

# HURRICANE *Safe*

Information About Storm Cleanup and Future Storm Damage Prevention  
A publication of FEMA and the State of Texas Governor's Division of Emergency Management

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## Helpful Contacts

### State

Texas Department of Public Safety  
Governor's Division of Emergency Management  
[www.txdps.state.tx.us](http://www.txdps.state.tx.us)

Texas Department of State Health Services  
[www.dshs.state.tx.us](http://www.dshs.state.tx.us)

Texas Department of Insurance  
[www.tdi.state.tx.us](http://www.tdi.state.tx.us)

Texas Windstorm Insurance Association  
[www.twia.org](http://www.twia.org)

### Federal

Federal Emergency Management Agency  
[www.fema.gov](http://www.fema.gov)

FEMA Registration and Helpline  
(800) 621-FEMA (3362)  
TTY (800) 462-7585

Free FEMA Publications:  
(800) 480-2520 or [www.fema.gov/library](http://www.fema.gov/library)

Flood Information  
[www.floodsmart.gov](http://www.floodsmart.gov)

U.S. Small Business Administration  
[www.sba.gov](http://www.sba.gov)

### Volunteer Agencies

American Red Cross  
(866) 438-4636

Salvation Army  
(800) 725-2769

**NOTE:** Before beginning any construction project, citizens should consult their local building department officials to obtain the requisite permits and ensure that the project complies with local ordinances.

## HURRICANE Safe

This publication was created in 2008 by the Federal Emergency Management Agency and the State of Texas Governor's Division of Emergency Management in support of Hurricane Ike recovery.



# FEMA

## Homes Built with Love – and Lots of Extra Nails



PHOTO COURTESY OF SOUTHERN BRAZORIA COUNTY HABITAT FOR HUMANITY

**FREEPORT, Texas** – Hurricane Ike rudely interrupted Frank Bartolomeo and his Habitat for Humanity team of volunteers just as they were finishing the framing of their latest house in Freeport. Winds through the coastal town reached higher than 90 mph in the early hours of Sept. 13, with scattered tornadoes. Nearby on the Gulf Coast, storm surge and hurricane-force winds shattered neighborhoods.

Bartolomeo, 77, a retired chemist, and the volunteers evacuated inland until it was safe to return and begin moving downed trees and repairing ripped roofs throughout southern Brazoria County, west of Galveston. It was only a matter of days, however, before they were back at their labor of love: building Habitat homes. Quickly, they surveyed their inventory.

"We have built 66 homes in southern Brazoria County since 1991," Bartolomeo said. "We had no more damage to any of them than a few lost shingles here and there and minor water damage in one of the units. We are relieved but not surprised. We have never had structural wind damage or flooding from rising water in any of our Habitat units.

"First of all, we go by the city codes on everything," Bartolomeo said. "The city code officials are a great help to us and keep us updated on all the latest code changes. We are lucky to have a Texas Windstorm Program inspector in our group, and we abide by everything he says, too."

"We want to build homes to last," said Marc Bartolomeo, Frank's son. "The people who live in these houses are not earning so much, so the homes need to be maintenance-free. They can't afford damage. They help with the construction, of course, and building to the highest quality gives them a certain sense of pride – and for us, too."

Ask Bartolomeo and the southern Brazoria Habitat volunteers about the construction and you will get a whirlwind tour of the framed-in house, top to bottom. Here are the steel braces on all connections and the bolts that anchor the frame to the slab, and over there are the extra-strong roofs, the added bracing over the doors and windows, the precise pattern of nails tying the sheathing to the roof.

"It starts with the 2-by-6-inch roof trusses, with glued wood that is stronger than steel, and we tie the roof to the top plate with metal H clips. If you're going to lift this roof, you would have to lift the whole house," Frank Bartolomeo said.

"You have to hold the whole house together – tie the roof to the walls and the walls to the cement

slab. We also add 4-by-8-foot OSB panels on the outside walls, topped by insulation paneling and the siding."

"And there's more," said volunteer Jim Erskine, the project's planner. He unrolled a sheaf of his plans, the road maps for each building project. He showed that the bedrooms all have fire alarms and the kitchen and bathrooms all have ground-fault interrupters, outlets that protect against electric shock near water sources.

Furthermore, the houses are energy-efficient. "We did an analysis of one of our four-bedroom homes a couple of years ago," Bartolomeo said. "In August, the electric bill was \$47. In February, the gas bill was just \$21."

They don't build on the coast or in the 1-percent-chance floodplain, period. "At the very least, we build one foot above the 500-year floodplain," Bartolomeo said. Many building sites are donated, but they don't accept lowland lots. Their houses average around 1,200 square feet, and most have three bedrooms. Each costs less than \$45,000 in materials. That money comes from donors such as Dow Chemical, sponsor of unit No. 66 in Freeport, and fundraisers such as the annual Walk for Habitat.

By and large, the labor is free. "People come from all over to help," the younger Bartolomeo said. "It's a homey, friendly group – a barn-raising." The core group includes 35 people, most of them well into the second half of their lives. When all the pieces such as materials and building inspections come together correctly, they can build a house in 12 days, including painting and landscaping.

"These homes are not fancy but they provide excellent quality at an economical price," Marc Bartolomeo said. "We try to reduce the cost of everything we do." Habitat holds the mortgage on the house, charges no interest, and requires windstorm and flood insurance on all units.

"Our pride is to build a good house that will last longer than a lifetime, at a modest cost," Erskine said. "We put in all these extra nails and bracing and touches because that is how we want to do it. We have no profit motive."

"These people we're building for are more than customers to us," Marc Bartolomeo said. "They are our friends and neighbors. They work on the houses, just like we do, and in the process they build self esteem and pride. That's what Habitat is all about – it's all about building community and friends."

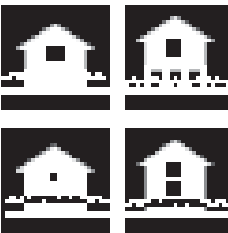
**"Our pride is to build a good house that will last longer than a lifetime."**

—Jim Erskine



# What is Retrofitting?

**RETROFITTING** means making changes to an existing building to protect it from flooding or other hazards such as high winds and earthquakes.



## Elevation

Raising your house so that the floor of the lowest living space is above the Base Flood Elevation.



## Relocation

Moving your house to a new, safer location.



## Dry Floodproofing

Sealing your house to prevent flood waters from entering.



