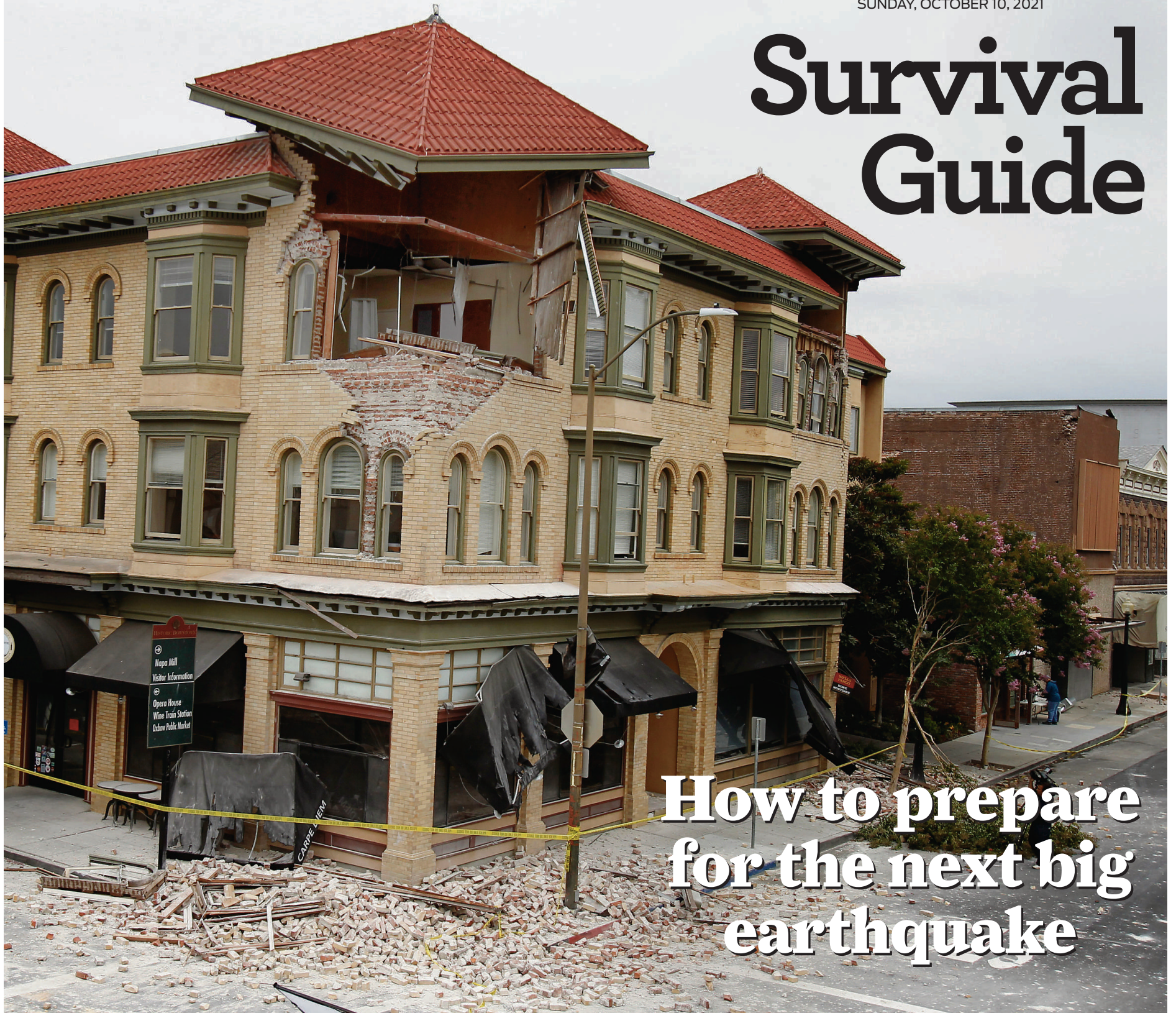


San Francisco Chronicle
SUNDAY, OCTOBER 10, 2021

Survival Guide

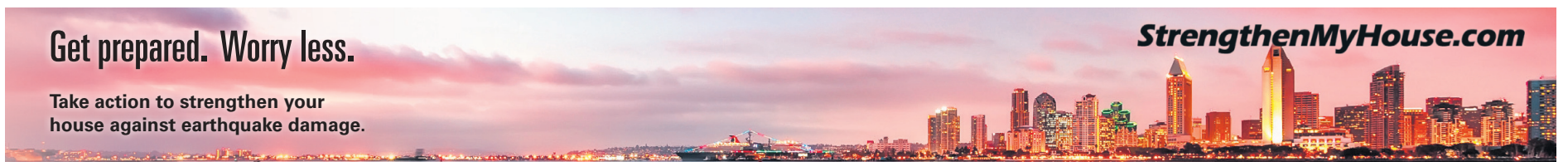


How to prepare
for the next big
earthquake

Get prepared. Worry less.

Take action to strengthen your
house against earthquake damage.

[StrengthenMyHouse.com](https://www.strengthenmyhouse.com)



SURVIVAL GUIDE

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ON THE COVER: Buildings in downtown Napa were damaged by the 6.0 quake in 2014.

Chronicle photo by Brant Ward



Erik Castro / Special to The Chronicle 2014

A house in downtown Napa was one of many in the area that suffered extensive damage in a 6.0 earthquake in 2014.

Get ready — the Bay Area is due for a major quake

Most Californians have felt the occasional earthquake, but many have never been through a major one — one that does serious, possibly cataclysmic damage and takes lives.

A major quake will be a life-changing, possibly world-changing experience. Thirty-two years ago, it took just 15 seconds for the Loma Prieta quake to turn the Bay Area and Santa Cruz upside down. Damage was widespread. There were deaths and injuries. Electricity was out, roads and bridges were damaged, communication was down. Even after things calmed down, there were aftershocks.

The good news is that the global odds of a major quake happening are relatively small. There are an estimated half million quakes on the planet each year. Of those, 100,000 can be felt. Just 100 — or 0.1% — do damage.

Online extra

The guide is available in a downloadable form at [sfchronicle.com/survival](https://www.sfchronicle.com/survival).

The not-so-good news: One quake of magnitude 8.0 or higher — stronger than the 1906 S.F. quake, estimated at 7.9 — is expected to occur somewhere each year. And the

Bay Area, where two tectonic plates meet, is a target-rich area. History suggests that we are due, if not overdue, for a major quake along the Hayward Fault in the East Bay.

The Chronicle's earthquake survival guide offers tips on putting together a survival kit; securing your home; taking care of your loved ones, neighbors and pets; and getting your finances in order. We'll tell you which apps and websites will keep you safe and informed. There is also information on what to do when the Big One hits and then, how to recover.

Keep it on hand, and take action today to prepare for the inevitable.

PREPARING FOR A PUBLIC SAFETY POWER SHUTOFF

During severe weather, high winds could cause tree branches or debris to contact electric lines and start fires. That's why PG&E may need to turn off power during severe weather to help prevent wildfires. This is called a Public Safety Power Shutoff (PSPS). While turning off the power helps prevent wildfires, we know it can be disruptive. We are working year-round to improve PSPS events for our customers and communities.

HERE ARE 5 WAYS TO PREPARE FOR A PSPS:

1



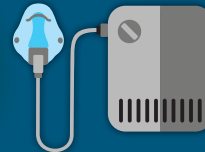
Make sure PG&E can reach you before a PSPS by updating your contact information at pge.com/mywildfirealerts.

2



Pack or restock your family's emergency kit including food, water, batteries, radio and a first aid kit.

3



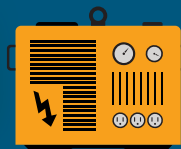
Make preparations for anyone in your family who depends on electricity for medical needs.

4



Practice manually opening your garage door.

5



Ensure any backup power sources are ready and safe to operate.



For translated support in over 200 languages, please contact PG&E at 866-743-6589.



To learn more ways to prepare for a PSPS and any emergency, visit safetyactioncenter.pge.com

SURVIVAL GUIDE



Chronicle file photo 1906

The 1906 San Francisco earthquake, at magnitude 7.9, ties for first place with an 1857 quake centered 45 miles northeast of San Luis Obispo.

CHRONICLE STAFF REPORT

The further back in time scientists look, the harder it is to pinpoint the date, place and magnitude of earthquakes.

But understanding long-term earthquake behavior and recurrence has important applications for modern risk analysis. Scientists estimate earthquake probabilities in 30-year increments so insurance companies and home buyers securing mortgages can account for the risk.

A whole branch of scientific inquiry — paleoseismology — is dedicated to hunting for ancient earthquakes that rumbled before the time of news reports, seismographs and

The 10 biggest earthquakes in California since 1800

Loma Prieta's 6.9 didn't quite make the cut — the 1906 shaker registered 7.9

diary entries.

The work often involves digging a trench along a fault and looking for disturbances in sediment layers. Where there's a rupture, paleoseismologists can carbon-date things like wood, seeds and leaf pieces to determine when the ground shaking occurred.

Understanding the threat, if put to good use, can yield benefits.

In the early 1980s, for instance, officials with the Nuclear Regulatory Commission wanted to know the earthquake potential of the Cascadia subduction zone — an offshore fault that stretches from Vancouver Island to Cape Mendocino, where the

Top 10 continues on W6

ADVERTISING FEATURE

All Things Earthquake Preparedness on new StrengthenMyHouse.com Website

“Take a deep breath and make a plan” are words of wisdom on any day. This advice is especially prescient when faced with a potential natural disaster, specifically an earthquake. Janiele Maffei, Executive Director of the California Residential Mitigation Program (CRMP), issued this directive when she was asked to suggest how Californians should prepare for earthquakes.

“Take a look at the Seven Steps to Earthquake Safety and start with something simple,” she advises. “Don’t take on a big project at first. Create an emergency go bag, store your water, and, if you’re a parent, make sure you have a backup plan to keep your child safe at school and home. Writing down your plan will feel very empowering.”

A Cal Berkeley-educated structural engineer, Maffei is pleased to announce www.StrengthenMyHouse.com, an A-Z website that provides Californians with comprehensive information concerning earthquake preparedness including vulnerability by location, hazard prep, quick fixes to earthquake resilience, pre-engineered seismic retrofit plans, a directory of trained contractors, and other information.

The California Earthquake Authority (CEA) provides residential earthquake insurance and continues to provide partial funding for the CRMP’s mitigation program, Earthquake Brace + Bolt (EBB). To date, EBB has provided funding to seismically retrofit more than 15,600 homes in California.” EBB provides grants of up to \$3,000 for individual home retrofitting. Registration is scheduled to open for this year’s EBB grants on October 27.

