



## Building Higher in Flood Zones: Freeboard – Reduce Your Risk, Reduce Your Premium

One way flood risk is communicated is through maps that show base flood elevations (BFEs), or the height floodwaters would reach during a 1-percent-annual-chance flood in any given year.

*Freeboard* is a term used by FEMA’s National Flood Insurance Program (NFIP) to describe a factor of safety usually expressed in feet above the 1-percent-annual-chance flood level. The NFIP requires the lowest floor of structures built in Special Flood Hazard Areas (SFHAs) to be at or above the BFE, so a structure built with freeboard would have its lowest floor 1 foot or more above the BFE. Adding freeboard will reduce NFIP insurance premiums.

### Benefits of Freeboard

There are many benefits to incorporating freeboard into new construction plans, the most important being safety (Figure 1). Freeboard provides a margin of safety against extraordinary or unknown flood risk. BFEs reflect estimates of flood risk, but there are many unknown factors that can cause flood heights to rise above the BFE, such as wave action, bridge and culvert openings being blocked by debris, and development in the floodplain. It is important to remember that floods more severe than the 1-percent-annual-chance event can and do occur.

Other benefits of freeboard include incurring less damage, easier and faster cleanup after a flood event, and lower flood insurance rates. Incorporating freeboard into building plans can result in substantial savings in flood insurance premiums each year, especially for buildings located in Zone V (a coastal flood zone at risk from wave action). Figure 2 shows potential flood insurance rates based on the amount of freeboard in both riverine (Zone AE) and coastal (Zone VE) environments.

Communities that incorporate freeboard into their local floodplain ordinances can earn discounts on flood insurance by participating in the NFIP’s Community Rating System (CRS) program. CRS rewards communities that engage in floodplain management activities that exceed NFIP standards by offering discounts of up to 45 percent on flood insurance policies written for SFHAs in NFIP-participating communities.



Figure 1: House elevated above the BFE with 1 foot of freeboard

### What is Floodplain Management?

Floodplain management is the operation of a program of preventive and corrective measures for reducing flood damage. FEMA helps communities develop floodplain management regulations that comply with NFIP regulations. Communities may adopt more restrictive regulations. Community officials may have knowledge of local conditions that require higher standards than the NFIP regulations, particularly for human safety.

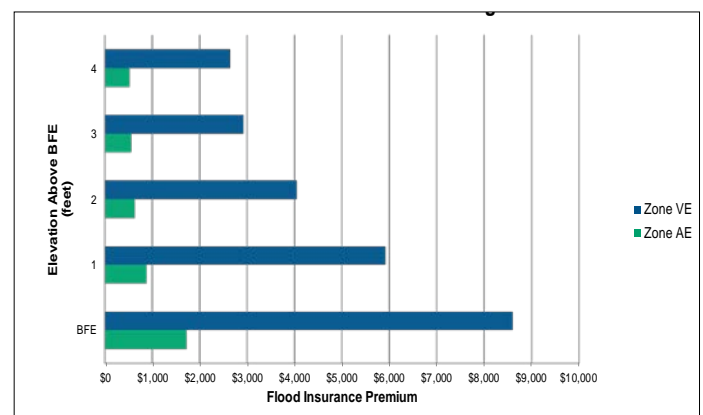


Figure 2: Maximum coverage for a \$250,000 residential building and \$100,000 contents

## Benefit-Cost Comparison

Incorporating freeboard into new construction is extremely cost effective. The up-front costs are generally only about 0.25 to 1.5 percent of the total construction costs for each foot of freeboard. However, the long-term savings on flood insurance will more than offset these costs.

For example, adding 2 feet of freeboard to a new home might add \$20 a month to the mortgage payment, or \$240 per year. The resulting flood insurance savings could be more than \$1,000 a year for a building in Zone AE (for instance, in a riverine flood zone not affected by wave action) and \$2,000 a year in Zone VE.

Many States and communities have incorporated freeboard requirements into the elevation and floodproofing requirements stipulated by the NFIP. Freeboard requirements can range from 6 inches to 4 feet, and it would be up to the community to decide what is most appropriate given their location and other community conditions.

### *Historically Speaking...*

Freeboard was (and still is) a nautical term. It refers to the height of a ship's deck above the waterline. If you think of the lowest floor of your house as the deck of your ship, and the BFE as the height of the sea, freeboard is the extra height that keeps the larger waves off your deck.

### *FOR MORE INFORMATION...*

#### **FEMA's Floodplain Management Branch**

About floodplain management's role in the NFIP:  
<http://www.fema.gov/floodplain-management>

#### **FEMA 347 – Above the Flood: Elevating Your Floodprone House:**

<http://www.fema.gov/media-library/assets/documents/725?id=1424>

#### **FEMA 312 – Homeowner's Guide to Retrofitting:**

<http://www.fema.gov/media-library/assets/documents/480?id=1420>

#### **Homebuilder's Guide to Coastal Construction:**

A series of fact sheets providing information about responsible building practices including freeboard.  
<http://www.fema.gov/library/viewRecord.do?id=2138>

#### **FloodSmart**

Information for consumers and insurance agents about flood insurance and the NFIP.  
[www.FloodSmart.gov](http://www.FloodSmart.gov)

