbite, which can result from prolonged exposure to cold, are also risks. Additionally, clean-up (shoveling) from winter weather events can be strenuous, and may therefore pose a risk for older adults and others with physical limitations.

KEY TERMS

- ▶ A **Winter Weather Advisory** means winter weather conditions are expected and may be hazardous.
- ▶ A **Winter Storm Watch** means means snow, sleet, or ice are possible — be prepared. (the next 36 to 48 hours)
- ▶ A **Winter Storm Warning** means snow, sleet, or ice are expected — take action! (within 24 hours)
- ▶ A **Frost/Freeze Warning** means below freezing temperatures are expected.
- ▶ A **Blizzard Warning** indicates sustained winds or regular gusts to 35 miles per hour or more, as well as considerable amounts of snowfall or snow drifts and near zero visibility.

WHAT TO DO



Before (Preparedness/ Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered NOAA weather radio available.
- ❑ Have your furnace serviced regularly.
- ❑ Prepare your home by salting walkways, driveways, and entrances.
- ❑ Have emergency heating equipment.
- ❑ Purchase a homeowner's insurance policy.
- ❑ Plan for snow removal: have shovels on hand, or consider going in with a few neighbors for a community snow blower.
- ❑ Turn off outside spigots and drain the pipes.
- ❑ Learn how to operate your water's main shut off valve (in case a pipe bursts).
- ❑ Learn First Aid.
- ❑ Refer to "Power Outage/ Blackout" and "Medical Emergency," below.



During (Response)

- ❑ Stay indoors during the storm if possible.
- ❑ Dress appropriately for cold weather. Wear loose-fitting, lightweight, warm layers, rather than one heavy layer of clothing.
- ❑ Drive only if necessary – especially if you are inexperienced in winter conditions or you have rear-wheel drive.
- ❑ Watch for signs of hypothermia, including:
 - Uncontrollable shivering
 - Memory loss
 - Disorientation

- Incoherence
- Slurred speech
- Drowsiness
- Apparent exhaustion

If signs are detected, get medical help as soon as possible.

- ❑ Watch for signs of frostbite, including loss of feeling and white or pale appearance in extremities such as fingers, toes, earlobes, or the tip of the nose.
- ❑ If you are driving and your vehicle stops working, pull off the road, turn on your hazard lights, stay in your car, and use your phone to call for help.



After (Recovery)

- ❑ Be sure paved areas on your property and adjacent rights-of-way (including sidewalks) are shoveled. Un-shoveled snow is a hazard to your neighbors, and it may eventually turn to ice.
- ❑ "Adopt" a fire hydrant near your home or business and keep it clear of snow.
- ❑ Watch for signs of hypothermia or frostbite in yourself and others.
- ❑ Be careful when shoveling snow. Overexertion can cause injury and even trigger heart attacks. If you plan to shovel, stretch before going outside, take breaks, and don't overexert yourself.
- ❑ If you have neighbors who are older or have access or functional needs, shovel for them; if you are concerned about your ability to shovel, reach out to your neighbors for help.



EXTREME HEAT

WHAT IT IS

Extreme heat – especially coupled with high humidity – can be deadly, slowing evaporation and thus requiring the body to work harder to moderate its core temperature. Overexposure to heat and/or overexertion (too much exercise or effort) can trigger a heat-related illness: heat cramps, heat exhaustion, and eventually heat stroke. Heat-related illness is a particularly high risk for children, older adults, and those who are infirm or overweight.

KEY TERMS

- ▶ A **Heat Wave** is a prolonged period of excessive heat, often combined with high humidity.
- ▶ The **Heat Index** indicates how hot it feels, with relative humidity and sun exposure added to the absolute air temperature. Exposure to full sunshine can increase the heat index by 15 degrees.
- ▶ **Heat Cramps** are muscular pains and spasms due to heavy exertion.
- ▶ **Heat Exhaustion** typically occurs when people exercise heavily or work in a hot, humid place, and body fluids are lost through heavy sweating. Heat exhaustion must be treated with fluids and cooling of the skin, or it will turn into heat stroke.
- ▶ **Heat Stroke** (or “sun stroke”) is a life-threatening condition in which the victim’s temperature-control system, which produces sweat to cool the body, stops working. Heat stroke victims will be completely incoherent or unconscious, and they require immediate medical attention.