“We are also very excited to announce a new low-income supplemental grant,” Maffei says. “Applicants with household incomes of less than 80% of the California median income will qualify for this grant. Our goal is to provide the entire cost of retrofitting, though our grant recipients may be responsible for a small percentage of the final cost.”

The low-income supplementary grant will greatly increase CEA’s ultimate desire to ensure every vulnerable house in the Bay Area and beyond gets retrofitted. The Earthquake Brace + Bolt program has also expanded to include 40 new ZIP Codes that encompass several cities and outlying areas. This expanded coverage increases the EBB and low-income grant eligibility significantly. You can identify your eligibility for the EBB grant at Program Rules Earthquake Brace + Bolt | EBB

StrengthenMyHouse.com also features several -types of homes are particularly vulnerable to extensive earthquake damage. A raised foundation can result in a house shifting off the supports when shaking due to an earthquake. A house that was built without a foundation, aka a post & pier home, can also shift and potentially collapse during a quake. Mobile and manufactured homes also lack a foundation that can resist earthquake shaking. A seismic bracing system designed specifically for these homes can greatly strengthen them against earthquakes.

Hillside homes are also vulnerable in many unique ways; however, they can also be strengthened in several ways to be properly braced to prevent damage during an earth-



quake and subsequent tremors. Older chimneys often crack during an earthquake, and fireplaces can be especially hazardous inside the home. Having your chimney inspected for vulnerability will ultimately save money and property when an earthquake occurs. A living space over a garage is also vulnerable to shaking, as are garage doors.

The StrengthenMyHouse.com website has a link to a list of trained contractors as well as questions to ask a potential contractor to help you make your decision. There are also Plan Sets for Northern and Southern California available for most traditionally designed homes. These sets are already engineer-approved to save time and money. Numerous other resources are also available on the website.

“The reality is most structures will not collapse during an earthquake,” says Maffei. “But you want to keep your house on its foundation. You also want to prepare your interior environment to withstand what amounts to the Jolly Green Giant holding your house by the sides and shaking it.”

To protect yourself and your family inside the home, Maffei states all heavy furniture must be bolted to the wall, nothing large should hang from the ceiling, and no object should hang behind the bed. She advises going through your house immediately to survey for easily preventable vulnerabilities, like that heavy painting from your grandparents that hangs behind the bed or the large unanchored hutch that would crash right through the dining room or kitchen table. You should also identify locations where you and your family can “Drop, Cover, and Hold On” under heavy furniture, like a dining room table or a secured counter, to name two examples.

“There are many forms of readiness you can take to significantly lower property damage or prevent someone you love from getting hurt,” she says. “For example, many of us commute to work in San Francisco but lack an extensive plan for our children at school in the East Bay or Marin. What if BART is suspended and the bridges close? What if our regular childcare provider can’t get to the school to pick up our kids? It’s important to let the

school know beforehand that your child should remain on site until someone can collect her.”

Maffei says that, unlike hurricanes, there is no warning, no time to prepare, before an earthquake strikes, so safety really is all about the planning.

“Many of us have experienced empty shelves during the pandemic,” she says. “Think about those items like toilet paper and water that were unavailable. Now is the time to purchase a healthy supply of these, in addition to flashlight batteries and other items listed on the StrengthenMyHouse.com website.

Taking the Seven Earthquake Safety Steps is a great way to start.

1. Secure your Space
2. Plan to be Safe
3. Organize Disaster Supplies
4. Minimize Financial Hardship
5. Drop, Cover, and Hold On
6. Improve Safety
7. Reconnect and Restore

Each of these steps is finely detailed with links to resources like the Earthquake Emergency Kit and a Financial Emergency Kit. The MyShake app, developed by the University of California, provides “ShakeAlerts,” an early warning that should be on every family member’s smartphone.

The California Earthquake Authority has launched StrengthenMyHouse.com to further inform Golden State residents about the unexpected. To further this effort, the Earthquake Brace + Bolt and low-income supplementary grant programs will begin taking applications on October 27. Janiele Maffei and her team urge homeowners to inspect their homes for earthquake vulnerability and all Californians to prepare for the next unexpected but inevitable earthquake. Visit the StrengthenMyHouse.com website to take control of your preparation. ■

Top 10 from page W4

Juan de Fuca tectonic plate is diving beneath the North American plate — to decide where to locate two nuclear power plants, said Brian Atwater, a U.S. Geological Survey seismologist and affiliate professor at the University of Washington.

The query led to a groundbreaking discovery: Atwater and his colleagues found that an earthquake of roughly magnitude 9 emanating from the subduction zone, where plates collide, rocked California and the Pacific Northwest around 1700, plus or minus 20 years. They relied on geologic evidence such as dead trees and coastal mud inundation, indicating a tsunami.

Using written records from Japan, where the tsunami also washed ashore, scientists determined an exact date: Jan. 27, 1700.

Until the discovery, no one knew that the subduction zone was capable of releasing such a powerful earthquake. In recent centuries, no quake close to that magnitude has rocked California.

Here are the state's 10 biggest earthquakes — by magnitude — since 1800, according to the USGS and California Geological Survey.

Fort Tejon, 1857**Magnitude 7.9**

The earthquake, centered 45 miles northeast of San Luis Obispo, ruptured 225 miles of the San Andreas Fault on the morning of Jan. 9, 1857, and shook the ground for an estimated one to three minutes. One person was killed when an adobe house in Los Angeles County collapsed.

At Fort Tejon, an Army post 4 miles from the fault, two buildings were destroyed, and others were badly damaged. Elsewhere, trees were uprooted and structures collapsed.

San Francisco, 1906**Magnitude 7.9**

According to some estimates, the San Francisco earthquake and firestorm killed more than 3,000 people, one of the greatest losses of life



Chronicle file photo 1906

The 1906 San Francisco earthquake had an estimated magnitude of 7.9. The quake and subsequent fire may have killed more than 3,000 people.

from a natural disaster in U.S. history.

The quake ruptured 296 miles of the San Andreas Fault at 5:12 a.m. April 18, 1906. The disaster marked the beginning of a “scientific revolution” in understanding earthquakes and the forces that drive them, the USGS says.

The catastrophe also led to a rebuilding boom. Some of the city's best museums, theaters and Art Deco skyscrapers were constructed in the recovery period.

Owens Valley, 1872**Magnitude 7.8**

The earthquake, centered near Lone Pine (Inyo County), struck about 2:30 a.m. March 26, 1872. It destroyed most of Lone Pine and killed 27 of its residents, about 10 percent of the town's population.

People throughout California and in parts of Nevada, Oregon, Arizona and Utah reported feeling the earthquake.

West of Eureka, 1980**Magnitude 7.4**

Six people were injured when the earthquake, centered about 40 miles northwest of Eureka, struck on Nov. 8, 1980. Aftershocks continued for another two days.

The main earthquake was felt from San Francisco to Salem, Oregon. The damage was minor rela-

tive to the size of the earthquake, according to the USGS. The quake caused some minor landslides, the partial collapse of a road overpass and broken chimneys.

Santa Cruz Mountains, 1838**Magnitude 7.4**

Scientists do not know the exact magnitude of this earthquake, on the San Andreas Fault in the Santa Cruz Mountains, but estimate it to be 7.4. In 2014, researchers used tree-ring analysis and radiocarbon dating of redwood chips they found in a trench to help find the time and place of the June 1838 quake.

The quake is believed to have stretched from San Francisco to San Juan Bautista.

Imperial Valley, 1892**Magnitude 7.3**

The Feb. 24, 1892, earthquake near the California-Mexico border destroyed adobe buildings and knocked down chimneys in San Diego County. Other parts of Southern California had reports of rock slides and ground fissures.

Wrightwood, 1812**Magnitude 7.3**

Forty Native Americans were killed in Mission San Juan Capi-

strano, which collapsed during the mid-morning earthquake of Dec. 8, 1812, centered in San Bernardino County. Other missions, including San Gabriel Arcangel, reported damage as well.

Landers, 1992**Magnitude 7.3**

One child was killed and about 400 people were injured in the early morning earthquake on June 28, 1992, centered about 130 miles east of Los Angeles. Buildings, roads, and power and water systems were considerably damaged across desert communities.

There were about 25 small foreshocks and thousands of aftershocks, according to the USGS.

Kern County, 1952**Magnitude 7.3**

A dozen people were killed in the July 21, 1952, earthquake that hit just before 5 a.m. along the White Wolf Fault, about 30 miles south of Bakersfield. It caused \$60 million in property damage and was felt as far away as Reno.

The quake was tied to an aftershock a month later near Bakersfield, when two more people were killed and dozens were injured. The aftershock caused \$10 million in property damage, mostly in downtown Bakersfield.

Petrolia, 1992**Magnitude 7.2**

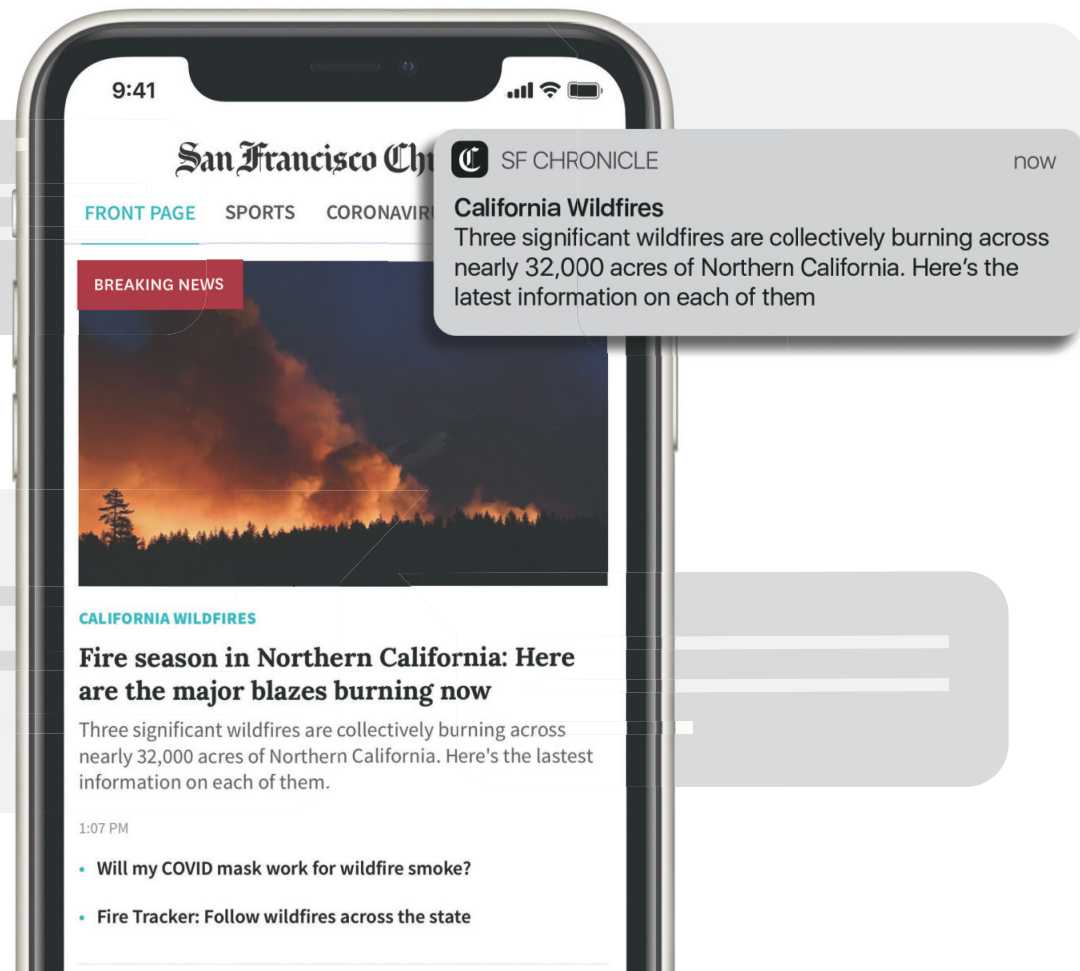
More than 350 people were injured in the April 25, 1992, earthquake and ensuing fire that caused \$50 million in property damage. The quake, centered in Humboldt County, was felt as far away as Oregon and Nevada.