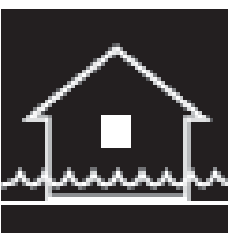
## Levee and Floodwall

Constructing barriers to prevent flood waters from entering your house.



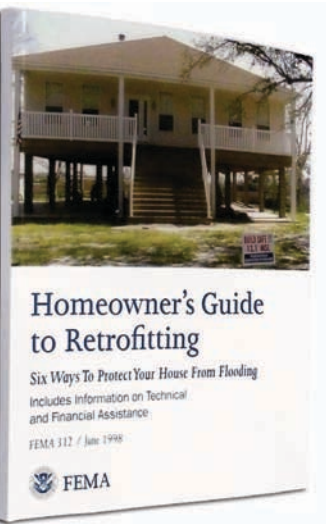
## Demolition

Razing your house and rebuilding on the same property or buying a house elsewhere.



## Wet Floodproofing

Using vents or breakaway walls to reduce structural damage by allowing flood waters to flow through uninhabited parts of a building.



## More Information

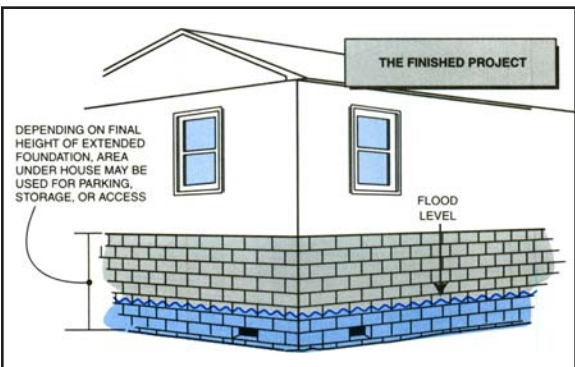
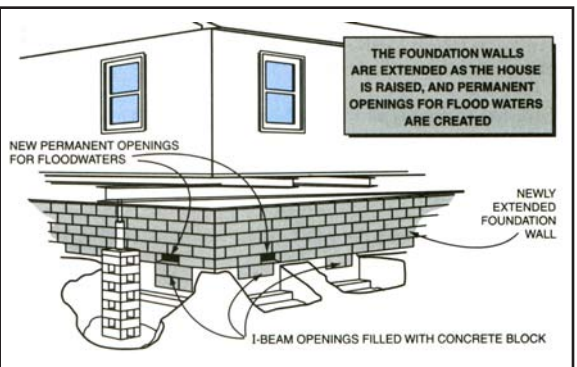
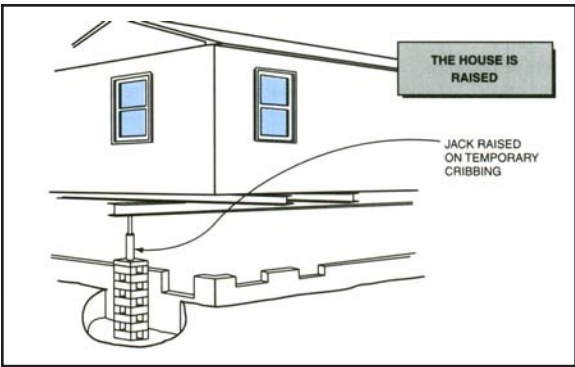
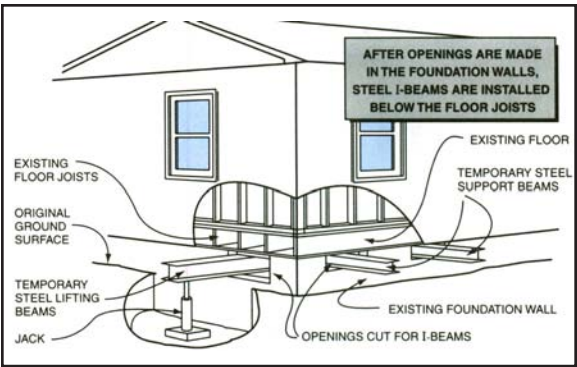
FEMA PUBLICATION 312, Homeowner's Guide to Retrofitting: Six Ways to Protect Your House From Flooding.

Order free by publication title or number: (800) 480-2520 [www.fema.gov/library](http://www.fema.gov/library)

# Elevating Your House

This set of illustrations shows how a house built on a basement or crawl space can be elevated on extended foundation walls with added flood vents to equalize any pressure from flood waters and therefore reduce

flood damage. Here it is elevated above the Base Flood Elevation, which is the level that would be reached by a flood that has a 1 percent chance of occurring in any year.



In some cases relocation is the best answer to a hazard problem.

Other Related Publications	
FEMA 55	Coastal Construction Manual
FEMA 257	Mitigation of Flood and Erosion Damage
FEMA 102	Floodproofing Non-residential Structures
FEMA 259	Engineering Principles
FEMA 347	Elevating your Flood-prone Home
FEMA 114	Design Manual for Retrofitting

## Deciding Which Method is Right for Your House

Making a decision involves four steps:

1

**Determine the Hazards to Your House**  
Flood  
Wind  
Earthquake  
Other

2

**Inspect Your House**  
Construction Type  
Foundation Type  
Lowest Floor Elevation  
Condition  
Other

3

**Check with Your Local Officials**  
Hazards  
Regulations/Codes  
Technical Guidance  
Financial Assistance

4

**Consult a Design Professional and a Contractor**  
Qualifications  
Site Inspection  
Cost Estimate  
Design  
Schedule





## Elevating a Mobile Home

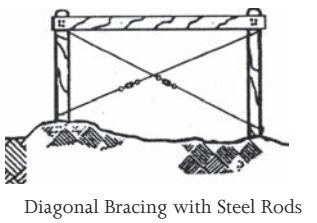
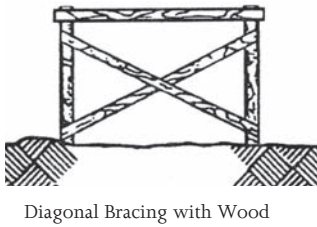
A strong foundation, cross-bracing and tiedowns are important elements for the proper elevation and anchoring of a manufactured home. Each is essential for a safe and secure mobile home installation.

### Foundations

A poured concrete footing, reinforced with rebar, gives maximum stability. Extend rebar from the footing and up into the steel-reinforced concrete or concrete block pier. Solidly fill each concrete block with concrete. Cast threaded anchor bolts into the top of each pier to anchor the mobile home frame to the foundation. Posts attached to piers with special connectors cast into the concrete are also effective. In areas with soft ground, post foundations may be able to achieve the required foundation strength. Drive posts into the ground down to a rock foundation, or to a depth specified by an engineer. Backfill posts with concrete for maximum strength.

