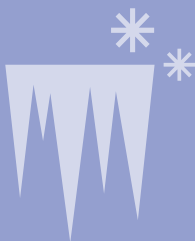


READY NEW YORK

REDUCE YOUR RISK



NYC
Emergency
Management

Bill de Blasio, Mayor
Joseph J. Esposito, Commissioner



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While it is important to protect yourself and your families from emergencies, it is also important to protect your property.

Ready New York: Reduce Your Risk outlines steps property owners can take to prepare through hazard mitigation – cost-effective and sustained actions taken to reduce the long-term risk to human life or property from hazards.

FLOODING



Flooding is one of the most common natural disasters. New York City is vulnerable to different types of flooding, which include:

- **Flash flooding:** flooding caused by intense rainstorms when the rainfall rate exceeds the ability of the water to be absorbed or drained. Flash flooding can cause sewers to back up. Such sewer back-ups can cause basements and cellars to flood.
- **Coastal flooding:** flooding caused when an intense offshore low-pressure system drives ocean water inland. The water pushed ashore is called storm surge. All of New York City's shoreline, including along the East, Hudson, and Harlem Rivers, is subject to coastal flooding.
- **Tidal flooding:** occurs when the tide's range is at its highest level, also called a spring tide. Such spring tides can flood land that is typically unaffected by tides of minimum or average range. Tidal flooding can occur with no storm.
- **Riverine flooding:** occurs when freshwater rivers and streams overflow their banks.

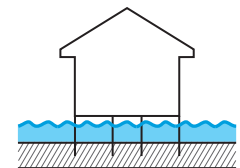
REDUCE YOUR RISK

Consider the following strategies to protect your home from flooding:

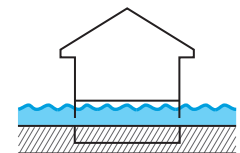
- New York City relies on FEMA's Flood Insurance Rate Maps (FIRMs) for information on flood risk probability for coastal and riverine flooding. These maps represent the federal government's official assessment of flood risk by area. Visit www.region2coastal.com for additional guidance.
- Get flood insurance. Protection against loss due to floods is typically not covered under a homeowner's policy. Visit www.floodsmart.gov for more information.
- Build with flood damage-resistant materials, such as cast-in-place concrete, concrete block, and solid structural wood (e.g., 2x4s, etc.). Visit www.fema.gov for additional guidance.

- Hire a New York State-licensed Registered Architect or Professional Engineer to determine the best option for retrofitting your home, which means altering the existing structure to reduce or eliminate the possibility of damage. Typical retrofit strategies include, but are not limited to:

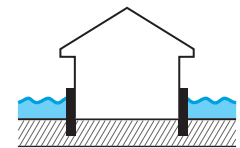
- Elevation: raising a home so that the lowest floor is above flood level. Elevation is the most common way for residential buildings to avoid flood damage.



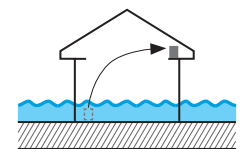
- Wet floodproofing: achieved by converting space below the design flood elevation to be constructed of flood damage-resistant materials, and vents that allow water to enter the space during flooding and recede after flooding.



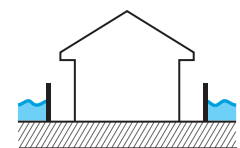
- Dry floodproofing: sealing your home below the design flood elevation to prevent flood waters from entering.



- Raise or floodproof electrical, mechanical, and plumbing system components and equipment above anticipated flood level to appropriate design standards.