A sensor near the epicenter recorded an acceleration of 2.2 times g, the standard gravitational acceleration on Earth's surface, which was the strongest ever measured in an earthquake at the time, according to the Berkeley Seismology Lab.

San Francisco Chronicle

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PLANNING

Have emergency kits packed and ready

Packaged kits are available from retailers. If you assemble your own, here's the minimum it should contain, according to the Red Cross. For the car, much of the gear is best placed tightly into a backpack to save space. At home, most items can be stored in a basic outdoor garbage can.



Carlos Avila Gonzalez / The Chronicle 2017

For the car

Water: A three-day supply amounting to 1 gallon per person per day.
Food: A three-day supply, about 1,000 calories — something lightweight like energy bars
Water purification tablets, or a water filter in case you go beyond three days and need to find alternate sources of water.
Portable radio
Flashlight and/or light stick
Charger for cell phones and devices, powered by batteries, along with a cell phone charger cord for the car
Batteries
Blankets: Emergency survival types are compact and light

Tube tent
Sanitation and personal hygiene supplies, including toilet paper
Leatherman-style multitool or pocket-knife with can opener, screwdriver heads and knife blade
Poncho or other rain gear
Candles
Waterproof matches
50 feet of rope (3/16 or bigger)
Duct tape
Work gloves
First-aid kit
Sewing kit
Whistle
Smoke/dust mask
Gas meter valve shut-off wrench
Instant hand warmers

For the home

All the previous items, plus:
Medications, at least a seven-day supply
Cash: Small bills and coins
Tools: Foldable shovel, hatchet, screw-driver, pliers, pocketknife and can opener
Extra clothes
Battery-powered lamp
Plastic sheeting (for emergency shelter)
Paper or plastic plates, bowls and cutlery
Small cooking pot
Soap and bath towels
Copies of personal documents
Emergency contact list
Maps of the area

Other items to consider

Additional medical supplies (hearing aids, glasses, contacts, syringes, etc.)
Baby supplies
Games and toys (for children)
Pet supplies
Two-way radios
Extra car and house keys
Scissors
Sleeping bags

PLANNING

Get financial, insurance documents in order

CHRONICLE STAFF REPORT

Thousands of people who have lost homes in the California wildfires have discovered too late that their insurance coverage has not kept up with the rising cost of lumber, labor and other rebuilding materials. Talk to your insurer to make sure you have enough coverage but, for a quick reality check, ask a local contractor how much it costs to build per square foot and multiply that by your home's size.

One of the most painful post-disaster tasks is compiling an inventory of possessions so you can seek reimbursement. It's far easier to put the list together beforehand. Here are other tips for shoring up your finances:

Safeguard your documents: Keep a copy of your will, trust, birth and marriage certificates, Social Security cards, insurance papers, medical information, most recent tax return, receipts for high-ticket items and other important documents in a safe deposit box. You can also scan and save them to a DVD or flash drive, which you can give to a trusted friend or family member outside the region. Another option is to save them in the cloud.

Break out the camera: Your insurer will pay for everything you lost — up to your policy limits — as a result of a covered “peril,” such as fire or windstorm. To get reimbursed for your personal belongings, most companies require a detailed inventory of every item lost, although some will advance a portion of your contents coverage without this list. While your house is still standing, use an online inventory or app or print a blank one from the California Department of Insurance or consumer group United Policyholders. Store it away from your home or better yet, in the cloud. At the very least, take photos or videos of everything in your home and out-buildings, including the inside of drawers, cabinets and closets.

Know your coverage: Most policies will pay for losses from fire, smoke, wind, hail, water (excluding floods), vandalism and theft. They do not cover losses caused by earthquakes and floods. Those require separate policies.



Noah Berger / Associated Press 2020

Flames consume a home as the Quail Fire burns near Winters last year. Replacement-cost insurance coverage will pay to replace your building and contents — up to your policy limits — with new ones of similar kind and quality.

Make sure you have replacement-cost coverage. This will pay to replace your building and contents — up to your policy limits — with new ones of similar kind and quality. Avoid actual cash value policies, which pay only the depreciated value of what you lost.

It's good to have extended replacement-cost coverage, which will pay a certain amount above your policy limits. This can help pay for the surge in local building costs that often follows a widespread disaster. Also opt for building code upgrades, which will pay an amount over your policy limit to comply with new code requirements. A guaranteed replacement-cost policy will pay to replace your house no matter the cost, but these are not common and very expensive.

For homes that are not damaged or destroyed in a disaster, but are located

in a ZIP code within or adjacent to a fire disaster, an insurer cannot cancel or refuse to renew a residential property insurance policy for one year after the declaration of a state of emergency. CalFire determines the fire perimeter, and the insurance commissioner announces which ZIP codes are included.

Homeowners who can't get covered by a mainstream insurer may need to seek coverage from a “non-admitted” carrier, such as those affiliated with Lloyd's of London. Also called surplus lines, these insurers are far less regulated than admitted carriers and do not participate in the California Insurance Guarantee Association, which pays claims if an admitted carrier fails.

If you can't get insurance elsewhere, contact the California Fair Plan, which provides insurance for the home or

contents from fire or lightning, internal explosion and smoke. For an additional premium, you can add extended coverage (for windstorm, hail, explosions, riots, aircraft, vehicles and volcanic eruptions as well as vandalism/mischief). You can purchase a Fair Plan policy from a licensed agent or broker or contact the plan directly at 800-339-4099. Last year the Fair Plan increased its maximum coverage limit to \$3 million from \$1.5 million per home.

Quake and flood coverage: Your homeowners or renters insurance company can provide a National Flood Insurance Policy and a quake policy from the California Earthquake Authority. A few companies sell stand-alone earthquake insurance, and several offer private flood insurance in California.

PLANNING

What to know about the ShakeAlert system

CHRONICLE STAFF REPORT

Tens of thousands of people in the Bay Area and across Northern California experienced an earthquake early warning system for the first time earlier this year, after a magnitude 4.7 quake near Truckee activated the U.S. Geological Survey's ShakeAlert system.

While the initial alerts weren't perfect — some far from Truckee were warned of a much stronger quake than the one that actually occurred — the earthquakes provided an important test for the system, which can give people crucial seconds to take cover before an earthquake strikes.

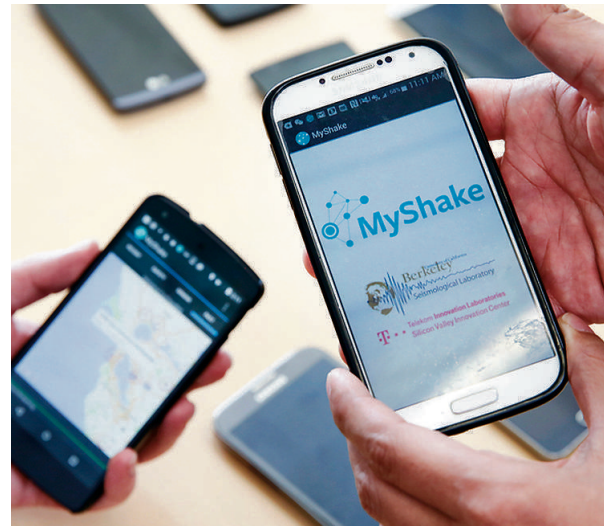
Here's what you need to know about the ShakeAlert system:

What is ShakeAlert?: It is impossible to predict earthquakes. But using more than 1,000 sensors placed throughout the West Coast, the USGS is able to detect earthquakes right as the first seismic motion reaches the surface of the Earth.

Preliminary information about the earthquake is then transmitted to one of three USGS ShakeAlert processing centers, where, through an automated process, a determination is made whether the quake is significant enough to issue an alert.

Right now, there are more than 1,100 sensors up and down the West Coast, according to Robert de Groot, the USGS communication coordinator for ShakeAlert. The USGS hopes to have 1,675 by the end of 2025.

How do I sign up?: There are several ways to receive early warnings from ShakeAlert. A mobile application called MyShake is free in the Apple App Store and on Google Play. Through a USGS partnership with Google, Android users in California automatically receive ShakeAlert warnings.



Michael Short / Special to The Chronicle 2016

The MyShake app is an earthquake-detection app for Apple and Android mobile phones.

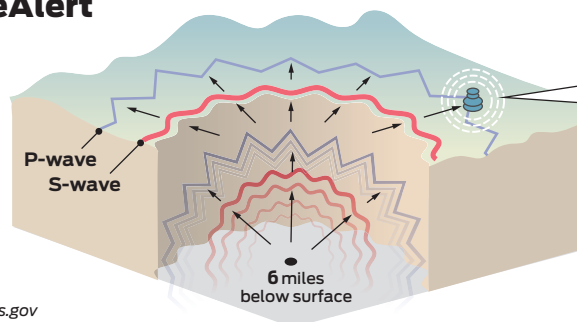
The Android and app warnings are triggered in response to magnitude 4.5 earthquakes and greater. Wireless Emergency Alerts, similar to Amber Alerts, are used in response to earthquakes greater than a 5.0 magnitude, according to state officials.

At least 30,000 people received warnings about the Truckee earthquake through the mobile apps, according to de Groot. Officials are still calculating the number of people who received the alerts from Google, but said "it could be a significant number."