WHAT TO DO

Before (Preparedness/ Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered NOAA weather radio available.
- ❑ If you have an air conditioner, have it serviced regularly.
- ❑ Drink plenty of fluids. Know your body and know what is normal.
- ❑ Dress in loose-fitting clothes that cover as much skin as possible. Lightweight, light-colored clothing reflects heat and sunlight and helps maintain normal body temperatures.
- ❑ Reschedule outdoor activities, if possible.
- ❑ Never leave children or pets alone in closed vehicles.
- ❑ Learn First Aid.
- ❑ Refer to “Power Outage/ Blackout” and “Medical Emergency,” below.

During (Response)

- ❑ Stay indoors as much as possible and limit exposure to heat and sun.
- ❑ Drink plenty of water or electrolyte sports drinks.
- ❑ Avoid strenuous work during the warmest part of the day.
- ❑ Use a buddy system when working in extreme heat, have a phone handy, and take frequent breaks.

- ❑ If you must exercise, consider indoor activities. If you must exercise outside, do so during cooler parts of the day, drink extra fluids, use a buddy system, have a phone handy, and reduce your level of effort.
- ❑ If you feel woozy, overheated, or unwell, take action immediately!
 - Stop any strenuous activity.
 - Get somewhere cool.
 - Drink something if you can.
 - Cool your skin by taking a cold bath or holding anything cold against your body.
 - Call someone for help, or call 911 – do this before your condition compromises your critical thinking skills!
- ❑ Check on older neighbors and any neighbors without air conditioning.

After (Recovery)

- ❑ Consult a medical professional if a heat-related condition does not improve.
- ❑ Continue to hydrate.

TORNADO

WHAT IT IS

Tornadoes are nature's most violent storms. They are characterized by a rapidly spinning column of air from 65 miles per hour to upwards of 200 miles per hour. Weak tornadoes will cause superficial damage to directly impacted buildings, while very strong tornadoes can destroy everything along paths hundreds of yards across. Tornadoes can accompany thunderstorms, tropical storms, and hurricanes. They can appear suddenly, without warning, and can be invisible until dust and debris are picked up or a funnel cloud appears. Note that there are no tornado sirens in Fairfax County.



KEY TERMS

- ▶ A **Tornado Watch** means current weather conditions may result in a tornado.
- ▶ A **Tornado Warning** means a tornado has been sighted or indicated by a weather radar.
- ▶ The **Enhanced Fujita Scale** measures tornado strength by wind speed (EF0 to EF5).

WHAT TO DO:

Before (Preparedness/Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered NOAA weather radio available.
- ❑ Practice sheltering in place in the interior of your residence or business.
 - If there is a tornado watch, pay attention to a weather radio, commercial radio, television, or a news website for up to date information.
 - During a tornado watch (not a warning), secure or bring inside any outdoor objects that could blow away or become “missiles” and cause damage.
- ❑ Watch for signs of a tornado: dark or greenish skies, hail, large, dark low-lying clouds, loud roar.
- ❑ Learn First Aid.

During (Response)

- ❑ Listen to official information.
- ❑ Go immediately to the lowest level of your building, to an interior room or hallway.
- ❑ Stay away from windows and doorways.
- ❑ Do not stay in a trailer or a mobile home. Go immediately to a building with a strong foundation.
- ❑ If you are in a car, or if shelter is not available, lie flat in a ditch or other low-lying area. Do not seek refuge under a bridge or overpass.
- ❑ Plan to stay in your shelter location until the danger has passed.
- ❑ Refer to “Power Outage/ Blackout” and “Medical Emergency,” below.

After (Recovery)

- ❑ Return home when local officials say it is safe.
- ❑ Stay clear from damaged buildings and infrastructure.
- ❑ Check in with family and friends by texting or using social media.

EARTHQUAKE

WHAT IT IS

An earthquake is a shaking of the ground that can cause damage to buildings and infrastructure. Following an earthquake, fire is a significant risk due to gas leaks and water-pressure failures.

Earthquake strength is described by the Richter Scale, which measures amplitude on a logarithmic basis – meaning that each whole number correlates to a 10-fold increase in earthquake amplitude, or a 30-fold increase in total energy released. Earthquakes below 5 on the Richter scale may be felt but rarely cause damage; earthquakes of 9 and up cause complete regional devastation.

For context, the 2011 Virginia earthquake rated 5.9 on the Richter Scale; the 1995 Northridge, California earthquake 6.7; the 2017 Mexico City earthquake 8.2; the 2011 Fukushima, Japan earthquake 9.1.

Virginia is one of 45 states or territories in the US at risk of earthquakes.