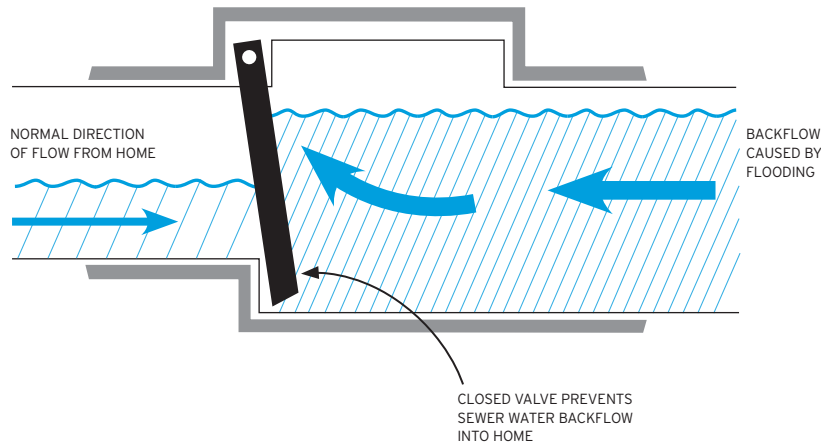


- Retaining storm water onsite or creating green and unpaved spaces around your home to improve infiltration can help reduce flow into the sewer, thus increasing the sewer's available capacity.



~ ANTICIPATED FLOOD LEVEL
/// GROUND

- Install backflow valves (also known as check valves) to prevent sewer water from rising up into your home through basement plumbing. Another form of protection is drain plugs.



- Install proper downspout and roof drainage: clean your gutters regularly, and connect downspouts to appropriate drains. Consider complementing these steps by installing a rain barrel to capture storm water to be drained later.
- Depressed driveway protection: If your property has a driveway that slopes below street level, the City recommends you contact a licensed professional to help prevent flooding of your basement.
- Anchor indoor and outdoor fuel tanks.
- Other measures:
 - If you live in a flood-susceptible area, keep materials, such as sandbags, plywood, plastic sheeting, and lumber, on hand to protect your home.
 - Take care of your sewer connection: never pour grease or cooking oil down the drain, and avoid flushing non-flushable items.
 - Keep your valuables and other belongings in waterproof containers and elevated off the floor.

For more information about retrofitting residential building, see FEMA's Homeowner's Guide to Retrofitting by visiting www.fema.gov.



COASTAL STORMS



Coastal storms, including nor'easters, tropical storms and hurricanes, can and do affect New York City. The city's coastal geography, combined with its dense population and high concentration of development make it especially vulnerable to damage from coastal storms.

Coastal storms are accompanied by strong winds, coastal flooding, and rain. They can also bring severe thunderstorms, tornadoes, snow or ice depending on the type of storm.

New York City is most at risk of nor'easters between October and April. While Atlantic hurricane season lasts from June through November, New York City is most at risk between August and October.

REDUCE YOUR RISK

- Be aware of the risk related to the location of your home or property.
 - For insurance and regulatory purposes, determine if property is in a FEMA flood zone at www.region2coastal.com.
 - For life safety, determine if your property is in a hurricane evacuation zone at NYC.gov/knowyourzone.
- Get flood insurance.
 - Protection against loss due to floods is typically not covered under a homeowner's policy. Visit www.floodsmart.gov for more information.
 - Review your renters or homeowner's insurance policy to understand what is covered from coastal storms and associated hazards.

General Maintenance

- Hire a New York State Registered Architect or Professional Engineer to inspect your home to see if retrofitting is necessary. (See *Reduce Your Risk: Flooding* section for additional details).
- Periodically clean your property, and dispose of any garbage or debris that could become projectiles during a storm.
- Replace gravel/rock landscaping with shredded bark to reduce risk of damage from windborne debris. (See image on the right.)

- Trim branches/remove trees on your property that could fall on homes or power lines.
- If a storm is forecasted, move outdoor furniture inside or tie it down securely.

Roof and Chimney

- Check the condition of your roofing twice a year.
- Check interior walls for cracked paint, discolored gypsum board, peeling wallpaper, or stains caused by leaks as these are signs of damaged roof areas.
- Inspect your roof from the ground using binoculars, looking for cracked, curled or missing shingles, loss of protective layer, or loose seams.



