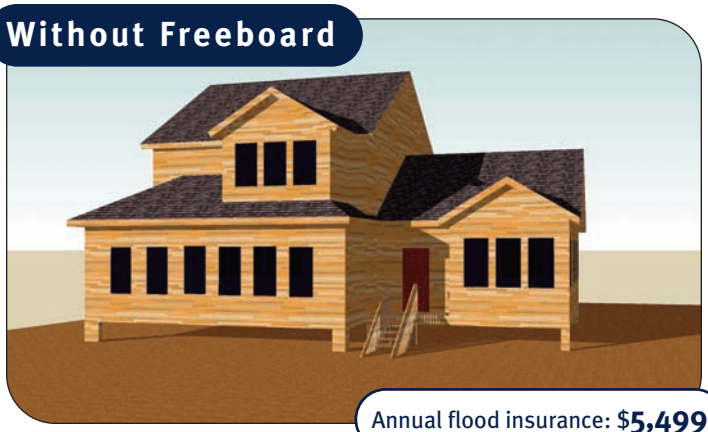
fact sheet 5

stormsmart coasts

Raise Your Home, Lower Your Monthly Payments

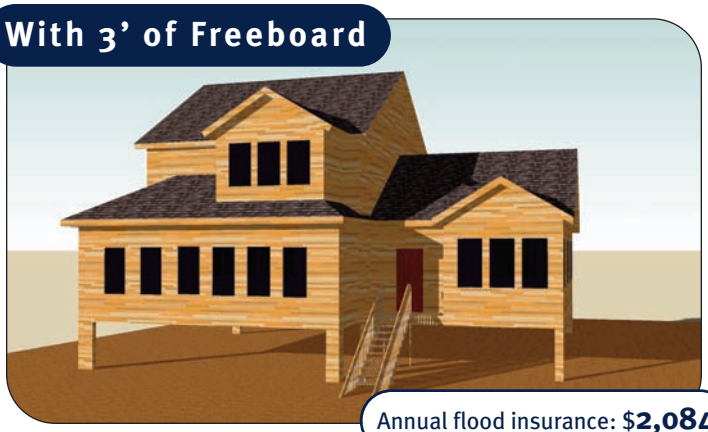
Protect buildings and reduce monthly expenses with freeboard

Without Freeboard



Annual flood insurance: $**5,499**

With 3' of Freeboard



Annual flood insurance: $**2,084**

Elevating a home a few feet above legally mandated heights has very little effect on its overall look, yet it can lead to substantial reductions in flood insurance, substantially decrease the chances the home will be damaged by storms and flooding, and help protect against sea level rise.

What Is Freeboard?

Freeboard is elevating a building's lowest floor above predicted flood elevations by a small additional height (generally 1-3 feet above National Flood Insurance Program [NFIP] minimum height requirements). Elevating a home a few feet above legally mandated heights has very little effect on its overall look, yet it can lead to substantial reductions in flood insurance, significantly decrease the chances the home will be damaged by storms and flooding, and help protect against sea level rise.

What Are the Benefits of Freeboard?

Increased protection from floods and storms. Storm waters can and do rise higher than shown on Flood Insurance Rate Maps (FIRMs). Freeboard helps protect buildings from storms larger than those that FIRMs are based on, and provides an added margin of safety to address the flood modeling and mapping uncertainties associated with FIRMs.

Better preparation for ongoing sea level rise. Massachusetts has experienced a relative sea level rise of approximately 1 foot over the past 100 years. Since elevations on FIRMs do not include sea level rise, freeboard will help keep structures above floodwaters as storm surge elevations increase.

Greatly reduced flood insurance premiums. Recognizing that freeboard reduces flood risk, the Federal Emergency Management Agency (FEMA, which administers the NFIP) provides substantial (sometimes more than 50 percent) reductions in flood insurance premiums for structures incorporating freeboard. These savings can rapidly accumulate, especially over the life of a normal mortgage.

Example of savings on NFIP premiums[1] with freeboard

V Zone[2]	Annual savings in NFIP premiums	Savings over 30-year mortgage
1' freeboard	$1,360 (25%)	$40,800
2' freeboard	$2,730 (50%)	$81,900
3' freeboard	$3,415 (62%)	$102,450

A Zone[3]	Annual savings in NFIP premiums	Savings over 30-year mortgage
	$502 (41%)	$15,060
	$678 (55%)	$20,340
	$743 (60%)	$22,290

[1] **NFIP premiums** based on May 2007 rates for a one-floor residential structure with no basement built after a FIRM was issued for the community (post-FIRM rates differ from pre-FIRM rates). $500 deductible/$250,000 coverage for the building/$100,000 for contents.