During a magnitude 4.5 earthquake that struck Southern California in September 2020, about 2.2 million people received alerts.

How ShakeAlert app works

When an earthquake hits, fast-moving P-waves, slower-moving S-waves and then surface waves radiate.



Sensors detect the initial P-waves, which rarely do damage, and send information about projected size, location and shaking to processing centers. If the quake fits the correct profile, an alert is sent out. The system does not predict quakes, but warns within seconds that waves are on the way. It is designed so you can prepare for the more dangerous S-waves and following surface waves.

Source: earthquake.usgs.gov

Graphics by John Blanchard / The Chronicle

FREE APPS

FEMA Mobile: The federal disaster relief agency’s app will allow you to set weather alerts from the National Weather Service for up to five locations in the United States. The alerts provide information about wildfire risks, dangerous storms and heat waves, along with other natural disasters. You can also share emergency alerts, prepare a disaster checklist and learn preparedness tips. The app is also available in Spanish.

American Red Cross: The nonprofit provides a number of free emergency alert apps for download, including an all-inclusive Emergency app and one specifically for earthquakes. The apps also include one called First Aid, which provides information if you need to render first aid.

Zello: This app can turn your phone into a walkie-talkie, allowing you and anyone else with the app to communicate via short audio messages. It can be a helpful way to stay connected to others during an emergency, or to make quick contact with separated family members.

5-0 Radio Police Scanner: You can listen to live police scanners using this free app, including San Francisco fire and emergency medical services. Scanners can sometimes provide useful information during natural disasters.

Broadcastify: Public safety live streams of quake, fire, police, aircraft and more. Choose by name or location. The app includes official feeds and most popular feeds.

COUNTY-SPECIFIC APPS

Alameda County: To enroll in the county’s AC Alert system, download the Everbridge app and search for AC Alert. The system allows you to provide multiple methods of emergency contact and other useful information.

Santa Clara County: The ReadySCC free mobile app helps you create an emergency preparedness kit and an emergency preparedness family plan, including important emergency contacts and links to resources and information.

PHONE AND EMAIL

You can register your phone and email address for location-specific alerts with local and federal government sources. If you text “PREPARE” to 43362, your phone number will be signed up for FEMA text alerts and emergency preparedness tips. Save the number 43362 in your contacts. If you text this number with the word “SHELTER” and your ZIP code, you can find open shelters.

More useful tech tools to help during a disaster

Power blackouts and poorly-thought-out alert systems have left Californians without critical information during natural disasters in the past. But there are some free apps for your phone, numbers to text, systems to register for and technology to buy that could ensure that you have the most accurate and up-to-date information when disaster strikes, even during a power blackout.

To best ensure you get critical information when you most need it, choose a diverse range of technology options in case any one particular solution fails. The Federal Emergency Management Agency also reminds people that mobile networks can become overwhelmed in a crisis, and it is often easier to receive information via text than over a phone call or on an app during those times.

All of the following apps are available for iOS in the Apple App Store or Android in the Google Play store unless otherwise indicated.



Lea Suzuki / The Chronicle 2020

Citizen journalist Sarah Stierch checks an alert on her cell phone as she monitors scanners in Sonoma. Safety apps can help in an emergency.

COUNTY-SPECIFIC ALERTS

For most Bay Area counties, you can sign up for local government and public safety alerts, including emergency warnings, via Nixle by texting your ZIP code to 888-777. You can also fill out an online registration form to receive alerts via phone or email for some Bay Area counties. Search your local county government website for information on signing up in Marin, San Mateo, Santa Clara, Sonoma and Solano counties.

TWITTER

You can also receive useful information from emergency alerts shared on county and other government Twitter accounts.

San Francisco: @SF_Emergency

Contra Costa: @ContraCostaFire, @CCCCounty and @CoCoCWS

Marin: @AlertMarin, @MarinSheriff and @MarinCountyFire

Alameda: @AlamedaCoAlert, @AlamedaCoFire and @ACSOSheriffs

Napa: @napacountyfire, @napasheriff and @CountyofNapa

San Mateo: @sanmateoco, @SMCSheriff and @SanMateoPD

Santa Clara: @sccfiredept, @SCCGov and @SCC_OES

Solano: @SolanoFire, @SolanoSheriff and @SolanoCountyEMS

Sonoma: @CountyofSonoma and @SonomaSheriff

Cal Fire: @CAL_FIRE

WIRELESS EMERGENCY ALERTS

Federal agencies like the National Weather Service and local governments use a system called Wireless Emergency Alerts to communicate with most cell phones. The alerts are usually accompanied by a sound and vibration pattern so that users can identify their importance.

But in areas with poor or no cell phone service, the alerts may be critically delayed or not arrive. Some people have reported that they did not receive essential emergency alerts when they were supposed to. Other apps and messaging systems that rely on Wi-Fi and data plans may help fill in the gaps left by the wireless emergency alert system.

The federal Emergency Alert System is a separate system that uses broadcasters and satellite providers to broadcast emergency warnings to television and radio. If you cannot access cell service or the internet, turning on a radio or television during an emergency may help you get the critical information you need.

Both the WEA and the EAS are part of the Integrated Public Alert and Warning System, which also uses digital road signs and sirens as alternative alerting mechanisms.

KEY HARDWARE

FEMA and the California Governor’s Office of Emergency Services recommend that families have an emergency charging option for cell phones in the case of a power failure. Be sure to keep at least one backup portable charger in your emergency preparedness kit.

Most state and local emergency preparedness lists recommend finding a battery-powered or hand-crank radio so that you can get information if you cannot access the internet or any cell-based technologies. Some lists also recommend extra batteries and a portable drive or cloud-based storage with scans of important documents, like insurance information.

If cell and internet networks are knocked out during a natural disaster, satellite phones can be an option to stay in touch because they rely on a network of satellites unaffected by natural disasters.

Though expensive, there are a few satellite phones commonly recommended for emergency use, including the Inmarsat IsatPhone 2 and the Iridium 9555. Some retailers have offered the Inmarsat for free alongside a yearly plan, and it may be worth exploring if you’re willing to spend \$50 to \$100 a year to keep a satellite phone active for emergencies.

PLANNING

Prepare your home, plan before the earthquake hits

The national Ready Campaign says families should be able to answer these questions:
How will I receive emergency alerts and warnings?
What is my shelter plan?
What is my evacuation route?
Here are practical tips on how to prepare for an earthquake:

- ▶ Gather the family and create a plan together.
- ▶ Pick safe places in each room to take cover in when the shaking begins — under furniture or against an interior wall away from windows, bookcases or tall furniture that could fall. Stay away from kitchens and garages, which tend to be the most dangerous

- places in a home because of the objects kept there. Also, doorways are not stronger than other parts of the house, so don't rely on them for protection.
- ▶ Practice "Drop, cover and hold on" in each safe place — and schedule drills every six months.
 - ▶ Conduct a "hazard hunt," looking for objects that could fall or fly through the air.
 - ▶ Put a working flashlight and shoes next to each bed.
 - ▶ Teach everyone to knock on something three times repeatedly if trapped.
 - ▶ Identify a safe place outside to meet after the shaking stops.

- ▶ Designate an out-of-state person for everyone to call to relay information to.
- ▶ Assign someone to turn off the gas and to gather pets.
- ▶ Create an earthquake kit as a family, and include one comfort item per child, like a teddy bear or toy, as well as activities or children's books.
- ▶ Talk about what to do if an earthquake happens while family members are at school or work — reassuring young children that they will be safe until picked up while also creating a meeting place for adults and older children.

— Chronicle staff report

REINFORCE CEILING

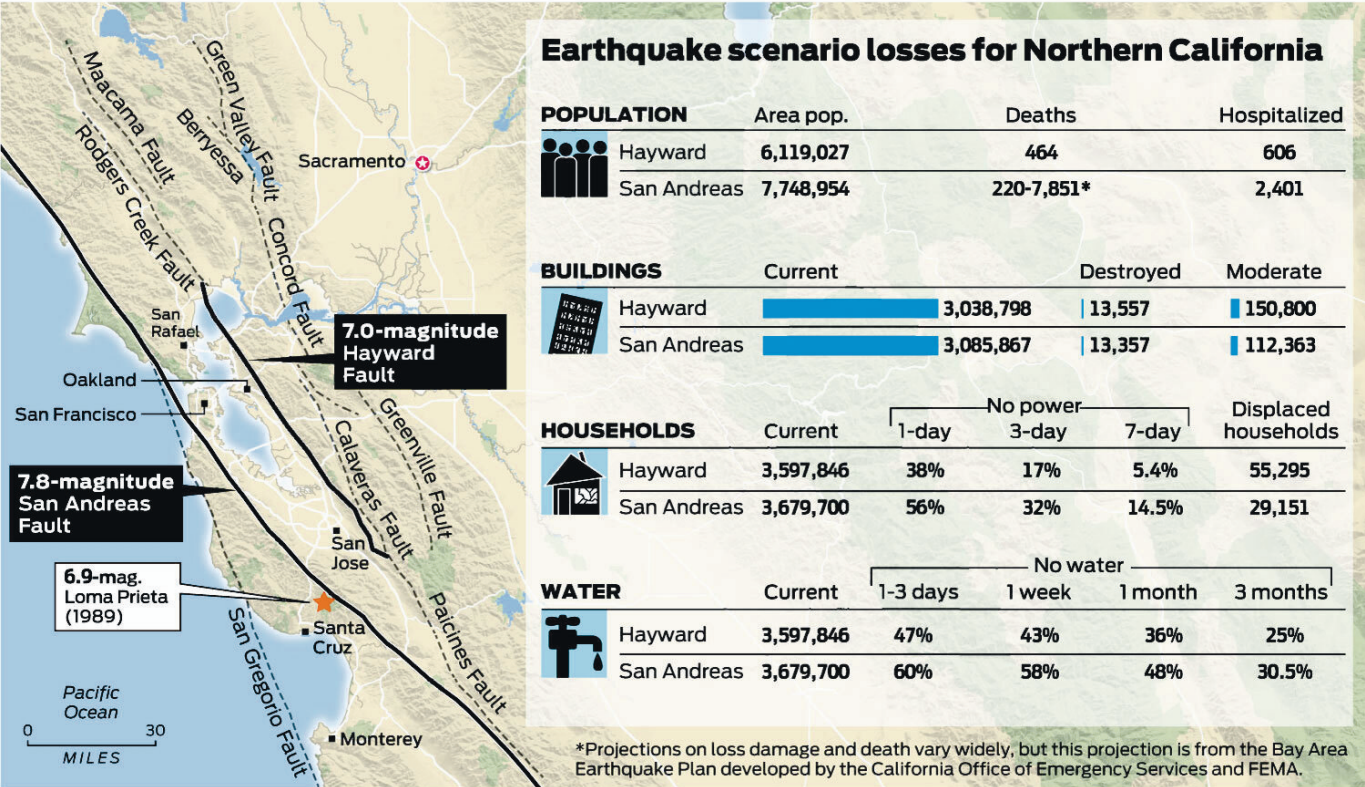
Screw plywood sheets to the attic ceiling, close to the chimney. Chimneys commonly collapse in a big quake, and this will help stop falling bricks from plunging through the roof and ceiling onto you.