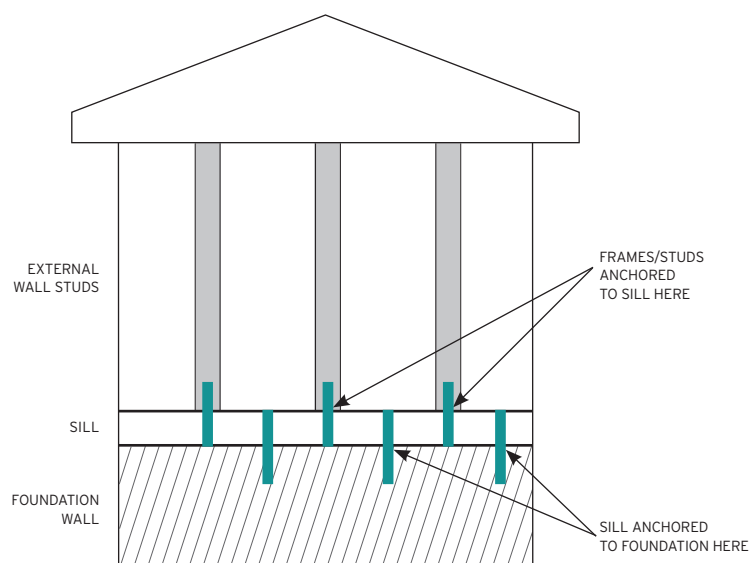
- Inspect existing sheathing to make sure it is properly attached and refasten as necessary.
- Check the condition of the mortar in your chimney walls and parapets for erosion or cracks. All structural elements need to be vertical or in the position they were originally installed.

Siding

- Check your siding for dislodged or loose elements. Note that aluminum siding is rarely installed adequately to meet design standards. The siding screws need to be installed deep in healthy wood.

Structural Walls

- Verify that the wood frame of exterior walls is anchored to the sill and the sill is anchored to the foundation walls (i.e., concrete or concrete masonry unit). Many buildings built prior to 1968 have such anchorage missing; older building codes did not explicitly require them. If such anchorage is missing, install using rated straps or devices.



Windows & Doors

- Make sure doors have at least three hinges and dead-bolt security lock.
- Immediately replace any cracked or broken windows.
- When performing any replacement or maintenance of windows, roofing or doors, make sure the items bought are rated for New York City wind speeds and the exposure category of your building, per the NYC Building Code maps. Consider the following:
 - The label should indicate a rating for basic wind speed of 100 mph for a three-second gust or 80 mph for wind exposure C.
 - Buildings situated 600 feet from shoreline should use materials rated for wind speeds of 100 mph and wind exposure D.

- When a window manufacturer label does not indicate wind speed but wind pressure, products with wind pressures less than 30 pounds per square foot (psf) should not be used.
- Consider installing door or window shutters in buildings situated close to open ocean or bays.

Additional Tips & Information

- Houses originally built as vacation cottages are at higher risk during floods and high winds, especially since these houses are usually close to the coast. Old, one-story wood frame houses also face a higher risk of damage.
- Although buildings should be designed to withstand a wind speed of 98 mph, buildings situated within 600 feet from the ocean or large bays are at an increased risk and need to be designed for a higher category of exposure.



TORNADOES AND WINDSTORMS



Tornadoes are highly destructive rotating columns of air that appear as funnel-shaped clouds and extend down from the base of a thundercloud toward the ground. Tornadoes are characterized by wind speeds that can reach more than 200 mph and can uproot trees, damage and collapse buildings, and turn harmless objects into deadly flying debris. Most tornado-related damage results from wind velocity and wind-blown debris, as well as large hail.

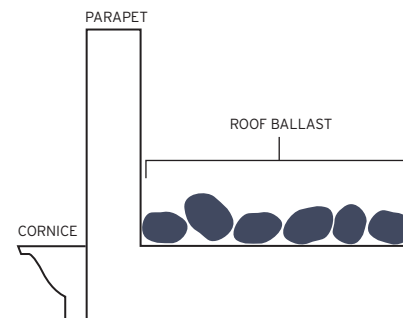
Windstorms are often associated with other storms, such as hurricanes or nor'easters, but may occur independently. High winds can cause downed trees and power lines, flying debris, and building damage—all of which may lead to power outages, transportation disruptions, damage to structures and vehicles, and personal injury and death. Similar to tornadoes, flying debris is the primary cause of damage during a windstorm.

