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NFIP Premiums for Single-Family Residential Properties: Today and Tomorrow

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Key Points

- Premiums for a newer primary residence in a 100-year floodplain with \$250,000 of building coverage can range, under plausible assumptions, from \$380–\$590 when the home is 2–4 feet above base flood elevation (BFE) or from \$650–\$1,890 at BFE.
- Outside 100-year floodplains, premiums are not based on elevation. Premiums can range from hundreds to a couple thousand dollars, depending on coverage choices and structural aspects of the home.
- For properties outside the 100-year floodplain with a favorable loss history, low premiums are available; the cost for the maximum building and contents coverage for these policies is only \$450–\$500.
- In 2014, only 1 percent of policies were in V zones (100-year floodplains subject to breaking waves of 3 feet or more). For newer homes in this zone, annual premiums are several thousands of dollars, increasing dramatically if the property is below BFE.
- “Pre-FIRM” rates (for homes built before flood risks were mapped) currently provide savings of thousands of dollars annually to homes below BFE, but are actually more costly to homes above BFE. These discounts are being phased out for all policyholders.
- The highest premiums are for properties below BFE. If a property is below BFE due to a new map, grandfathering can provide rate protection. For properties above BFE, however, grandfathering may not be preferable.

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Introduction

The federal government has been providing flood insurance to residents of participating communities since 1968 through the National Flood Insurance Program (NFIP). Communities can voluntarily join the program, adopting minimum floodplain regulations, and in exchange their residents become eligible to purchase flood insurance. Currently, a flood insurance policy is mandatory for properties located in a 100-year floodplain with a mortgage from a federally backed or regulated lender. The program has grown over the decades to become quite substantial. As of June 2016, there were over 5.08 million policies in force nationwide, representing slightly less than \$1.245 trillion in coverage.

In 2012 and 2014, Congress passed legislation modifying NFIP pricing practices in an attempt to make the program more fiscally sound. Notably, these laws called for the phasing out of pre-FIRM rates, which are discounts given to homes built before flood hazards were mapped in a community (see below). This policy brief provides a short overview of NFIP rate setting and then presents annual premiums for illustrative examples of single-family properties. Currently, almost 68 percent of all policies in force nationwide are for single-family homes. This brief also shows, for illustrative homes, the savings (or costs) from pre-FIRM rates, how such rates will be increasing, and examples of the premium savings possible from grandfathering.

Our premium calculations should not be taken as estimates for any particular property. Potential policyholders should contact an agent for accurate premium estimates.

An Overview of NFIP Rate Setting

The Federal Emergency Management Agency (FEMA) maps flood hazards on Flood Insurance Rate Maps (FIRMs). FIRMs delineate different flood risk zones. Areas modeled as the 1 percent annual chance floodplain, or 100-year floodplain, are referred to as Special Flood Hazard Areas (SFHAs). These are divided into two broad groups: A zones and V zones (areas subject to breaking waves of 3 feet or more). FEMA also maps the 500-year floodplain (referred to as shaded X on FIRMs) and areas outside both SFHAs and 500-year floodplains (referred to as unshaded X).

Single-family residences (and two- to four-dwelling residences) in participating communities can purchase up to \$250,000 of building coverage and \$100,000 of contents coverage. Minimum deductibles for properties rated “full risk” by the NFIP are generally \$1,000 or \$1,250, with higher ones available. Private companies write policies on behalf of the program and process claims, but all the risk is borne by the NFIP. The NFIP, not companies, set rates.

Roughly 80 percent of policies are currently paying NFIP full-risk rates. FEMA defines a full-risk premium rate as one “charged to a group of policies that results in aggregate premiums sufficient to pay anticipated losses and expenses for that group.”¹ These rates are not subject to any price discounts, with the exception of discounts from community participation in the

¹ See: <https://www.fema.gov/national-flood-insurance-program/definitions>.