### Cross-Bracing

Diagonal bracing reduces foundation twisting and the potential of collapse in flooding or high winds. Brace foundation posts with lumber bolted to the piers, or with steel rods fitted through drilled holes, fastened with nuts and tightened with turnbuckles.



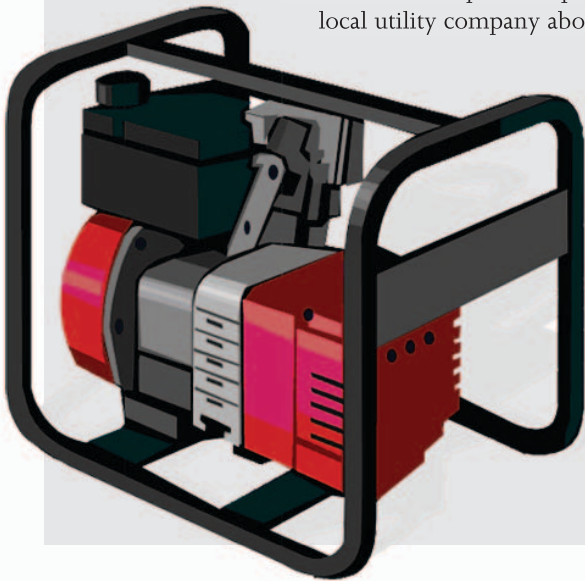
### Tie-Down Straps

Tie-down straps are used at the base of the manufactured home and can be tied over the top. The most common failure is pullout of the ground anchor. For maximum pullout resistance, cast the anchor into a concrete “deadman,” a base that functions as an anchor.

## Install a Generator for Emergencies

Power outages are commonplace during disasters, and they often last for several days. An emergency power generator can provide power to essential home appliances, heating and emergency lighting.

Remember to keep an adequate supply of fuel, ask your local utility company about regulations governing the use of generators, and never use a generator inside a building or attached garage.

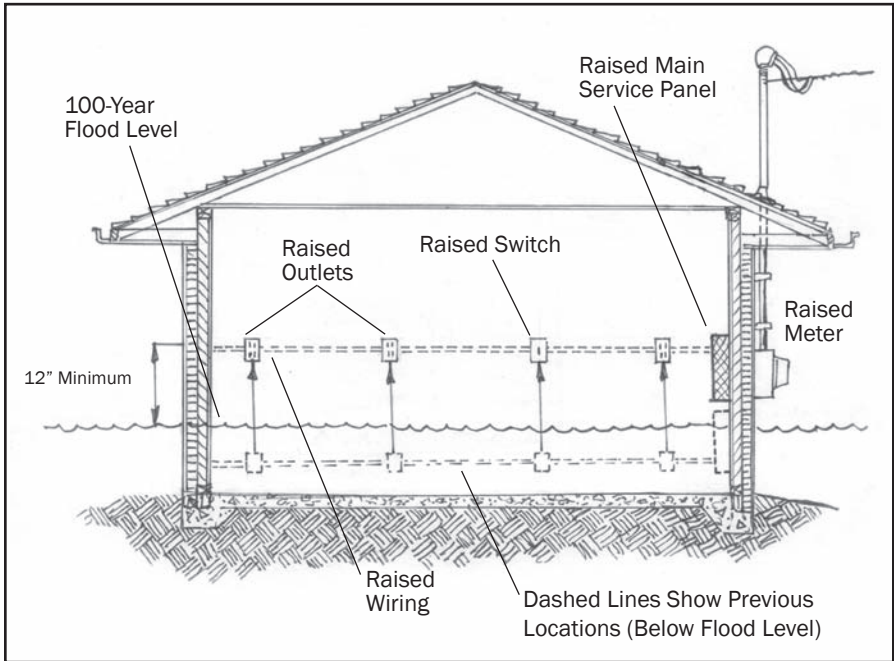


## Elevating an Electrical System

The surest way to protect your valuable electrical system is to keep it from getting wet. When rebuilding after a flood, or repairing by wet floodproofing, move all wiring at least one foot above the Base Flood Elevation. All outlets, switches, light sockets and junction boxes, as well as the main breaker or fuse box and electric motors, should be out of danger of getting wet.

Run wires overhead. If a wire has to run into the areas that could get wet, use a wire rated for underground use. No wire should end in the flood zone and all junctions should be in approved junction boxes. If a wire has to terminate below the Base Flood Elevation, it should be specially marked in the panel box and turned off at the time of a flood warning.

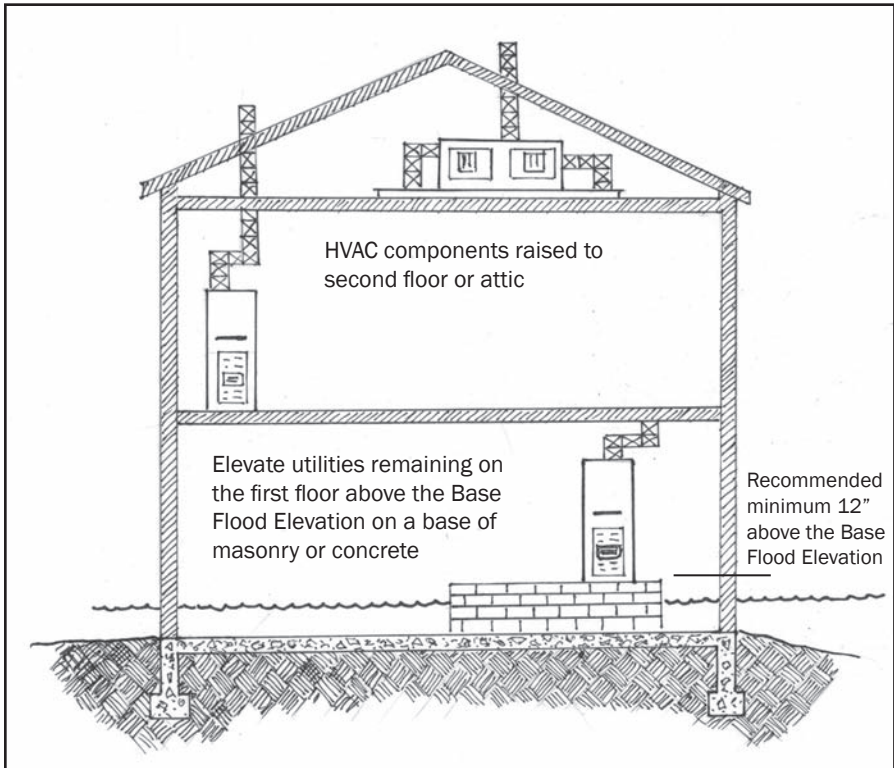
Change all outlets to ground fault interrupters (GFI). Be sure all electrical wiring is done by a licensed electrician and approved by the local building department.