Although the City closely monitors severe weather, tornadoes and windstorms can occur with little or no warning. Due to New York City's dense urban environment, high winds and flying debris pose a serious threat to buildings and infrastructure.

REDUCE YOUR RISK

- Know the safest place in your home to go to if a severe thunderstorm or tornado warning is issued for your area. This is typically a basement or a windowless interior room, such as a bathroom, closet, or inner hallway on the lowest level of the building.
- If severe weather is expected in your area, tie down any loose items that may become projectiles, including items or equipment both on the ground or mounted on your roof or outdoor patio.
- Trim branches and/or remove trees on your property that could potentially fall on homes or power lines.
- Implement routine building maintenance:
 - Keep roofs tight and in good condition.
 - Secure cornices and aluminum panels.
 - Repoint mortar regularly (especially parapets and chimneys).
 - Fix all cracks.
- Replace glass that is not rated for New York City winds (i.e., 30 pounds per square foot [psf] for buildings less than 100 feet high).

- For older brick buildings that lack reinforcement, hire a New York State-licensed Registered Architect or Professional Engineer to assist with the following:
 - Replace unreinforced masonry parapets with reinforced masonry parapets and anchor them to the rest of the building.
 - Add bracing to anchor building parapets using diagonal steel struts and perform mortar-repair of the parapets.
 - Replace all leaning parapets and masonry chimneys.
 - Repair all masonry structural cracks by replacing the cracked bricks.
 - Anchor roof frame to bearing walls.
 - Install bolts to connect your home to its foundation.
- Anchor all wood buildings to foundations.
- Replace size of ballast roofing to sizes indicated in the New York City Building Code.



- Roof ballast is designed to anchor the roof to the structure by sheer weight. There are a number of materials that are commonly used to achieve this, including pea gravel or stones; however, during a tornado or high wind event, these materials can quickly become high-speed projectiles.

- To reduce damage from hail, replace your roof covering with the highest-rated material possible (Class 4 under the Underwriters Laboratories' 2218 standard).
- Reinforce the connections between your roof and walls, and between your walls and your structure's foundation. Hire a contractor if necessary.
- Make sure your home or business's electrical system is properly grounded to ensure effective operation of surge protectors.
- Install a whole-house surge protector to decrease the damage from lightning strikes.
 - Install additional protection for important or expensive electronic equipment.

EARTHQUAKES



An earthquake is a sudden, rapid shaking of the ground caused when two blocks of earth slip past each other beneath the surface. Most earthquakes originate from existing faults, along which rocks on either side of faults move past each other, or from a new break in the rocks that make up the earth's crust.

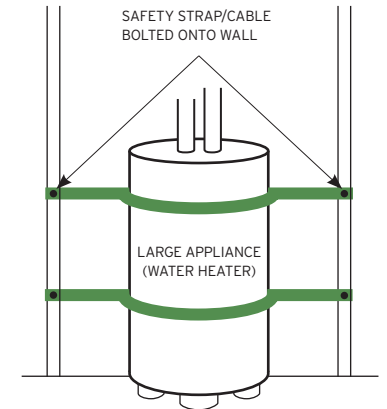
Although New York City does not sit on a major fault line, earthquakes can and have affected our area. A dense population, a high volume of built infrastructure, and the lack of seismic design code for buildings before 1996 all amplify the city's risk. Older brick buildings are found to be more at risk to collapse during earthquakes (compared with wood or modern concrete and steel buildings).

REDUCE YOUR RISK

Consider taking the following steps to ensure your property is protected from earthquakes:

- Implement routine building maintenance:
 - Keep roofs tight and in good condition.
 - Secure cornices and aluminum panels.
 - Repoint mortar regularly – especially parapet and chimneys.
 - Fix all cracks.

- Protect/modify gas line entry to building to allow some movement.
- Strap your water heater to a nearby wall. If a gas water heater falls during an earthquake, it could break the gas line and start a fire.
- Anchor large appliances to walls using safety cables or straps. Lock the rollers of any large appliances or pieces of furniture. (See image on the right.)