Community Rating System (a voluntary program that rewards additional community actions that reduce flood risk). Inside the SFHA, rates vary by zone and certain characteristics of the house, as seen in the tables below. Rates are higher for homes below base flood elevation (BFE), or the estimated height of waters during a 100-year flood. NFIP premiums may not be equivalent to private sector prices, for a variety of reasons. There is no cost of capital in NFIP rates and the program does not explicitly price for the risk of the aggregate portfolio.

The NFIP classifies the first \$60,000 of building coverage for single-family homes as the “basic limit” and charges higher rates for coverage under this amount, since losses are more likely to occur in this range. The basic limit threshold, however, is a fixed dollar value and is not a percentage of the home value. As such, this makes insurance more expensive for lower valued homes and could be a cross-subsidy from lower valued to higher valued structures.

For properties outside the SFHA, the NFIP has two primary rates: Zone X and Preferred Risk Policy (PRP) rates. Zone X comprises areas both within and outside the 500-year floodplain; rates are the same in both. Outside the SFHA, FEMA does not rate based on elevation relative to the BFE and rates are thus not fully risk-based. Zone X is also subject to adverse selection in that only the riskiest properties in this zone voluntarily purchase insurance; FEMA accounts for this in the rate. For properties with a favorable loss history and outside SFHAs, FEMA offers PRP rates. These are lower rates for properties that are currently in an X zone and have not had any of the following: two claims of more than \$1,000 each, three or more claims of any amount, two federal disaster aid payments of more than \$1,000 each, three federal disaster aid payments for separate occurrences for any amount, or one insurance claim and two federal aid payments of more than \$1,000 each.

There are two main groups that pay less than NFIP risk-based rates. The first are pre-FIRM properties. At the time the NFIP was created, over a million structures in the nation’s floodplains had been constructed, often without being subject to any building code. Full-risk insurance rates for these existing structures would have been high, given the risk. Congress, therefore, created a discounted rate structure for pre-existing development, referred to as pre-FIRM policies. As of July 2012, there were 5.6 million NFIP policies, with just over 19 percent of these policies receiving pre-FIRM discounted rates (A. Neal, pers. comm.; July 19, 2012). Pre-FIRM rates are not set according to the height of the first floor relative to the BFE, as is done for full-risk properties in SFHAs. FEMA does not receive taxpayer funds to offset these lower rates. Pre-FIRM properties sustain more damage and have higher claims than post-FIRM properties (GAO 2010; Kousky and Michel-Kerjan 2015).

As a result of legislation in 2012 and 2014, pre-FIRM rates are being phased out over time. Pre-FIRM premiums for single-family properties must increase by at least 5 percent per year, but no more than 18 percent per year (not including fees). Elevation certificates are required to rate post-FIRM properties. As pre-FIRM rates are eliminated, property owners are encouraged to submit an elevation certificate to the NFIP. Until they do so, rates will continue to increase on their property. Non-primary residences, businesses, severe repetitive loss properties, and properties substantially damaged or improved with pre-FIRM rates will see their premiums increase 25 percent per year until they reach the full-risk rate.

The second significant group of properties paying lower premiums is grandfathered properties. These are given a lower rate if a new map indicates they are at higher risk, as long as they maintain a flood insurance policy or, if the property is post-FIRM, if they can demonstrate that the home was built in compliance with the hazard map in effect at the time of construction. Zone grandfathering occurs when a property is “mapped into” a higher-risk area and can keep the rate of the lower-risk zone. When moving from outside the SFHA to inside, a policyholder will be transitioned over time from a PRP to an X zone rate. There is no long-term grandfathering of PRP rates. Elevation grandfathering occurs when a new map increases the elevation of the mapped 1-percent flood but without changing the zone itself. As an illustration, a property that was previously mapped as being three feet above BFE but is now, according to the revised map, only one foot above could still pay the three foot–above BFE rate. The Biggert-Waters Flood Insurance Reform Act of 2012 had eliminated grandfathering, but the Homeowner Flood Insurance Affordability Act of 2014 reinstated it. The NFIP tries to recoup the lower rates of grandfathered properties by charging higher rates across all other properties in the zone. This is an explicit cross-subsidization between grandfathered properties and all other properties in the SFHA.