FORTIFY THE FOUNDATION

- ▶ Secure your house to its foundation with anchor bolts, if it hasn't already been done. It will help prevent the structure from sliding off its foundation.
- ▶ Install extra wooden sheeting along the home's cripple walls — those short walls in the crawl space between the foundation and floor. That will also help keep the house on its foundation.

▶ If you live in a soft-story house, meaning the first floor is not well reinforced and will collapse in a big temblor, it's recommended to spend the considerable amount of money it will take to have it retrofitted. Or if you don't own the building, talk to the landlord about this. In some cases, the retrofit is required by local law.

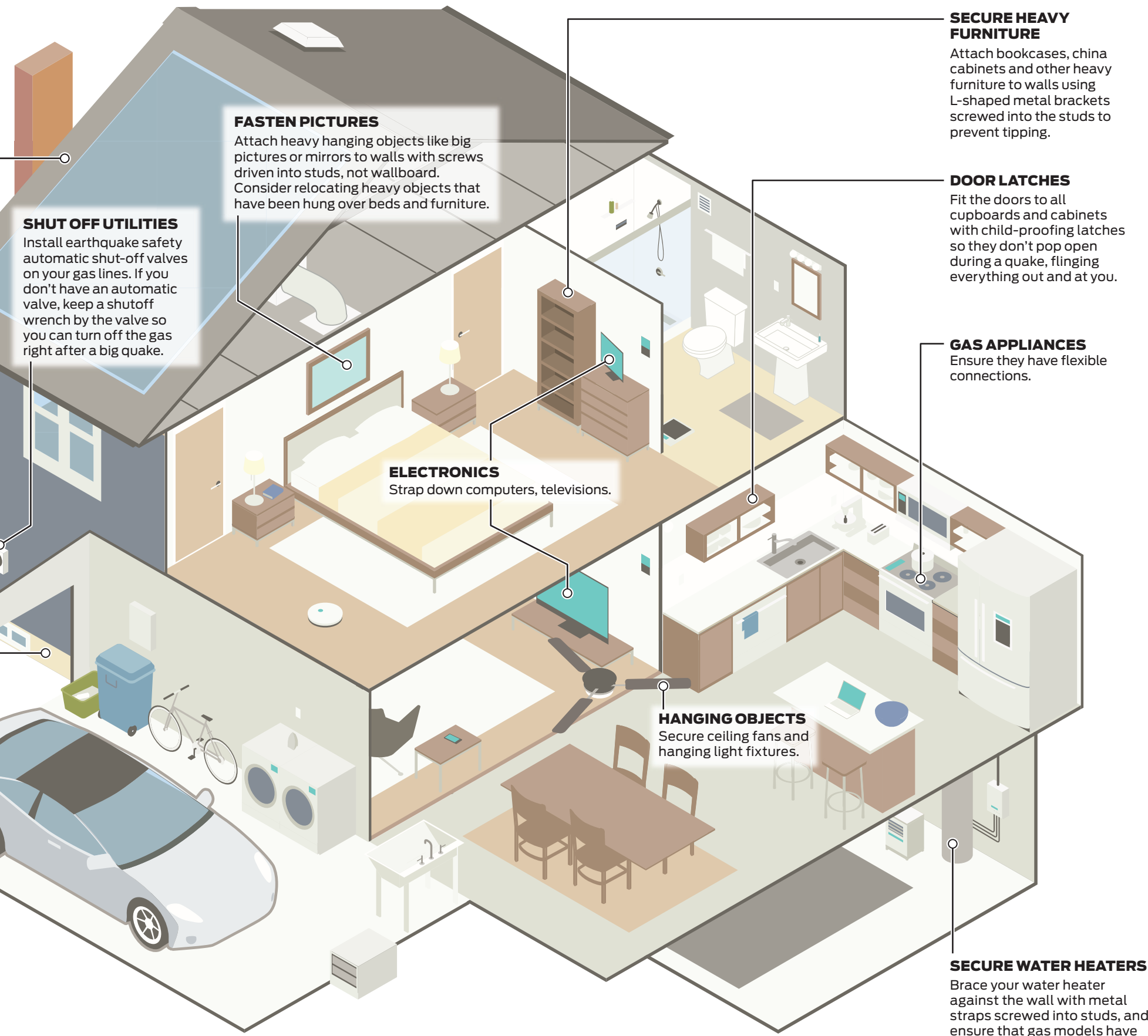
▶ For a mobile home, install braces or a tie-down system underneath to keep your house from collapsing during the shaking.



Sources: FEMA, Bay Area Earthquake Plan (BAEP)

John Blanchard / The Chronicle

Sources: Federal Emergency Management Agency, Getty



SHUT OFF UTILITIES

Install earthquake safety automatic shut-off valves on your gas lines. If you don't have an automatic valve, keep a shutoff wrench by the valve so you can turn off the gas right after a big quake.

FASTEN PICTURES

Attach heavy hanging objects like big pictures or mirrors to walls with screws driven into studs, not wallboard. Consider relocating heavy objects that have been hung over beds and furniture.

ELECTRONICS

Strap down computers, televisions.

SECURE HEAVY FURNITURE

Attach bookcases, china cabinets and other heavy furniture to walls using L-shaped metal brackets screwed into the studs to prevent tipping.

DOOR LATCHES

Fit the doors to all cupboards and cabinets with child-proofing latches so they don't pop open during a quake, flinging everything out and at you.

GAS APPLIANCES

Ensure they have flexible connections.

HANGING OBJECTS

Secure ceiling fans and hanging light fixtures.

SECURE WATER HEATERS

Brace your water heater against the wall with metal straps screwed into studs, and ensure that gas models have flexible connections.

PLANNING

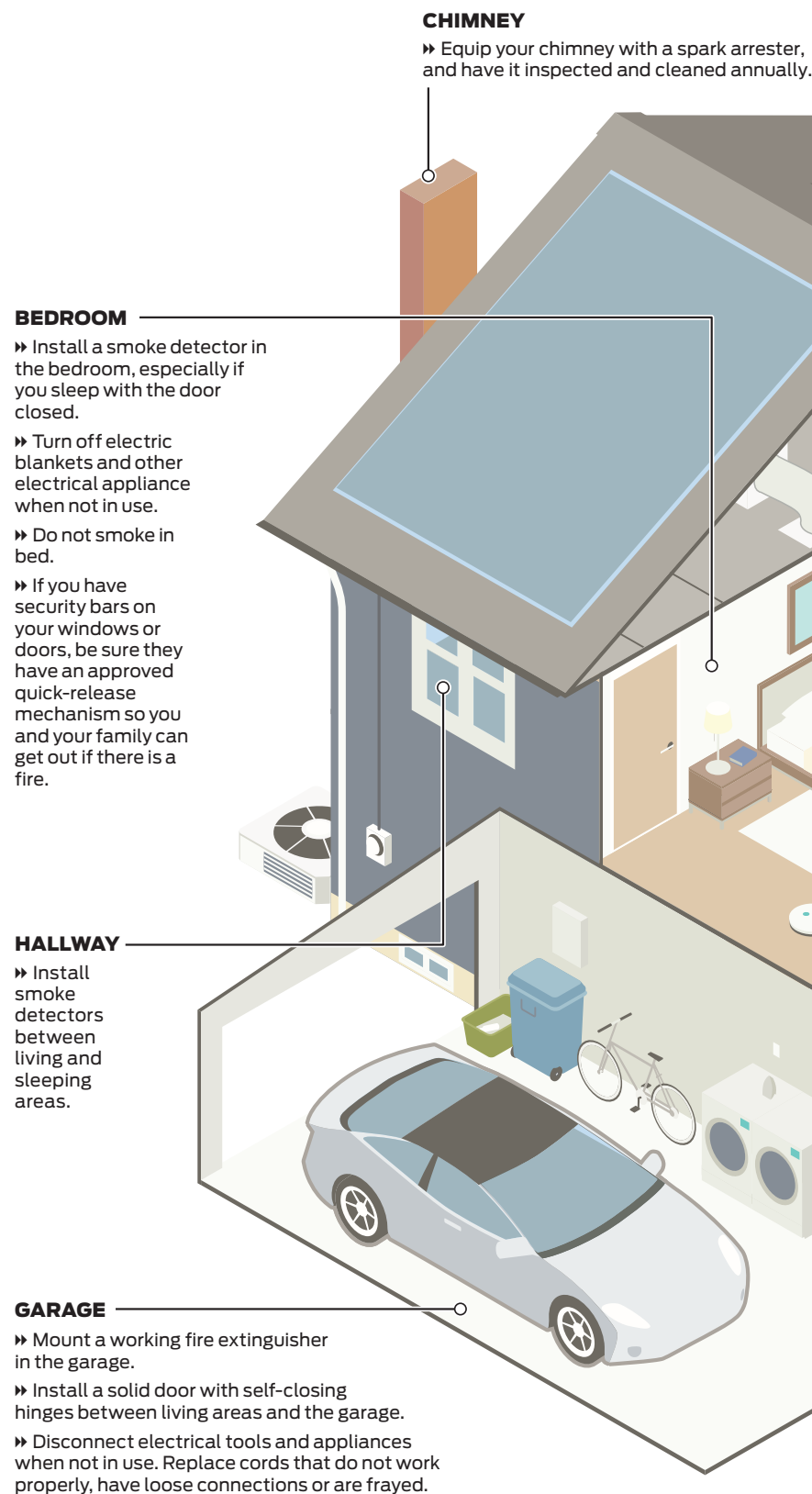
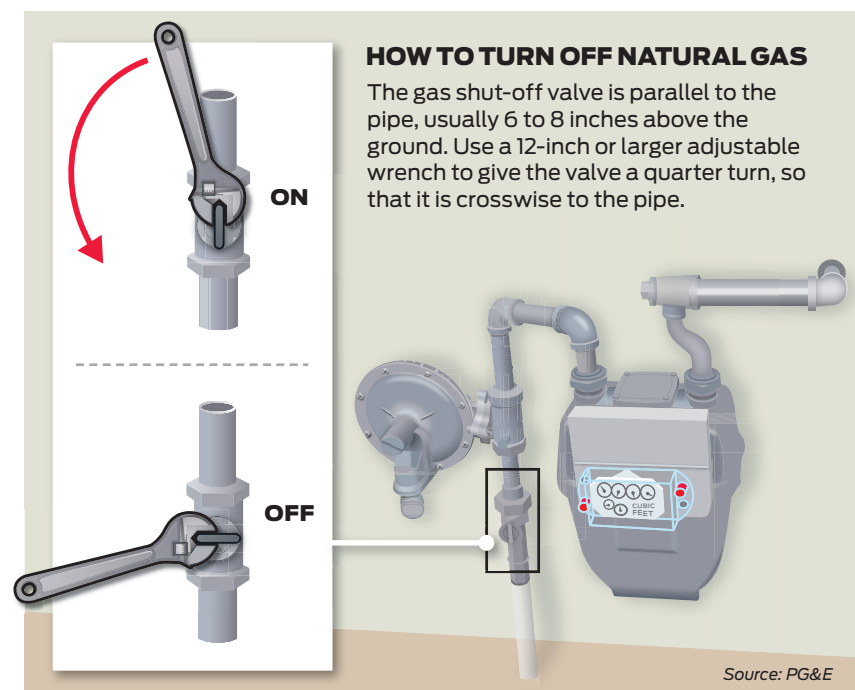
Keep flames from igniting your home

In the 1906 earthquake, the most severe damage occurred when water and gas mains ruptured.