WHAT TO DO

Before (Preparedness/ Mitigation)

- Sign up for Fairfax Alerts and have a battery or crank powered radio available.
- Locate safe spots in each room under a sturdy table or against an inside wall.
- Hold earthquake drills with your family members.
- Understand how your home or structure will react, and consider hardening if there are areas of concern.
- Learn First Aid.
- Refer to “Power Outage/ Blackout” and “Medical Emergency,” below.

During (Response)

- Drop, cover, and hold on. Drop to your hands and knees, if you can, protecting your head and neck.
- Stay away from windows if you are indoors.
- Stay indoors until the shaking stops or if you are sure it is safe.

KEY TERMS

- ▶ An **Aftershock** is an earthquake of similar or lesser intensity that follows the main earthquake.
- ▶ The **Epicenter** is the place on the earth’s surface directly above the point on the fault where the earthquake rupture began.
- ▶ A **Fault** is the fracture along which the earth’s crust is displaced during an earthquake.
- ▶ **Magnitude** is the amount of energy released during an earthquake.

- If you are outside, find a clear spot away from tall buildings and drop to the ground until the shaking stops.
- If you are in a vehicle, pull over to a clear location and stop.
- Listen to official information.

After (Recovery)

- Expect aftershocks (smaller earthquakes) for hours or days after the initial quake.
- Avoid damaged areas.
- Check your utilities (especially gas), and evacuate and call 911 if you smell gas.
- Look for cracks in your foundation or drywall, as this may be a sign of structural damage. If you find damage, have the structure inspected before reoccupying it.
- Check in with family and friends by texting or using social media.

PANDEMIC INFLUENZA AND INFECTIOUS DISEASE

WHAT IT IS

A pandemic is a global communicable disease outbreak (whereas an “epidemic” is regional in nature or otherwise confined to particular populations). An influenza pandemic occurs when a strain of influenza virus emerges:

- Which causes serious illness.
- For which there is limited immunity in the human population.
- Which is able to easily and quickly spread person-to-person – especially through saliva, coughing, or sneezing.

Infectious diseases are one of the leading cause of death worldwide. Because of air travel and international trade, infectious disease agents are carried across borders every day by humans, animals, insects, and food products.

KEY TERMS

- ▶ **Influenza** (flu) is a respiratory illness caused by the influenza virus that affects millions of people each year. Different strains have widely variant characteristics in terms of virulence, communicability, and population impacts. Flu virus also has the capacity to rapidly mutate and cross to and from multiple species.
- ▶ **Nonpharmaceutical Interventions** (NPIs) are actions, apart from getting vaccinated and taking medicine, which people and communities can take to help slow the spread of respiratory illnesses, like pandemic flu. Many NPIs are provided below, in the list of “What to do: Before.”

WHAT TO DO

Before (Preparedness/ Mitigation)

- ❑ Sign up for Fairfax Alerts and have a battery or crank powered radio available.
- ❑ Get a yearly flu vaccine for everyone six months and older, unless a doctor advises against it.
- ❑ Wash or sanitize your hands often.
- ❑ Take common-sense steps to stop the spread of germs including covering coughs and sneezes and staying away from others as much as possible when you are sick.
- ❑ Wash and sanitize household items often.
- ❑ Practice good health habits, including eating a balanced diet, exercising daily, and getting sufficient rest.
- ❑ Periodically check your regular prescription drugs to ensure a continuous supply in your home.
- ❑ Have any nonprescription drugs and other health supplies on hand, including pain relievers, stomach remedies, cough and cold medicines, fluids with electrolytes, and vitamins.
- ❑ Get copies and maintain electronic versions of health records from doctors, hospitals, pharmacies and other sources and store them, for personal reference.
- ❑ Refer to “Medical Emergency,” below.

During (Response)

- ❑ Listen to official information.
- ❑ If you are sick, keep your distance from others to protect them from getting sick too.
- ❑ Avoid close contact with people who are sick.
- ❑ Cover your mouth and nose with a tissue when coughing or sneezing.
- ❑ Wash or sanitize hands often.
- ❑ Avoid touching your eyes, nose or mouth.
- ❑ If you have a fever, make sure you are fever-free for 24 hours before you return to work and school.

After (Recovery)

- ❑ Clean surfaces such as counters, doorknobs, fixtures, phones, remotes, and linens.
- ❑ Common household cleaning products can kill the flu virus, including products containing:
 - Chlorine
 - Hydrogen peroxide
 - Detergents (soap)
 - Iodine-based antiseptics
 - Alcohols