## Raise or Floodproof HVAC Equipment

Heating, ventilating and cooling (HVAC) equipment, such as a furnace or hot water heater, can be damaged extensively if it is inundated by flood waters. The amount of damage will depend partly on the depth of flooding and the amount of time the equipment remains under water. Often, the damage is so great that the only solution is replacement.

In flood-prone houses, a good way to protect HVAC equipment is to move it from the basement or lower level of the house to an upper floor or even to the attic. A less desirable method is to leave the equipment where it is and build a concrete or masonry block floodwall around it. Both of these methods require the skills of a professional contractor. Relocation can involve plumbing and electrical changes, and floodwalls must be adequately designed and constructed so that they are strong enough and high enough to provide the necessary level of protection.





## What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) is a federal program enabling property owners to purchase flood insurance. The program began in 1968 with the passage of the National Flood Insurance Act to provide an alternative to increasing flood losses and disaster relief costs. If your community adopts and enforces floodplain management regulations that meet minimum federal requirements, the federal government makes flood insurance and flood disaster assistance available in your community.



The ground is bare where Hurricane Ike took away many houses on Crystal Beach, Texas.

## Why You Need Flood Insurance

### The Risk is Real

You can live miles away from water and still be the victim of flooding. Nearly one in four flood insurance claims are paid on policies in low-to-moderate-risk areas. It doesn't take a major body of water, or even a major storm, to cause a flood. Anything from a broken sewer line to a slow-moving rainstorm can cause flooding. In high-risk areas, your home has a 26 percent chance of being damaged by a flood over the life of a 30-year mortgage.

### Flood Insurance is Affordable

The problem of flooding may be widespread, but the solution is simple in communities that participate in the National Flood Insurance Program. There are a large number of private insurance companies nationwide that offer affordable flood insurance backed by the federal government. Policies are available to homeowners, condo owners, apartment owners, renters and business owners alike. A flood of just 2 inches causes \$7,800 in repairs for a 1,200-square-foot ranch-style home.

If you live in a low-to-moderate-risk area, a flood policy can cost just over \$119 a year. That amounts

to less than 30 cents a day to protect your property against a natural disaster that causes more than \$2 billion in damage in the U.S. every year. Fortunately, even in the most highest-risk areas, a flood insurance policy can cost only \$500 a year.

### Disaster Aid is Not Always Available

Many people assume they will never need flood insurance because they believe federal disaster assistance will be available. However, flooding does not always receive a federal disaster declaration. Even when it does, aid is usually offered in the form of a loan that must be paid back with interest.

Flood insurance, on the other hand, pays for all covered losses, and unlike loans, that money does not have to be paid back. A home's structure can be covered for up to \$250,000, and its contents up to \$100,000. For businesses, structural coverage is available up to \$500,000, and up to \$500,000 for contents.

Don't count on others to bail you out. Take the initiative to protect your home and business.

## First Steps in Filing Your Claim

If your home has suffered flood damage and you have a flood insurance policy, these guidelines may be helpful in filing your claim.

### Immediately

- Call your agent or insurance company. Have the following information with you when you place your call: (1) the name of your insurance company (your agent may write policies for more than one company); (2) your policy number; and (3) a telephone number or e-mail address where you can be reached.
- When you file your claim, ask for an approximate time frame during which an adjuster can be expected to visit your home so you can plan accordingly.

### Once You Have Reported Your Loss

- An adjuster will work with you to calculate the value of the damage and prepare a repair estimate.
- Please keep your agent advised if your contact information changes. If you are still in a shelter or cannot be easily reached, please provide the name of a designated relative or point of contact who can reach you.

### Before the Adjuster Arrives

- Take photographs. Take photos of any water in the house and any damaged personal property.
- Local officials may require the disposal of damaged items. If you dispose of items, keep a swatch or other sample of damaged items for the adjuster.
- Separate damaged items from undamaged items. If necessary, place damaged items outside the home.
- Make a list of damaged or lost items and include their age and value when possible. If possible, have receipts for all items available for the adjuster.
- If you have damage estimates prepared by a contractor, provide them to your adjuster.
- Contact your insurance company if an adjuster has not been assigned to you within the expected time frame.

## How Do I Purchase Flood Insurance?

Flood insurance is not available everywhere. It is available only to residents of communities participating in the National Flood Insurance Program (NFIP). For more information and to find out if your community participates in the NFIP, call **(800) 427-4661**. If your community is participating in the National Flood Insurance Program you can purchase insurance for

your property. There are no restrictions. All insurance agents can sell flood insurance policies. If your agent is not aware of the procedures for selling flood insurance policies, please call **(800) 720-1093** for a referral to an insurance agent in your area who writes NFIP policies.



**For more information on flood insurance:**

Visit [www.floodsmart.gov](http://www.floodsmart.gov) and [www.fema.gov](http://www.fema.gov)

**For general flood insurance questions, call (800) 427-4661 or contact your insurance company or insurance agent. To obtain a policy, contact your agent or call (800) 427-2419 to find an agent near you.**





# Coastal County Residents: Before You Build, Inquire About a Windstorm Insurance Inspection

The Texas Windstorm Insurance Association (TWIA) is the state’s insurer of last resort for wind and hail coverage in the 14 coastal counties and parts of Harris County. TWIA provides wind and hail coverage when insurance companies exclude that coverage from homeowners insurance and other property policies sold to coastal residents.

If you are planning to build or renovate any structure in the counties listed below, you are advised to contact your insurance agent about the Windstorm Inspection Program in order to obtain or maintain windstorm and hail insurance through TWIA.

Coastal counties and areas included: Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kenedy, Kleberg, Matagorda, Nueces, Refugio, San Patricio, Willacy, and the cities east of State

Highway 146 in Harris County (La Porte, Morgan’s Point, Pasadena, Seabrook and Shoreacres).

The following projects typically do require an inspection for windstorm insurance purposes: new structures, additions, alterations, re-roofs and repairs.

Windstorm insurance inspections under this program must be made by either a Texas Department of Insurance (TDI) inspector or an engineer who has been appointed by the Commissioner of Insurance. There is no fee for any inspection conducted by TDI.