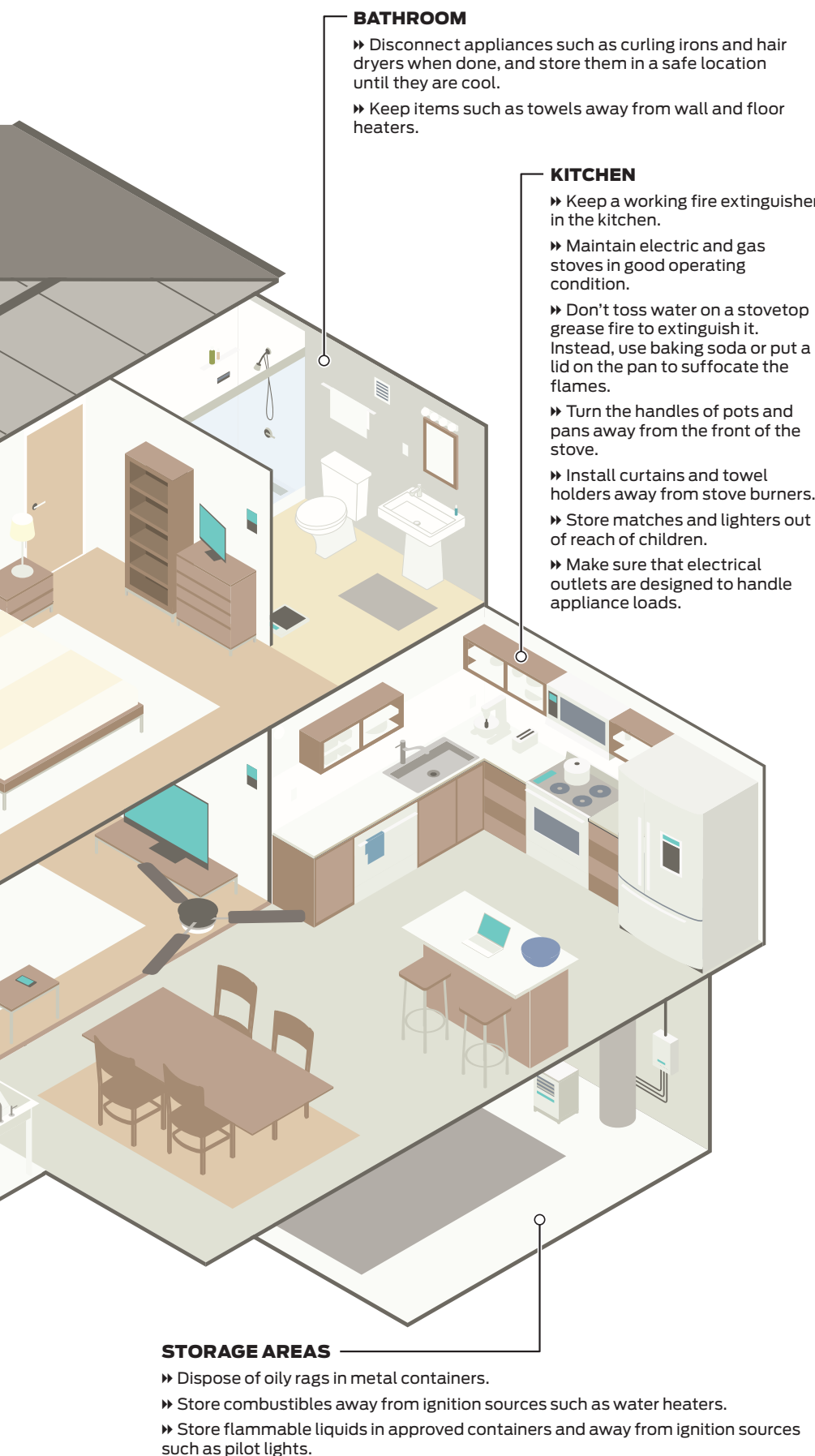
From the second a fire ignites in your home, experts say you may have just two minutes to get out before being overwhelmed by smoke and flames — and just five minutes before the entire structure is engulfed in flames. The key is to prevent the blaze from having an opportunity to get to that point. Here are things you can do:

- » Check the batteries in your smoke alarms once a month, and replace them twice a year. A good rule of thumb is to replace them when you change the clocks in the spring and fall.
- » Get rid of old paints and other flammable liquids you don't need anymore, and store those you do in well-ventilated areas.
- » Cover all outside vents with tight mesh of 1/8- to 1/4-inch openings to prevent embers from floating inside and igniting furniture or inner walls.
- » Keep a disaster kit within easy reach of the front door — see the planning section in this guide — and make sure valuable documents such as deeds, passports and insurance policies are in one handy place to grab quickly on the way out.

— Chronicle staff report



Sources: California Department of Forestry and Fire Protection, Getty Images



Liz Hafalia / The Chronicle 2011

Install smoke alarms in every room where someone sleeps, and check them often. If a fire starts in your home, you need to act right away.

Have a plan — and practice it

CHRONICLE STAFF REPORT

The majority of fire deaths — about 85% — happen in homes. Yet just 1 in 5 families has practiced getting out of their house in the event of a fire. Do you know how you'd escape from each room if a fire breaks out? If the answer is no, it's time to make a plan and practice.

- » Walk through your home and identify exits and escape routes, making sure doors and windows can be easily opened.
- » Install alarms in every room where someone sleeps.
- » Keep hallways and stairs free of clutter.
- » Choose a meeting place outside — say the nearest stop sign or light post.
- » Assign someone to get the pets.
- » Practice escape routes twice a year, making the drill as realistic as possible, according to the Red Cross. The idea is to practice, not scare children, so it doesn't need to be a surprise drill. Drills should include making sure children know not to go back for toys, not to hide and not to go near the fire.

- » Teach children to “get low and go.” Have them practice escaping each room by crawling along the perimeter to an exit and to “stop, drop and roll” if their clothing catches fire.
- » If children are fearful about fire or fire drills at school or home make them anxious, try visiting a fire station or turning the drills into games, perhaps “Simon says, ‘Get low and go.’ ”
- » For those in multistory homes or buildings, practice setting up and using escape ladders from a first-floor window.
- » Not everyone may be able to get out, so family members should be taught how to insulate themselves in a room by closing doors and using towels or duct tape to seal cracks. Those who are stranded should wave a flashlight or light-colored clothing at the window so firefighters know where they are.
- » Turn on emergency alert notification on your cell phones. This will allow you to get alerts when a vegetation or other kind of fire becomes a threat. Also, sign up for your county's emergency alert system if applicable.

PLANNING

New Bay Area tsunami hazard zones identified

By Tara Duggan

If a once-in-a-millennium tsunami hit the Bay Area, waves could inundate more of the waterfront than scientists previously feared. While alarming, new tsunami hazard maps created by the California Geological Survey are aimed at showing people whether they're in a vulnerable area and how to get to safety — that often means only walking a few blocks.

In July, the California Geological Survey released new tsunami hazard maps for San Francisco, Contra Costa and Santa Clara counties, along with several in Southern California, for the first time since 2009. Updated with new technology and knowledge gained from major events like Japan's catastrophic Tohoku earthquake and tsunami in 2011, the interactive maps show flooding risk in wider parts of San Francisco's downtown, Marina and North Beach neighborhoods and around the Port of Richmond than previously anticipated.

The danger areas reflect a worst-case scenario: a tsunami resulting from a magnitude 9.3 earthquake in the