Price Simulations

We present 2016 flood insurance premiums for an example set of properties. We limit our examination to primary residences and only look at the costs of building coverage (contents coverage up to \$100,000 is also available through the NFIP). We do not include any discounts due to community participation in the Community Rating System. All premiums presented in this section were calculated using the most recent *Flood Insurance Rate Manual* (FEMA 2016a) and the *Specific Rating Guidelines* (FEMA 2016b) that went into effect April 1, 2016. These premiums give a snapshot of rates for different types of single-family primary residences as of 2016. At this point, some rate changes from the 2014 law are already in effect, such as a \$25 surcharge and a reserve fund assessment; these are included in the rates shown below.²

In all of the following tables we present annual premium estimates for both \$100,000 and \$250,000 of building coverage. Premiums increase with the amount of coverage purchased. Homeowners subject to the mandatory purchase requirement must insure for at least the lesser of the outstanding principal balance of the mortgage, the NFIP coverage cap, or the insurable value of the property. For reference, in 2014, the mean building coverage for single-family homes was \$194,460 and the median was \$250,000. Just over 50 percent of single-family policies in 2014 had building coverage at the NFIP cap.

Full Risk (Post-FIRM) Premiums

We first examine a post-FIRM property in the AE zone (AE is an A zone where BFEs have been determined). Figure 1 compares annual premiums for two different properties, each choosing \$250,000 of building coverage, but selecting different deductibles. At four feet and two feet above BFE, annual premiums range from about \$380 to \$590. As seen, premiums go

² For more details on the components of NFIP rate setting NRC (2015) and Kousky, Lingle, and Shabman (2016).

up substantially when homes fall below BFE. Note, however, that new homes (post-FIRM) must be built at or above BFE in the SFHA. Older homes may qualify for pre-FIRM rates (discussed next) and homes facing new maps with different BFEs are often eligible for grandfathering. We do not have data on elevations relative to BFEs nationwide.