[2] **V zones**: This Flood Insurance Rate Map (FIRM) designation refers to coastal areas that are subject to the highest levels of wave energy and flooding.

[3] **A zones**: Also a FIRM designation, coastal A zones are subject to flooding but with less wave energy than V zones (i.e., wave heights less than 3 feet).

What Are the Costs of Freeboard?

The expense of incorporating freeboard into new structures is surprisingly low, generally adding only about 0.25 to 1.5 percent to the total construction costs for each foot of added height, according to a 2006 FEMA-commissioned study (*Evaluation of the National Flood Insurance Program's Building Standards*). The minor resulting increase in monthly mortgage payments is generally more than offset by savings on NFIP premiums. Consequently, adding freeboard typically saves homeowners money.

Consider, for example, a proposed one-story building in the V zone[2] that will cost $250,000 to build at minimum legal standards (the NFIP requires that all homes in the floodplain be elevated to at least the base flood elevation [BFE], mapped on FIRMs). According to the study cited above, adding each foot of freeboard to a home on piles or piers adds about 0.4 percent to total construction costs (about $1,000 a foot in this example). If the owner takes out a mortgage at 6.5 percent APR for the total construction costs, he or she will have lower monthly payments (mortgage plus NFIP premiums) with 3 feet of freeboard, even though the construction costs are higher.

Home at minimum legal height		
Monthly mortgage payments	$1,580.17	
Monthly flood insurance	+ $458.25	
Total monthly cost	**= $2,038.42**	
Home with 3' of freeboard		
Monthly mortgage payments	$1,599.13	(+$18.96)
Monthly flood insurance	+ $173.67	(-$284.58)
Total monthly cost	**= $1,772.80**	**(-$265.62)**

In this example, adding 3 feet of freeboard saves the homeowner $265.62 per month, or $95,623.67 over a 30-year mortgage. Benefits in A zones[3] are generally less dramatic, but still substantial. To determine NFIP premiums for a specific property, see a licensed insurance agent.

Who Can Benefit from Freeboard?

Nearly everyone building in floodplains can better protect themselves and their property and save on flood insurance by including freeboard into their construction and reconstruction projects. Additional benefits include:

- **Homeowners** - Whether or not you live in the house year-round, having it elevated increases the chances that it will weather storms safely, decreasing your worry and protecting your investment. If you're building a new home, or doing a renovation, ask your builder/designer about incorporating freeboard.
- **Builders/contractors** - Freeboard provides a competitive edge over other builders, allowing you to market the benefits of reduced flood insurance and flood risk to potential buyers. When doing retrofits (especially those requiring bringing structures up to current NFIP standards), explain the benefits of freeboard to your clients.
- **Municipalities** - Encourage the use of freeboard in appropriate private and public construction throughout your community's floodplain. (NOTE: The Massachusetts Attorney General's office has recently rejected bylaws requiring freeboard, but municipalities may promote its use.)
- **Businesses** - Freeboard helps: protect your buildings, important records, and inventory from flooding; drastically decrease your recovery/clean-up time after storm; and potentially save your business. The Institute for Business and Home Safety reports that more than 25 percent of businesses that close due to storm damage never reopen.

For More Information . . .

- For technical details on costs of using different flood-resistant building techniques (including freeboard), see the American Institutes for Research's *Evaluation of the National Flood Insurance Program's Building Standards* 2006 study at www.fema.gov/library/viewRecord.do?id=2592.
- For general information on the National Flood Insurance Program, see www.FloodSmart.gov.
- For specific questions on flood insurance rates, see a licensed insurance agent.
- Communities looking for more information on the National Flood Insurance Program can contact Richard Zingarelli, Massachusetts NFIP Coordinator: (617) 626-1406, Richard.Zingarelli@state.ma.us.
- For general information on how Massachusetts communities can protect themselves from storms, see the StormSmart Coasts website at mass.gov/czm/stormsmart.
- Businesses looking to prepare for storms and other catastrophic events should visit the Institute for Business and Home Safety's website at www.ibhs.org.

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This fact sheet was developed through CZM's StormSmart Coasts program, which supports community efforts to manage coastal floodplains. For further information on StormSmart Coasts, visit **www.mass.gov/czm/stormsmart**.

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