Tsunami warning resources

► The National Tsunami Warning Center provides alerts: tsunami.gov

► California Tsunami Preparedness Guide. Tsunami hazard maps: www.tsunami.ca/go

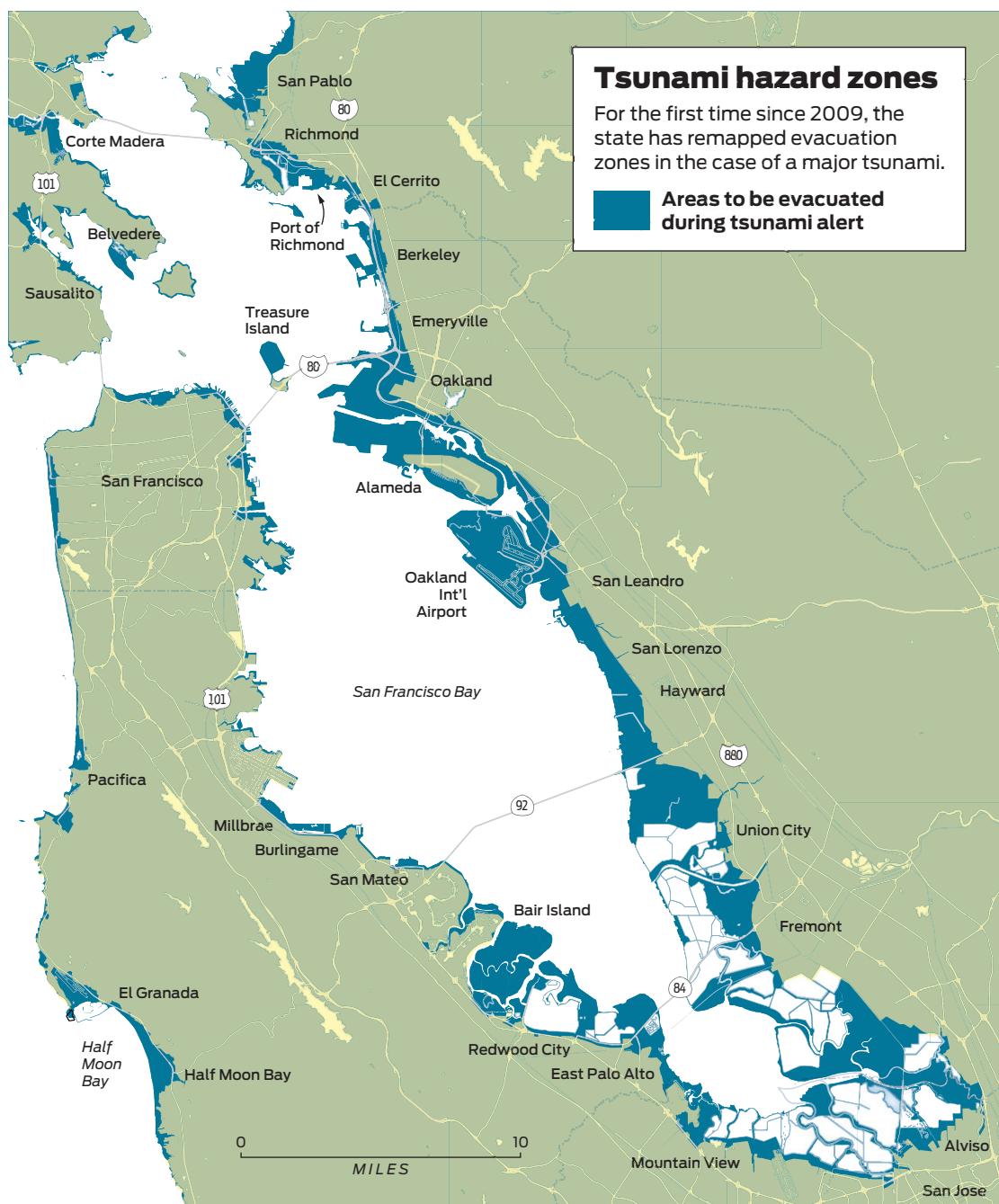
► For emergency alerts, text your ZIP code to 888-777.

eastern Aleutian Islands off Alaska, the location that presents the greatest risk of such destructive waves hitting Central California. Such an event would be extremely rare — and would take five hours to reach the Bay Area, so there would be time to warn people to get to safety, said Rick Wilson, senior engineering geologist at the California Geological Survey, part of the state Department of Conservation.

"So 99% of the time we're not going to see this tsunami," said Wilson, a member of the team updating the maps. "But it's good to prepare for the worst and hope for the best."

Earlier this year, the state released updated tsunami hazard maps for San Mateo

Tsunami continues on W17



Source: California Geological Survey

John Blanchard / The Chronicle

What to do when the water suddenly surges around you

CHRONICLE STAFF REPORT

► Seek high ground — with an emergency kit if you have one.

► If time allows, secure your home before leaving. Move valuables upstairs or to higher areas, disconnect electrical appliances, tie down outside furniture

and seal basement vents.

► Consult a reliable weather source such as www.weather.gov or a weather radio about safe places to go and safe ways to get there.

► Do not walk or drive through floodwater. Most flood-related drownings occur when someone drives into high

water, according to the Centers for Disease Control and Prevention. The second leading cause of drownings is walking into high water. Turn around and go the other way.

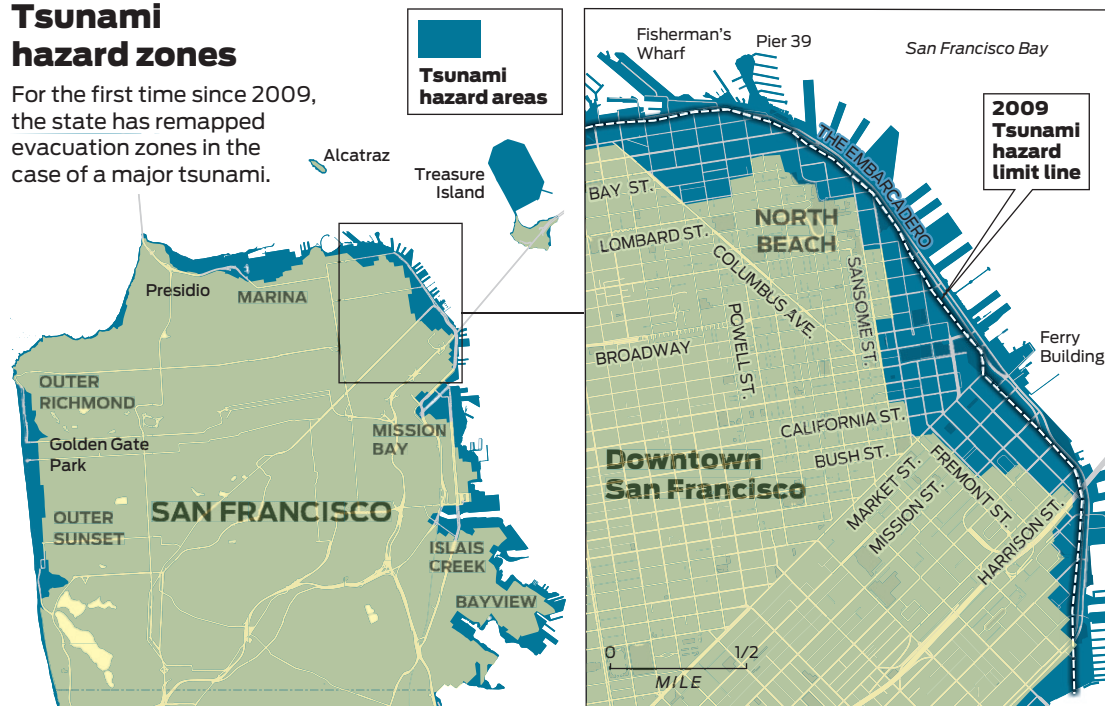
► Should your vehicle stall out, leave it. Don't wait on the roof. However, if the water is rushing and you have a

sense that you'll be swept away, stay put.

► If you live in an area prone to landslides, consult a geotechnical expert to assess the risk. Have an evacuation plan. Watch for tilted trees and leaning telephone poles. If you hear a rumbling sound that could signal a slide, get out.

Tsunami hazard zones

For the first time since 2009, the state has remapped evacuation zones in the case of a major tsunami.

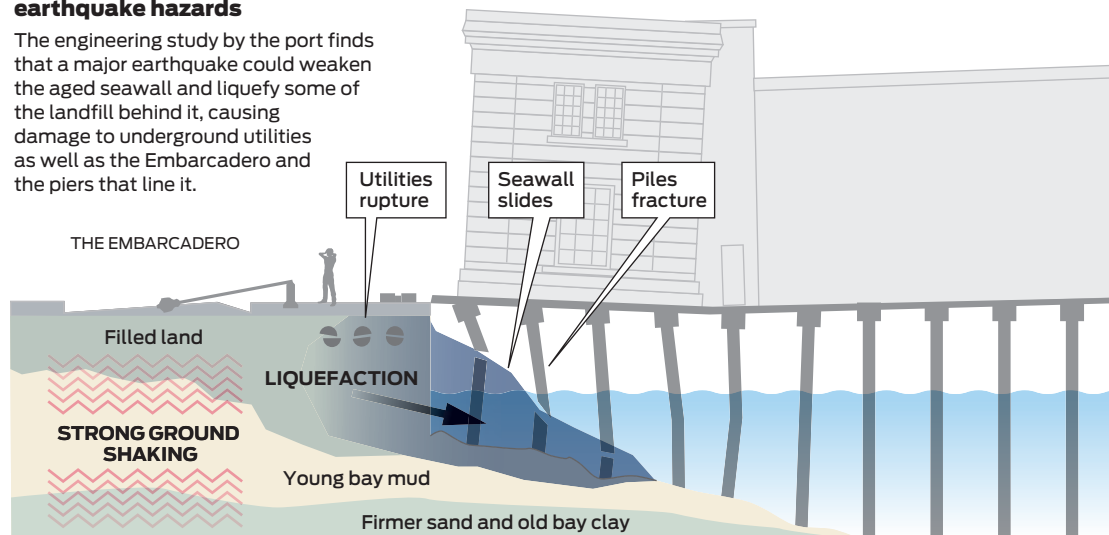


Source: California Geological Survey

John Blanchard / The Chronicle

Bulkhead wharf earthquake hazards

The engineering study by the port finds that a major earthquake could weaken the aged seawall and liquefy some of the landfill behind it, causing damage to underground utilities as well as the Embarcadero and the piers that line it.



Source: Port of San Francisco

John Blanchard / The Chronicle

Tsunami from page W16

and Alameda counties, and will do the same for the rest of the Bay Area and state by early next year.

If an earthquake occurs that could cause a tsunami, the National Tsunami Warning Center provides alerts, as do local governments, with everything from bullhorns to Amber Alert-style text messages indicating whether an evacuation is warranted. There are tiers of risk — while a tsunami advisory warns people to stay off beaches and harbors, a tsunami warning prompts inland evacuation.

The maps from the California Geological Survey are meant to warn people in advance if they're in a tsunami hazard zone and how far they'd need to go reach safety.

"You don't have to run to the mountains to be safe," Wilson said.

This time, Wilson and his colleagues used lidar mapping technology, which has higher resolution than what was previously used, and it pinpointed more low-lying areas susceptible to flooding.

They include parts of downtown San Francisco, where the hazard zone now extends inland as far as Fremont Street in the South of Market area and Sansome Street in the Financial District. In North Beach, the zone has been extended from Beach Street to as far south as Chestnut at Columbus. At Ocean Beach, the San Fran-

cisco Zoo is a newly named tsunami evacuation zone, prompting visions of Noah's Ark.

Wilson said waves in a worst-case scenario tsunami could be as high as 30 feet at the coast and 10 to 15 feet inside the bay. If such a tsunami overcame San Francisco's waterfront, for example, water could be overhead at the edge of the bay and dissipate to about 2 feet at the outer reaches of the hazard zone, still enough to knock people down, he said.

However, any work being done to protect the coast from sea level rise could also help protect it from a tsunami, Wilson said. In San Francisco, plans under way for a \$3 billion upgrade to the Embarcadero sea wall will help prepare for both sea level rise and tsunami risk, said Adrienne Bechelli, deputy director of the San Francisco Department of Emergency Management.

"This is a great example of where a capital investment has a multitude of benefits for all the different hazards and risks," she said.

Bechelli said city departments, from transit to Public Works, hold drills to prepare for events like a major tsunami. In addition, her department is working with the Recreation and Park Department on a worst-case evacuation plan for the zoo.

