

Taking Shelter from the Storm

Building a Safe Room for Your Home or Small Business



Tornadoes strong enough to damage roofs, destroy manufactured homes, snap or uproot large trees, and turn debris into damaging windborne missiles have occurred in virtually every state.

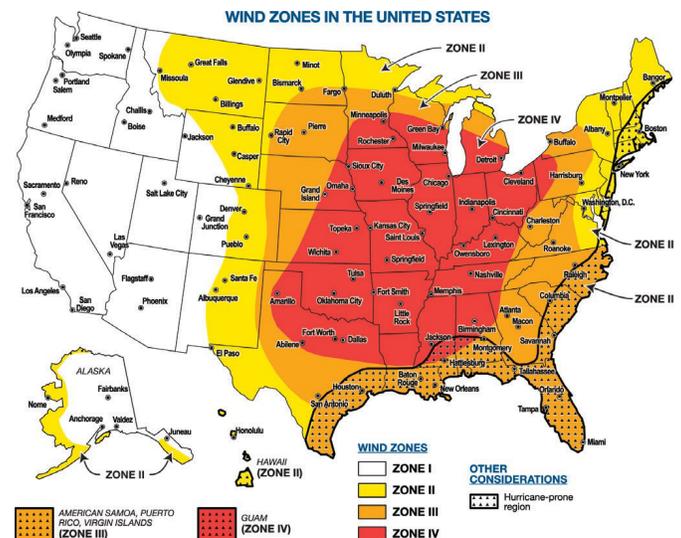
Hurricanes have struck Hawaii and all Atlantic and Gulf of Mexico coastal areas in the U.S., as well as Puerto Rico and the U.S. Virgin Islands, resulting in severe building damage and loss of lives. Even states not normally considered susceptible to extreme windstorms have areas that can be threatened by dangerous high winds. These areas, typically near mountain ranges, include the Pacific Northwest coast.



Extreme windstorms such as tornadoes and hurricanes pose a serious threat to buildings and their occupants in many areas of the U.S.

Do You Need a Safe Room?

The wind zone map on the right shows how the frequency and strength of extreme windstorms vary across the U.S. This map is based on 40 years of tornado history and over 100 years of hurricane history. Zone IV, the darkest area on the map, has experienced both the greatest number of tornadoes and the strongest tornadoes. The tornado hazard in Zone III, while not as great as in Zone IV, is still significant. In addition, Zone III includes coastal areas susceptible to hurricanes for which new hazard maps have been prepared (see [FEMA P-361, Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms](#), Third Edition, 2015).



Most homes and small business are built in accordance with local building codes in effect at the time of construction; these codes account for the effects of minimum design winds. Design winds are the wind speeds that building codes require all residences and building to withstand. However, a tornado or hurricane can often cause winds much greater than the minimum design wind speed. As a result, **buildings may be built in accordance with modern building code requirements, but still not be able to withstand winds from extreme events and provide life-safety protection for those inside.**

If you are concerned about wind hazards where you live, especially if you live in Wind Zones III or IV, you should consider building a safe room.

The Basis of Good Safe Room Design

The purpose of an extreme-wind safe room is to provide a space where you, your family, or your co-workers can survive a tornado or hurricane with little or no injury. Safe rooms can be built in the basement beneath a concrete slab-on-grade foundation or garage floor or in an interior room on the first floor. Under certain conditions, a safe room may also be constructed on an elevated foundation.

For a room to provide near-absolute life-safety protection for its occupants, the room or space must be able to withstand the forces exerted by extreme winds and remain standing, even if the rest of the building is severely damaged.

To do this, the room must have the following elements:

- + The safe room must be adequately anchored to resist overturning and uplift.
- + The walls, ceiling, and door of the safe room must withstand wind pressure and resist penetration by windborne debris and falling items such as trees and building elements.
- + The connections between all parts of the safe room must be strong enough to resist the wind forces without failing.
- + The safe room must be located outside of areas with a high risk of flooding (e.g., Zone V and Coastal A Zone) or storm surge inundation.

Did You Know...

Almost every state in the U.S. is subject to tornadoes, hurricanes, or both. The extreme winds that accompany these storms can cause extensive damage to buildings and threaten the lives of building occupants.

Safe rooms designed to FEMA guidelines provide near-absolute protection from wind forces of up to 250 mph and from the impact of associated windborne debris.

FEMA P-320, *Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business* for homeowners and builders includes an informational booklet and construction plans:

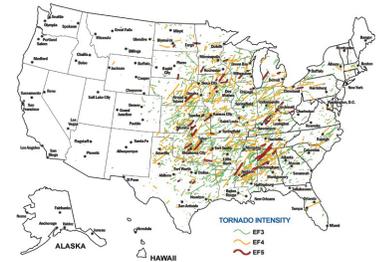
- + Background information to help you understand the hazards
- + Guidance on the level of risk in your area
- + Guidance for selecting a safe room design
- + Detailed safe room construction plans for builders and contractors

FEMA P-320 will guide you through the process of determining your risk and selecting a safe room type and location, as well as providing detailed plans for construction.

Source: <https://www.ready.gov/sites/default/files/2020-03/taking-shelter-building-a-safe-room.pdf>

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Guidance for homeowners and small business owners to help them determine their risk from extreme winds and potential locations for safe rooms.



Detailed construction plans provide all the information a builder or contractor needs to build a safe room.