**Important: All inspections must be made during the construction phase — TDI inspectors are unable to inspect a property after construction is completed.**

**More information:**  
[www.tdi.state.tx.us](http://www.tdi.state.tx.us) or (800) 248-6032



You will be required to carry flood insurance if you received disaster assistance for damage to your home following a disaster declaration.

## What if My Home in the 100-Year Floodplain is Declared ‘Substantially Damaged’?

- One goal of the National Flood Insurance Program (NFIP) is to keep people safe and make structures within flood hazard areas less vulnerable to future flood damage. To further this goal, the NFIP requires local communities to adopt and enforce floodplain management regulations when they join the program.
- If a structure is damaged so that the cost of restoring it to its pre-flood condition would equal or exceed 50 percent of the market value of the structure before the damage occurred, the structure is considered to be “substantially damaged.”
- If a building in a flood zone is substantially damaged, it must comply with the community’s floodplain management regulations. Options could include relocating a home outside the floodplain, elevating the home, or flood-proofing a nonresidential structure.
- Restoration of substantially damaged residential structures must include rebuilding the lowest floor to or above the identified Base Flood Elevation (BFE). Your community may require elevating one or more feet above BFE.

Responsibilities in Dealing with Substantial Damage			
Local Communities are Responsible for:			The Individual Property Owner is Responsible for:
	<ul style="list-style-type: none"><li>• Determining substantial damage or substantial improvement.</li><li>• Estimating the market value of the structure.</li><li>• Evaluating the cost of repairs or improvements (for damage repair prevailing costs for labor and related material will be used).</li><li>• Evaluating whether an area with significant damage might be a candidate for voluntary acquisition of properties.</li></ul>		
		<ul style="list-style-type: none"><li>• Working closely with local community officials to ensure compliance with floodplain regulations.</li><li>• Submitting complete cost estimates signed by a licensed contractor to community officials.</li><li>• Submitting an elevation certificate to determine the lowest floor elevation.</li><li>• Submitting building plans to show how the building will be elevated to community officials.</li></ul>	

## Wind Mitigation

### Install and Maintain Storm Shutters

Installing storm shutters on windows, sliding glass doors, skylights and French doors is one of the best ways to protect your home. You can buy manufactured shutters made of wood, steel or aluminum. You can also make storm shutters with 5/8-inch-thick exterior-grade plywood.



Storm shutters protected this house from major damage during Hurricane Ike.

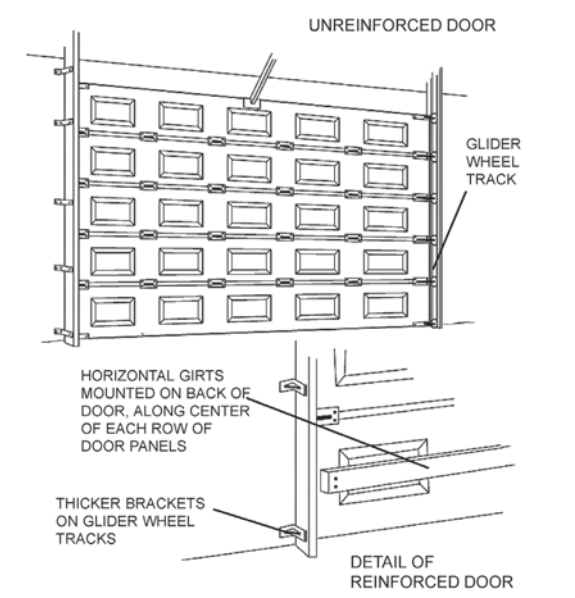
### Reinforce Your Garage Door

High winds from hurricanes can damage garage doors or even blow them in. If wind enters a garage, it can cause dangerous and expensive structural damage. Reinforcing your garage door helps you protect not only your garage, but its contents as well.

As shown in the figure, you can reinforce a garage door by adding girts across the back of the door and by strengthening the glider wheel tracks.

Reinforcing an existing garage door is something you may be able to do yourself if you have the necessary skills and tools.

Don’t wait until a hurricane warning is issued to reinforce your garage door; you probably won’t have time.



## Increased Cost of Compliance (ICC)

When a flood-insured building is damaged by a flood and local officials declare the building to be substantially damaged, NFIP coverage called Increased Cost of Compliance (ICC) can help pay for the cost to elevate, relocate, floodproof or demolish the building — up to a maximum benefit of \$30,000 as necessary to bring the structure into compliance with the community floodplain management ordinance.



# Don't Let Your Home Blow Its Top

During a windstorm, wind forces are carried from the roof down to the exterior walls and then farther down to the foundation. Homes can be damaged when wind forces are not properly transferred to the ground. Once a hurricane or major storm hits, it's too late to protect your home.

There are things you can do now to limit future wind damage. Some are fairly simple and inexpensive; others require a contractor. You'll need to consider the characteristics of your home, your financial resources and the building codes in your community.

The following actions have proven to make roofs more secure. For advice about the costs and benefits of each approach, talk to a professional builder, architect or contractor. You should also ask your building department about building permit requirements.

## Secure Your Roof

The first thing you should do is determine what type of roof you have. Homes with gabled roofs are more likely to suffer damage during a wind storm. The end wall of a home with a gabled roof takes a beating during a wind storm, and those that are not properly braced can collapse, causing major damage to the roof. In most homes, gabled roofs are built using manufactured trusses. Sheets of roof sheathing, often plywood, are fastened to the trusses with nails or staples, and roofing material is fastened to the sheathing. In many cases, the only thing holding the trusses in place is the plywood on top. This may not be enough to hold the roof in place during a windstorm. Installing additional truss bracing makes your roof's truss system much stronger.

Braces should be installed 18 inches from the ridge, in the center span, and at the base, with 8 to 10 feet between the braces. Use two 3-inch, 14-gauge wood screws or two 16d (16 penny) galvanized common nails at each truss. Because space in attics is generally limited, screws may be easier to install.

## Gable End Bracing

Gable end bracing consists of two-by-fours placed in an "X" pattern from the top center of the gable to the bottom center brace of the fourth truss, and from the bottom center of the gable to the top center brace of the fourth truss (see **Figure C**). Use two 3-inch, 14-gauge wood screws or two 16d galvanized common nails to attach the two-by-fours to the gable and to each of the four trusses.

## Hurricane Straps

There are many types of roof designs. Regardless of your type of roof, hurricane straps are designed to help hold your roof to the walls. While you are in the attic, inspect for hurricane straps of galvanized metal (see **Figures D & E**). Hurricane straps can be difficult for homeowners to install. You may need to call a professional to retrofit your home with hurricane straps. Check with your local building officials to see if hurricane straps are required in your area.