Tara Duggan is a San Francisco Chronicle staff writer. Email: tduggan@sfgate.com

Keeping yourself up to date

No power, no Internet? A battery-powered radio may be your best way to get information on what's going on.

Tune in to AM radio. In the Bay Area, KGO 810 and KCBS 740 carry regular news updates, and each is set up to run emergency information broadcasts from local

authorities.

Listen for a warning siren. The city of San Francisco, for example, will blast its sirens during a major disaster, which is a cue to listen to an emergency radio broadcast. (The sirens are tested at noon every Tuesday.)

Consider buying an emer-

gency radio. The radio includes channels that regular AM-FM radios don't get, including essential weather and disaster broadcasts from the National Oceanic and Atmospheric Administration. To find your local NOAA station, go to https://www.weather.gov/nwr/station_listing.

— Chronicle staff report

Sources of information

If you've managed to maintain internet service, these websites may be helpful:

- » www.sfchronicle.com and www.sfgate.com
- » U.S. Geological Service for earthquakes: <https://earthquake.usgs.gov/earthquakes/map>
- » Cal Fire for wildfires: www.fire.ca.gov/current_incidents
- » Nixle for local public safety details: www.nixle.com
- » Your county government website
- » Social media for information on friends and family.

RECOVERY

What to expect after surviving a disaster

Surviving the quake is just the first step. An important one, yes — but the danger and challenge are rarely over right away. You will need to push on for the next several hours, days or even weeks.

» If your house is livable, stay in it even if the utilities are out because officials are trying to avoid congregate shelter settings as much as possible due to the coronavirus. This is where your surviv-

al kit will prove its worth, for food, water, first aid and the rest. Be prepared to go it alone for as long as three days.

» You may have turned off your gas, but if you smell or suspect a leak, don't light a match or a candle or flip any light switch, which can cause a spark, until you're sure the gas danger is over.

» Never touch a downed power line.

» If you are ordered to evacuate, you may be directed to an evacuation point,

not a traditional shelter.

» If you rent or decide not to replace your house, prepare to make relocation arrangements — signing a new lease, getting new furniture or other belongings, applying for insurance payments or governmental emergency assistance. If you are moving back into an apartment that was only damaged, the landlord is responsible for making your unit fit to live in again — but not for the loss

of your personal property.

» Take care of yourself. Consider counseling, stay healthy through exercise and good diet, stay current with your friends — in other words, recognize that you've gone through an emotional wringer, and let yourself process the grief. Remember: To some extent, you will be rebuilding your life, and that comes one slow step at a time.

— Chronicle staff report

Places to get assistance

After a major disaster, you may qualify for tax relief, unemployment insurance, federal grants and low-interest loans, but it helps to act quickly. Here's where to turn:

File a claim: Contact your insurance agent as soon as possible to start a claim. If you have to move out of your house, most policies will pay for living expenses up to a certain amount of money and time. You can usually get an advance to cover temporary housing, food and other immediate needs. Some firms will give a percentage of your content coverage before you submit an inventory. If you believe your insurance company is not treating you fairly, file a complaint with the California Department of Insurance and consider hiring a public adjuster to represent you. If the treatment is egregious, consider hiring an attorney.

Federal assistance: You could be eligible for individual assistance from the Federal Emergency Management Agency if your loss is part of a federally declared disaster. FEMA can provide grants and low-interest loans to cover uninsured losses, up to certain limits. For more information: www.fema.gov/individual-disaster-assistance.

Mortgage relief: If you have a mortgage, contact your loan servicer. You can usually get at least a 90-day moratorium on payments and temporary relief from foreclosure activity.

Tax relief: If your home is damaged or destroyed, you may be eligible for property tax relief. File a claim with your county assessor's office within 12



Santiago Mejia / The Chronicle 2018

A house rises in a Santa Rosa neighborhood devastated by fire.

months. The assessor can reappraise the property in its current condition and potentially refund some taxes. When you rebuild, the value of your property before it was damaged will be restored. Also check with the IRS and California Franchise Tax Board to see if they have extended tax-filing deadlines for disaster victims.

If your loss was caused by a federally declared disaster, you may be eligible to deduct casualty losses that exceed 10 percent of your adjusted gross income on your federal return, if you itemize deductions.

Unemployment benefits: If you lose your job as a direct result of a federally declared disaster and are not eligible for regular state unemployment benefits, you could qualify for up to six months of unemployment benefits from a federally funded program called Disaster Unemployment Assistance. For more information: <http://bit.ly/2A73NCO>.

USEFUL WEBSITES

Living in earthquake country

<https://pubs.usgs.gov/gip/2005/15/gip-15.pdf>

Survival kits

www.sf72.org/supplies

www.ready.gov/build-a-kit

<http://bit.ly/2LYtJxJ>

Preparing your home

<http://resilience.abag.ca.gov/housing/homeowners/steps>

Family resources

Sesame Street Emergency Preparedness Toolkit: www.sesamestreet.org/toolkits/ready

Family Earthquake Preparedness Checklist: www.uclahealth.org/workfiles/emergency/eq_familyprep.pdf

Pet safety

www.aspc.org/pet-care/general-pet-care/disaster-preparedness

DURING, AFTER A DISASTER

Quakes

www.earthquakecountry.org/dropcoverholdon

www.ready.gov/earthquakes

www.redcross.org/get-help/how-to-prepare-for-emergencies/types-of-emergencies/earthquake#Before

www.shakeout.org/california/index.html

Fire recovery

<http://anrcatalog.ucanr.edu/pdf/8386.pdf>

www.usfa.fema.gov/downloads/pdf/publications/fa_46.pdf

www.apa.org/helpcenter/residential-fire.aspx

Regrouping

Check in as safe and well — or search for a family member — via the Red Cross: <https://www.safeandwell.org>

Family finder phone apps: www.life360.com/family-locator

<http://mamabearapp.com>

Tips for locating your missing loved ones

Even with the best-laid plans, family members might be unable to meet at prearranged points. Cell phones with contact information might be left behind in the rush to escape danger. Here are some tips for locating loved ones:

» Parents should ask child care providers or schools what their policy is for when a catastrophic disaster hits and whom they'll need to call if children need to be moved.

» Persistence matters. There may be several roadblocks before one contact method pans out.

» Try calling the people you're searching for during off-peak hours, when the working lines are less clogged.

» Try texting if calls aren't going through.

» Check social media — Facebook, Twitter, Instagram — to see if they are online.

» Email. Even if a phone is gone, those who are missing might still be able to log on to a computer.

» Call people whom missing loved ones are close to who may know where they are.

» Check in with their neighbors, employer, school or church — anywhere they usually hang out or spend time.

» For those in distant locations, try sending a snail-mail letter that has a good chance of getting forwarded if the missing person has relocated.

RECOVERY

How to help neighbors after a disaster

When disaster strikes, trained volunteers can make a big difference in helping communities respond. Two options to participate in these types of volunteer networks are:

The Citizen Corps: The organization brings together local government, business and community leaders to prepare for a disaster.

More information on local chapters can be found on Twitter @citizen_corps or online at www.ready.gov/citizen-corps.

Community Emergency Response Teams: CERT offers training for individuals to respond to fires, earthquakes or other disasters. More than 6,000 individuals participate in their communities. In San Francisco, the Fire Department organizes the free trainings for the city's Neighborhood Emergency Response Team, or NERT.

For more information: www.ready.gov/community-emergency-response-team

In San Francisco: <http://sf-fire.org/neighborhood-emergency-response-team-nert>

Make sure pets are safe and provided for

► All pets should be identified with tags and, preferably, microchips.

► In an emergency, dogs tend to bolt and cats tend to hide. Be prepared for unusual behavior. If your dog behaves erratically when Fourth of July fireworks go off, expect much more of the same during a quake or fire.

► Keep on hand a pet first aid kit, with disinfectant, bandages, tweezers and antibiotic ointment.

► Store a week's worth of pet food, and periodically check its expiration date. Canned food will keep longer than dry. Make sure to have plenty of extra water, more than you think you'll need. Pets (and people) drink more when under stress.

► Have bowls, leash, can opener, medicine, pet toys and plenty of cat litter, plastic bags or other cleanup gear ready to use.

► Train your pets to ride in a car, perhaps in a pet carrier. Remember, if you must evacuate your home, not all hotels and motels allow pets. Make a list of those near your area that do.

► Reassure your pet, calmly and often. It's good for both of you. Pets take their cues from their humans. If you're panicked, they will be, too.

Disaster checklist: What to do before and after

Before

- ☐ Download this guide as a PDF (sfchronicle.com/survival).
- ☐ Download apps that will be useful during an emergency.
- ☐ Compile a list of where to get emergency information, including radio stations, social networks, websites and public safety alerts.
- ☐ Keep the list in your car and in your home.
- ☐ Microchip your pets.
- ☐ Take photos of your belongings.
- ☐ Review and update your insurance coverage.
- ☐ Make copies of your important documents and store them in a safe place or on the cloud.
- ☐ Replace the batteries in your smoke detectors at least twice a year.
- ☐ Replace your smoke detectors at least once every 10 years.
- ☐ Check your fire extinguishers and make sure they and other firefighting tools are easily accessible.
- ☐ Pack emergency survival kits for your home and car — don't forget items for your pets.
- ☐ Plan and practice family escape routes from your home and establish a meeting place.
- ☐ Have family discussions about safe places in the home when an earthquake hits.
- ☐ Assign family members' responsibilities during an emergency, such as contacting other family members, turning off the gas and gathering pets.
- ☐ Know where your gas shut-off valve is and have necessary tools easily accessible.
- ☐ Maintain a defensible zone around your home.
- ☐ Notify PG&E if you notice unsafe power lines.
- ☐ Identify combustible building materials and replace them if possible.
- ☐ Prepare your home to survive a severe quake.
- ☐ Consider buying alternate power and communication devices.

After

- ☐ Seek federal assistance, mortgage relief, tax relief and unemployment benefits.
- ☐ Contact your insurance provider and start a claim as soon as possible.
- ☐ Consider counseling as you rebuild your life.
- ☐ Reach out to family — for your sake and theirs.

Get prepared. Worry less.



In California, there are millions of homes that are vulnerable to earthquake damage. They may be in your neighborhood and community. So, let's protect ourselves and each other.

Older homes may suffer more damage from a major earthquake, since they were constructed before seismic building codes were updated.

But homeowners can help prevent expensive earthquake damage. Some retrofits only take a few days to complete, but the process can boost your home's immunity to earthquake damage. And it may not be as costly as you think.

Earthquakes in California are inevitable, but the damage they cause is preventable. So, get prepared and worry less.

Visit ***StrengthenMyHouse.com*** to learn about stabilizing your home against earthquake damage.

StrengthenMyHouse.com