- Brace commercial fire protection systems so sprinkler system lines don't tear away from their connection points.
- Apply safety film to windows and glass doors.
- Secure ceiling lights, suspended ceilings and other hanging items, such as chandeliers and plants, to the permanent structure of your house.
- Bolt or strap cupboards, bookcases, and shelves to the wall and keep heavy objects on lower shelves.
- Install latches on drawers and cabinet doors.
- Securely mount flat screen TVs, pictures, and mirrors.
- Anchor all wood buildings to foundations.
- For older brick buildings that lack reinforcement, hire a New York State-licensed Registered Architect or Professional Engineer to assist with the following:
 - Replace unreinforced masonry parapets with reinforced masonry parapets and anchor them to the rest of the building.
 - Replace all leaning parapets and unstable masonry chimneys.
 - Repair all masonry structural cracks by replacing the cracked bricks.
 - Anchor roof frame to bearing walls.
 - Install bolts to connect your home to its foundation.
 - Add bracing to anchor building parapets using diagonal steel struts and perform mortar repair of the parapet. (See image below.)



BRUSH FIRES



While New York City does not experience the devastating wildfires that affect the western United States, the city can experience brush fires, which typically occur spring and fall in parts of the city when vegetation is dry.

Most brush fires in New York City are small and do not affect buildings. However, there are many areas where homes and buildings are near open areas with minimal or no natural buffers—particularly on Staten Island.

REDUCE YOUR RISK

Minimize damage to your home or business from brush fires by examining the various structures in and around your property.

Homes constructed primarily of combustible materials (such as wood) are at greater risk.

General Maintenance

- Inspect and remove old or dead vegetation and debris from around your property, including roofs, crawlspaces, vents, decks, etc., to reduce fire fuel.
- Cut tree branches that are within six feet of your roof.
- Create islands of vegetation and remove large bushes under trees so that fire does not have a path to your house.

Roofs

- Find out your roof's fire rating. If your roof needs to be replaced, Class A provides the best fire resistance and best protection. Visit the Underwriters Laboratory website, www.ul.com, for additional guidance.

Vents

- Clean vents on a regular basis to minimize build-up of debris in the mesh.

Siding

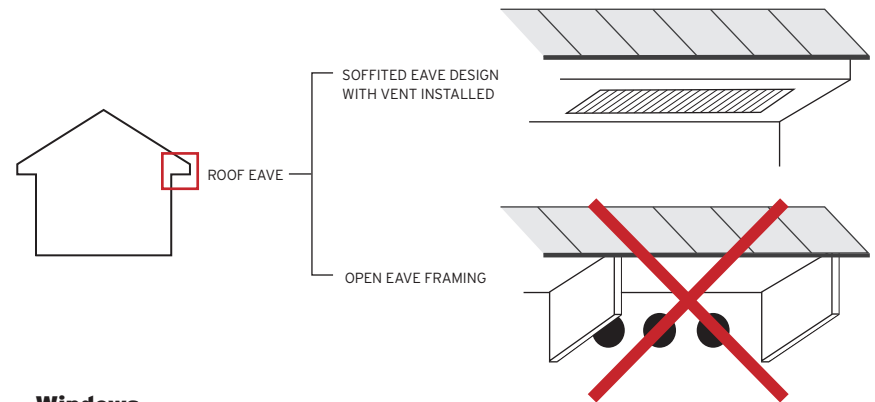
- If ignited, combustible siding may threaten other parts of a house, such as windows or the under-eave area.
- If you have combustible siding, inspect it annually for gaps and make sure that they are filled with a high-quality caulk.



IMAGE: CLASS A ROOF

Eaves

- The under-eave area is vulnerable if flames or embers enter the attic area through any gaps or vents.
- Replace open-eave framing with a soffited or boxed-in eave design.



Windows

- Install dual-pane windows so the outer pane can serve as a shield to protect the inner pane.
- Tempered glass is strong and will provide additional protection during a brush fire.
- Shutters or covers may provide additional protection.