## More Information

These guidelines showcase just a few of the steps you can take to protect your home from high winds. For more ideas you can download the booklet entitled "Against The Wind" from: [www.fema.gov/library/viewRecord.do?id=1641](http://www.fema.gov/library/viewRecord.do?id=1641)

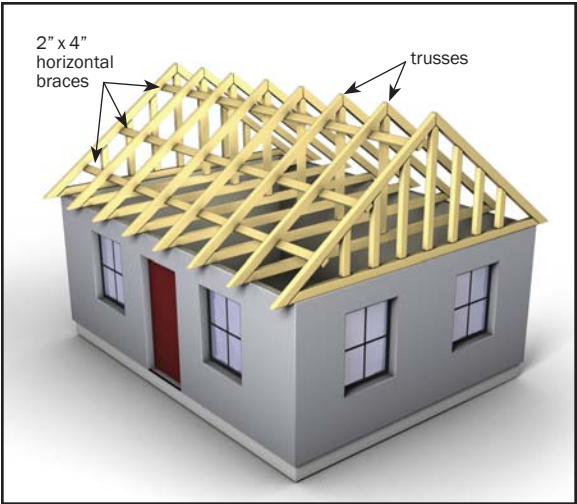


Figure B

## Roof Sheathing

Roof sheathing (the boards or plywood nailed to the roof rafters or trusses; see **Figure A**) can fail during a windstorm if not properly installed. Examine the sheathing from the attic. If many of the nails have missed the rafters, you may need to re-nail the sheathing. If you're putting on a new roof, make sure the sheathing complies with correct recommended practices.

## Truss Bracing

In gabled roofs, truss bracing usually consists of two-by-fours that run the length of the roof. If you do not have truss bracing, it should be installed. You can do this yourself or hire a professional. Install two-by-fours the length of your roof, overlapping the ends of the two-by-fours across two trusses (see **Figure B**).