FIGURE 1. ANNUAL PREMIUMS FOR \$250,000 OF BUILDING COVERAGE FOR SINGLE-FAMILY HOMES IN THE AE ZONE

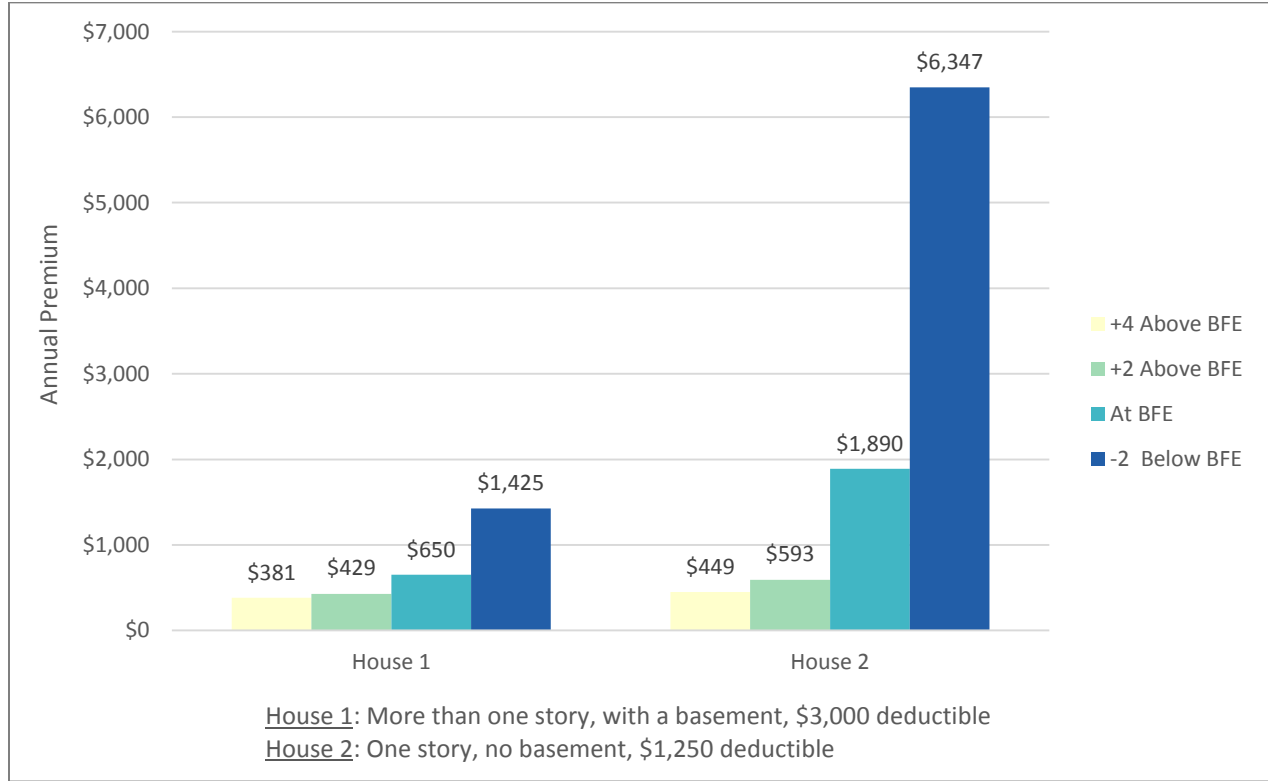


Table 1 presents annual premiums for post-FIRM AE properties with a wider variety of combinations of deductibles and coverage levels, basements, and number of stories than shown in Figure 1. Again, the table indicates that premiums are much lower as a home is elevated above BFE. Note that for second homes, annual premiums will be \$225 higher since the surcharge put in place by the 2014 legislation called for a \$25 fee on primary residences and a \$250 fee on all other properties.

TABLE 1. ANNUAL PREMIUM FOR POST-FIRM HOUSE IN AN AE ZONE

Deductible	<i>Property</i>	<i>Elevation: +2 Feet</i>		<i>Elevation: At BFE</i>		<i>Elevation: -2 Feet</i>	
		<i>\$125,000 coverage</i>	<i>\$250,000 coverage</i>	<i>\$125,000 coverage</i>	<i>\$250,000 coverage</i>	<i>\$125,000 coverage</i>	<i>\$250,000 coverage</i>
\$1,250	<i>1 floor, no basement</i>	\$467	\$593	\$1,608	\$1,890	\$5,099	\$6,347
	<i>2+ floors, no basement</i>	\$398	\$510	\$1,208	\$1,348	\$3,317	\$3,842
	<i>2+ floors, with basement</i>	\$357	\$469	\$610	\$714	\$1,458	\$1,575
\$5,000	<i>1 floor, no basement</i>	\$389	\$489	\$1,297	\$1,522	\$4,087	\$5,080
	<i>2+ floors, no basement</i>	\$334	\$422	\$979	\$1,090	\$2,667	\$3,083
	<i>2+ floors, with basement</i>	\$291	\$390	\$496	\$586	\$1,186	\$1,276

Next we examine a post-FIRM property in a VE zone (VE is a V zone where BFEs have been determined). In 2014, only roughly 1 percent of all contracts in force nationwide were in V zones. Rates for these properties vary with the replacement cost ratio (RCR)—how much coverage is purchased compared with the replacement cost of the structure. The higher the RCR, the lower the premium. For reference, in 2014, for single-family homes nationwide, just less than 70 percent had an RCR at or above 0.75. We assume the post-FIRM VE zone property is elevated (if it is not, the owner must submit for a special rate). Figure 2 shows annual premiums for two example homes to demonstrate a possible range of post-FIRM VE rates. We assume \$250,000 of building coverage for each. Note that although the table shows a range of elevations, we do not have data on the actual range of property elevations nationwide. As with the AE zone, there should be very few properties post-FIRM below BFE that are not eligible for grandfathering. As such, Figure 2, like the others, should not be taken as indication of the actual distribution of premiums being paid, but rather an illustrative look at rates for a range of possible properties.