Decks

- For wood deck boards, use lumber that is at least two inches thick.
- Do not store combustible materials under the deck.

Fences

- Do not construct fences from combustible materials. Use non-combustible materials, such as ignition-resistant wood, thicker dimension wood (1.5 inches or greater), or chain-link fence with climbing vines.

Garages

- Garages with roll-up doors can be weather-stripped and sealed at the edges.
- Replace windowed exterior doors with fire-rated material or paneling.
- Replace glass-paneled garage doors with fire-rated glass or fill them with caulk.
- Minimize use of combustibles in carports.

Wood Decay

- Some of the key places to look for decay are at the bottom corner of wooden window sills, the perimeter of decks, and any other area where water can be trapped in wood gaps or seams.
- To reduce your risk of wood decay:
 - Caulk any visible gaps and seams. Inspect all existing caulking and replace as necessary.
 - Clear soil from about one inch from the bottom of fences.

EXTREME HEAT



Extreme heat can take a significant toll on the body. Prolonged exposure to extreme heat may lead to serious health problems. Seniors, children, and those with chronic medical conditions are most at risk. For additional information about the effects of extreme heat on health, visit [NYC.gov/health](https://www.nyc.gov/health).

REDUCE YOUR RISK

- Install a light-colored (green or white) roof to lower the building's internal temperature and help reduce the urban heat island effect. (See image below.)



- Install high-performance windows. These windows often have the following features:
 - Multiple glazing layers (panes of glass that are spaced apart), which increase the window's insulation and sound-reduction properties.
 - Low emissivity coatings – transparent layers of tin or silver oxide deposited on the glass surface which allow light to pass through while blocking a substantial amount of heat.
- Install sunshades on your windows.
- Check the condition of your air conditioning and ventilation systems prior to the onset of the hottest months.
 - If you do not have central air, buy an air conditioning unit and be sure to periodically clean its filter.
- Insulate your structure's walls and attic.
- Test your home for "air tightness." On a windy day, hold a lit incense stick or a smoke pen next to your windows, doors, electrical boxes, plumbing fixtures, electrical outlets, ceiling fixtures, attic hatches, and other places where air may leak in from outside. If the smoke stream travels horizontally, you have located an air leak that may need sealing.
 - Seal doors and windows that leak air.
 - Seal air leaks where plumbing, ducting, or electrical wiring comes through walls, floors, ceilings, and soffits over cabinets.
 - Use foam sealant on larger gaps around windows, baseboards, and other places where air may leak out.

New York City typically experiences one or more periods of extreme heat every summer, when above average temperatures and/or high humidity levels are sustained for a prolonged period.

New Yorkers are also vulnerable to the "urban heat island effect," a phenomenon in which the asphalt, concrete, and metal that makes up the city's buildings and infrastructure absorb more heat from the sun than surrounding locations that have more trees and vegetation. This keeps air temperatures higher, particularly at night when most of the heat is released.

WINTER WEATHER



All areas of New York City are susceptible to various types of winter storms. These forms of severe weather often are accompanied by extreme cold, snow and ice. These factors can affect the city's buildings, infrastructure and services, in addition to public health and safety.

For additional information about ways to protect your health during the winter months, visit [NYC.gov/health](https://www.nyc.gov/health).

Although rare, snow and ice can cause structural damage or roof collapses if buildings are not properly maintained.

REDUCE YOUR RISK

General Maintenance

- Promptly remove ice and snow from tree limbs, your roof, and other structures.
 - If snow/ice accumulates, remove it using a snow rake with long extension arm so you can remove it safely while standing on the ground, or hire a snow removal contractor.
- Clear tree branches or limbs that could potentially fall on your home or power lines.
- Clear leaves and other debris from gutters.
- Inspect and repair all wood that has rot (especially when rot is close to outside walls).

- Repair sagging ceilings.
- Replace all damaged roof joists.
- Install a backup generator. (Do not use generators indoors; they can create dangerous levels of carbon monoxide.)