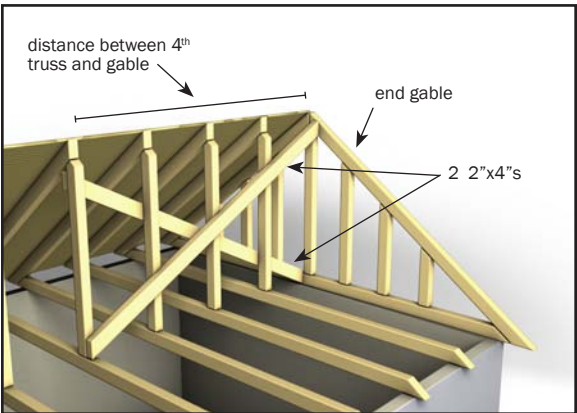


Figure C

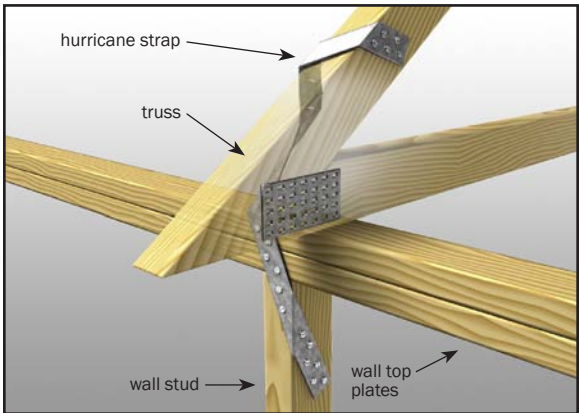


Figure D

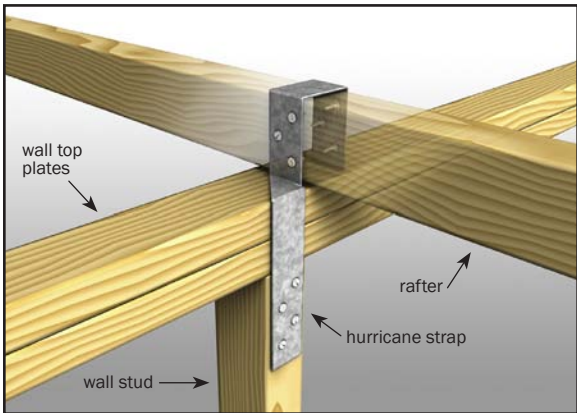


Figure E

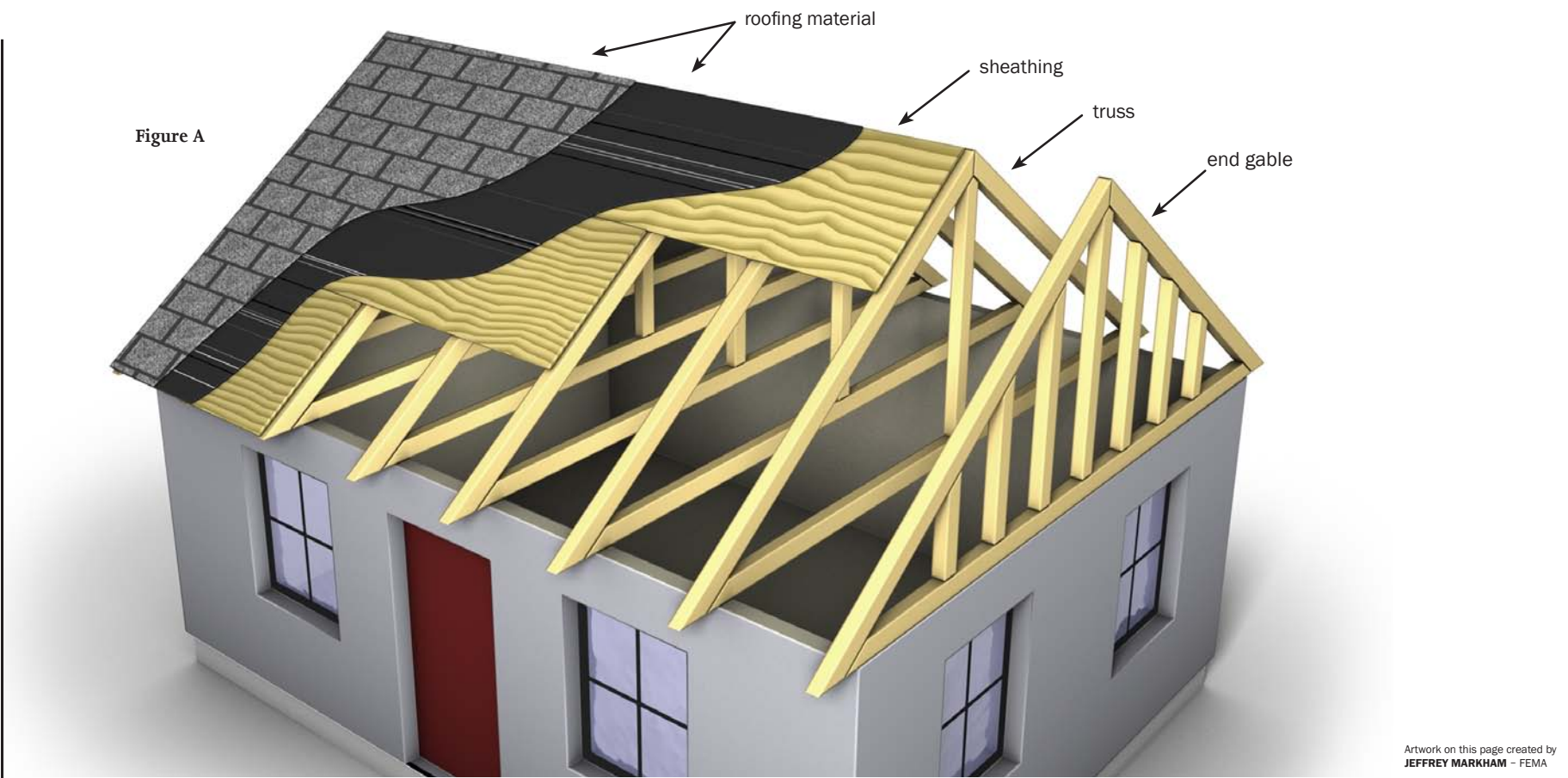


Figure A





## How Do I Hire a Contractor?

### Do Your Homework

If you are planning to hire someone to work on your home or property, you need to take steps to protect yourself from fraudulent or incompetent companies or individuals.

- Plan your project carefully. Know what you want to have done, and be able to explain it clearly to a potential contractor.
- Contact friends or others who have recently had work done on their homes and get referrals from those who had success with a contractor.
- Call several contractors and ask them questions about the work you will need. Also ask for references with names and addresses of work they have done in your area. If possible, visit a completed project as well as a site with work in progress, and interview the homeowner.
- A remodeler in Texas cannot engage in projects that change the living area of the home or that cost more than \$10,000 without first registering with the Texas Residential Construction Commission (TRCC). Contact the commission to check on any contractor you are considering.
- The Texas Department of Licensing and Regulation (TDLR) is a state regulatory agency that currently oversees more than 20 types of businesses, industries, trades and occupations. The agency is responsible for issuing licenses, conducting inspections, investigating complaints, assessing penalties, setting rules and standards, and holding hearings.
- Check on the firm's reputation at the local Better Business Bureau, Texas Association of Builders (TAB), Board of Realtors and/or building trade associations.

### Get It in Writing

Regardless of how well you know or trust a contractor, get everything related to the job in writing:

- Prepare a written scope of work, which should include everything you expect the contractor to do. Be sure to include plans (sketches or diagrams) of how you envision the project.
- Get a written estimates (bids) from at least two contractors. Each estimate should cover all aspects of the job, including time frame of work (begin and end date), plans, specifications of work to be done by the contractor and any subcontractors (or by you), who pays for materials and payment schedule.
- Compare multiple bids. Even with the same work description, each contractor will give you a different price. When comparing estimates, be sure each contractor is pricing out the same work, quality and type of materials.
- When you have chosen a contractor, obtain a written contract. The contract should clearly state all the work to be performed, materials to be used, costs, payment terms and schedule. It is also a good idea to include change-order processes, final review, sign-off procedures and cleanup. In most instances, the contractor is required to obtain any necessary building permits.
- In the presence of a witness, have the final contract that cites all of the above signed by the contractor and you as the customer. Never sign a blank contract or one with blank spaces. It may be worthwhile to have your attorney look over the contract if a lot of money is involved. Do not allow anyone to rush you into signing a contract. If anyone rushes you, tries to make you sign on the spot or will not leave a copy for you to study, be suspicious of the person and the contract.

### More Information

#### Texas Residential Construction Commission (TRCC)

[www.trcc.state.tx.us](http://www.trcc.state.tx.us)  
(877) 651-TRCC

#### Texas Department of Licensing and Regulation (TDLR)

[www.tdlr.state.tx.us](http://www.tdlr.state.tx.us)  
(800) 803-9202

#### Texas Association of Builders (TAB)

[www.texasbuilders.org](http://www.texasbuilders.org)  
(800) 252-3625

#### Greater Houston and South Texas Better Business Bureau

[www.bbbhou.org](http://www.bbbhou.org)  
(877) 468-9222

#### Texas Attorney General's Office

[www.oag.state.tx.us](http://www.oag.state.tx.us)  
Consumer Protection Hotline:  
(800) 621-0508

#### FEMA's Inspector General's Office

(800) 323-8603

## Steer Clear of Scammers

Areas recovering from floods or other disasters are often prime targets for less-than-honest business practices. Here are some tips to help safeguard against such practices:

- Beware of "special deals" offered after a disaster by contractors you don't know.
- Be suspicious of unknown contractors offering to use your home as a model to showcase their work.
- Be wary of high-pressure sales techniques. Under federal law, you are protected for a three-day "cooling-off period" against unsolicited door-to-door sales of more than \$25. If you decide to cancel a contract within three days of signing it, send your cancellation request letter by registered mail.
- Do not pay cash up front other than a down payment check written to a specific contractor. A reasonable down payment is up to 30 percent of the total project cost.
- Your contractor should be given the responsibility to call you or a qualified observer to inspect any work that will be hidden (e.g. water, sewer, electrical and plumbing) before it is closed in or covered by wallboard or paneling.
- Allegations of fraud should be directed to the Consumer Protection Division of the Texas Attorney General's Office, (800) 621-0508. Consumers also may file a complaint online – and get more information – at [www.oag.state.tx.us](http://www.oag.state.tx.us). Complaints may also be directed to FEMA's Inspector General's Office at (800) 323-8603 and to local law enforcement agencies.



## Cleaning Up and Drying Out Your Home



### Flood water can make the air in your home unhealthy

This is because when things get wet for more than two days, they usually get moldy. There may also be germs and bugs in your home after a flood.

**When cleaning wear protective clothing and gear, including:**

- ☒ An N-95 respirator
- ☒ Goggles
- ☒ Gloves
- ☒ Long pants, long-sleeved shirt and boots or work shoes

For more information contact the U.S. Environmental Protection Agency's (EPA) free hotline at (800) 438-4318 or visit the EPA website, [www.epa.gov/iaq/flood](http://www.epa.gov/iaq/flood)

If your house or its understructure has been under water from recent flooding, you will need to clean out bacteria and mold, and thoroughly dry out the building. Before beginning the main task, you should:

- Turn off the main electrical power.
- Take pictures for insurance purposes and make lists of valuable items that have been damaged.
- Open all windows and doors (weather permitting) to allow moist air to escape. At night, however, when humidity is higher outside, close up the house. Use safe, auxiliary electrical power available (generators placed outside your home and garage), fans, dehumidifiers and portable heaters to speed the drying process.
- Remove all wet furniture, contents, carpets and rugs. If you intend to keep any of these items, they must be cleaned and disinfected for health reasons.
- Discard all contaminated food.

### Interior Walls

If interior plaster walls are still holding water, remove the baseboard trim and drill holes about 2 inches from the floor level to let the water drain out.

Flood-soaked sections of wallboard will usually have to be replaced. Paneled walls can usually be dried out by prying out a bottom corner and propping it away from the wall studs.

### Exterior Walls

Insulation traps moisture and it must be removed as soon as possible so that other materials can dry out properly. Batt and blown-in insulation cannot be reused. Rigid foam insulation, however, can be removed, disinfected, dried and reinstalled.

### Floor Framing

If flood waters got into your floor framing but not into your house, you will need to check for wet floor insulation, remove it, and dry or replace it.

### Disinfecting

All surfaces and materials that were soaked by flood waters must be disinfected or "sanitized" for health reasons.

An inexpensive and easy-to-prepare disinfecting solution can be made by mixing 1.5 cups of liquid chlorine bleach in a gallon of fresh water.

### Reconstruction

As you begin to repair your flooded home, you may want to "build it better" to prevent or at least minimize damage from any future floods. Some steps to consider are:

- Use only water-resistant or waterproof reconstruction materials – moisture-resistant wallboard ("greenboard"), rigid foam insulation, exterior grade plywood for subfloors, indoor-outdoor carpeting, and galvanized or stainless steel hardware.
- Install wallboard horizontally. (If water level in any future flood is less than 4 feet deep, you will have to replace only half the wall.)

**NEVER mix bleach and ammonia cleaning products. This will produce deadly chlorine gas!**

**For more information see FEMA Publication 234**

## The Challenge with Mold and Mildew

A problem that often arises after a home is flooded is the development of mold and mildew. These microscopic organisms can begin to grow on virtually any damp surface within 24 to 48 hours. They can damage and eventually destroy the material they grow on, and can cause mild to severe respiratory, nervous system and other health problems.

If your home has been inundated by a flood, or if wet or damp conditions have resulted from sewage backup, plumbing or roofing leaks, or overflows from sinks, showers or bathtubs, then mold and mildew

will begin and continue to grow until you eliminate the source of the moisture, dry out the area and deal with the mold and mildew problem.

**FEMA Publication 606, "Mold and Mildew: Cleaning Up Your Flood-Damaged Home,"** gives you an overview of what mold is, the health risks it poses, and how to clean up and prevent the growth of mold and mildew.

You can get a printed copy by calling (800)

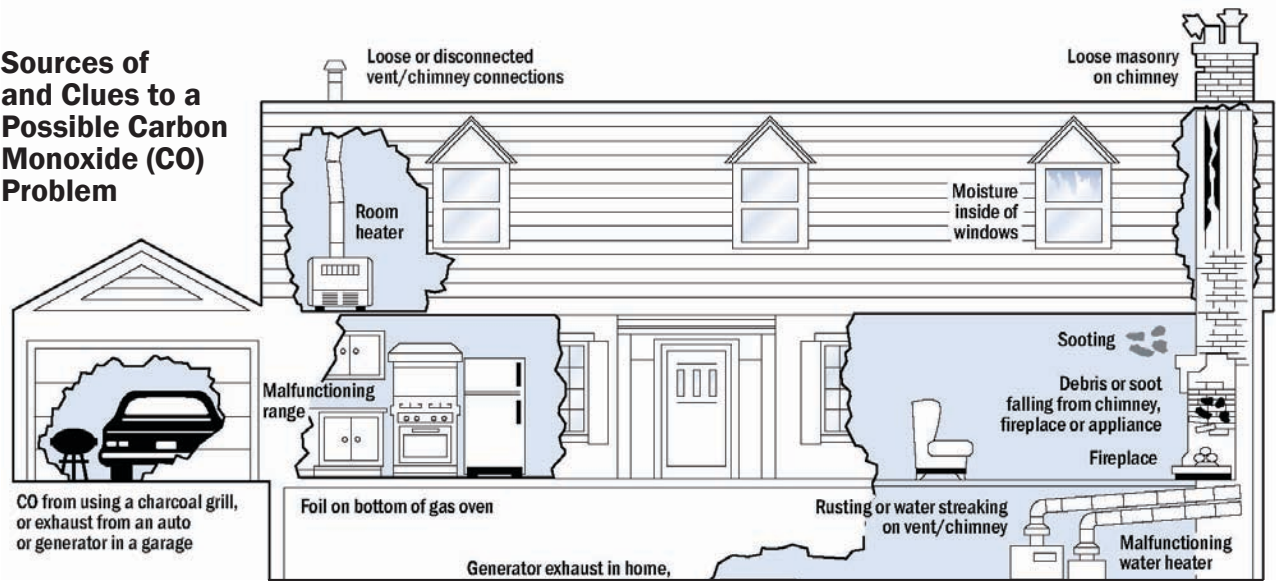
480-2520 or download a PDF copy from

[www.fema.gov/library/viewRecord.do?id=3049](http://www.fema.gov/library/viewRecord.do?id=3049)



## Protect Yourself from Carbon Monoxide Poisoning

### Sources of and Clues to a Possible Carbon Monoxide (CO) Problem



- Do not use generators, pressure washers, charcoal grills, camp stoves or other fuel-burning devices indoors or in enclosed or partially enclosed areas such as garages, even with doors or windows open.
- Do not put these devices outside near an open door, window or air vent. You could be poisoned or killed by carbon monoxide, an odorless, colorless gas emitted by burning fuel such as gasoline, charcoal or propane.
- Make sure a battery or electric-powered CO detector is functional to alert you to dangerous levels of carbon monoxide in your home.