Roofs

- Maintain your building by clearing roof of debris, etc.
- Hire a New York State-licensed Registered Architect or Professional Engineer to check the structural ability of the roof to sustain unusually heavy weight from snow accumulation.
- If your building has a flat roof, it is more vulnerable to ponding, which can cause leaks and even collapse, compared with a sloped roof.
- Repair roof leaks.
- Keep attic well ventilated to prevent melting and refreezing of snow/ice on the roof, which contributes to collapses.

Insulation

- Add building insulation to walls and attics.
- Make sure doorways and windows are effectively sealed by using:
 - Sunshades
 - Air sealing, high performance windows

Protect your pipes

- Insulate pipes with sleeves or wrapping, as exposed pipes tend to freeze.
- Let faucets drip during extremely cold weather to prevent pipes from bursting.
- Keep water pipes out of attics, crawl spaces, and vulnerable outside walls.
- Seal cracks and holes in outside walls and foundations near water pipes with caulking.
- Keep cabinet doors open during cold spells to allow warm air to circulate around pipes.



MORE RESOURCES



NYC Emergency Management

nyc.gov/emergencymanagement

Reduce Your Risk

nyc.gov/reduceyourrisk

New York City Hazard Mitigation Plan

nyc.gov/hazardmitigation

Ready New York

nyc.gov/readyny

Know Your Zone - Hurricane Preparedness in New York City

nyc.gov/knowyourzone

New York City Department of Buildings

nyc.gov/buildings

New York City Fire Department

nyc.gov/fdny

New York City Mayor's Office of Recovery and Resiliency

nyc.gov/resiliency

New York City Mayor's Office of Housing Recovery Operations

nyc.gov/recovery

FEMA

www.fema.gov/hazard-mitigation-grant-program

New York State Division of Homeland Security and Emergency Services

www.dhses.ny.gov

Notify NYC

nyc.gov/notifynyc

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NYC Emergency Management on Facebook:

www.facebook.com/NYCemergencymanagement

and Twitter:

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INSURANCE RESOURCES

National Flood Insurance Program

www.floodsmart.gov

1-888-379-9531

FEMA Region II Coastal Analysis and Mapping

www.region2coastal.com

New York State Department of Financial Services

www.dfs.ny.gov

1-800-342-3736

Insurance Institute for Business & Home Safety

www.disastersafety.org

(813) 286-3400

Neighborhood Housing Services of New York City, Inc.

www.nhsnyc.org

212-519-2500

Insurance Information Institute

www.iii.org

212-346-5500

Unless otherwise noted, call 311 (TTY: 212-504-4115), or use NYC.gov to contact City agencies.



This guide is also available in audio format and in the languages below.

Arabic

زُر NYC.gov/readyny للحصول على نسخ باللغة العربية من هذا الدليل.

Bengali

এই নির্দেশিকাটির বাংলা কপিৰ জন্য NYC.gov/readyny দেখুন

Chinese

請撥打311或訪問NYC.gov/readyny，獲得本指南的中文版本。

English

Call 311 or visit NYC.gov/readyny for copies of this guide in English.

French

Visitez NYC.gov/readyny pour obtenir des exemplaires de ce guide en français.

Haitian Creole

Ale nan sitwèb NYC.gov/readyny pou jwenn kopi gid sa a nan lang Kreyòl Ayisyen.

Italian

Visita il sito NYC.gov/readyny per ricevere una copia di questa guida in italiano.

Korean

한국어로 된 안내서 사본은 NYC.gov/readyny를 방문하십시오.

Polish

Kopia w języku polskim jest opublikowana pod adresem NYC.gov/readyny.

Russian

Позвоните по номеру 311 или посетите сайт NYC.gov/readyny, чтобы получить эту брошюру на русском языке.

Spanish

Llame al 311 o visite NYC.gov/readyny para obtener acceso a este folleto en español.

Urdu

اس رہنما پرچے کی کاپی اردو زبان میں حاصل کرنے کے لیے NYC.gov/readyny ملاحظہ کریں۔

Yiddish

באזוכ NYC.gov/readyny פאר קאפּיס פון דעם פאפּיר אין אידיש.