Table 2 shows post-FIRM VE rates for a wider variety of example homes. This table shows that VE zone rates are substantially higher than AE zone rates, given the risk of wave action. Again, elevation also drives premiums, with properties above BFE paying substantially less. Note again, however, that even in oceanfront communities, V zones are very small geographically, and so there are not many policies in force in V zones nationwide; much of the SFHA in coastal areas is designated as AE zone.

FIGURE 2. PREMIUMS FOR \$250,000 OF BUILDING COVERAGE FOR SINGLE-FAMILY HOMES IN THE VE ZONE

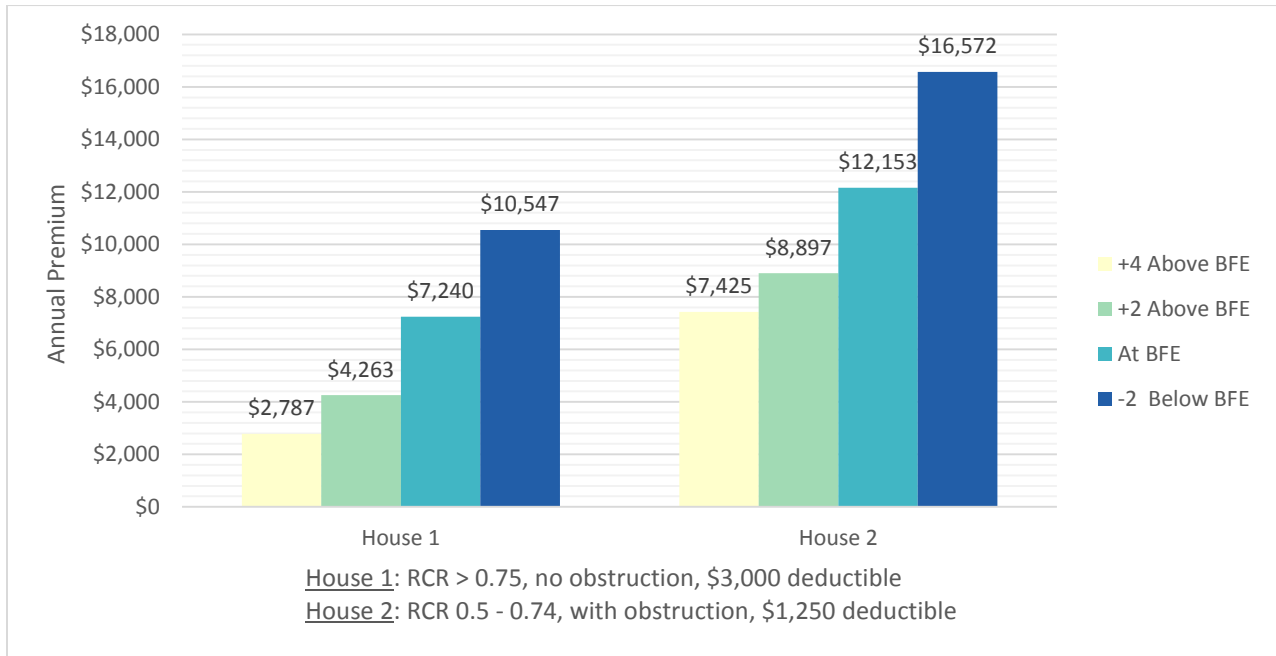


TABLE 2. ANNUAL PREMIUM FOR POST-FIRM HOUSE IN A V ZONE (POST-1981, VE, V1-V30)

Deductible	Property	Elevation: +2 Feet		Elevation: At BFE		Elevation: -2 Feet	
		\$125,000 coverage	\$250,000 coverage	\$125,000 coverage	\$250,000 coverage	\$125,000 coverage	\$250,000 coverage
\$1,250	No obstruction, RCR* 0.5 – 0.74	\$3,027	\$5,952	\$4,839	\$9,576	\$6,822	\$13,542
	No obstruction, RCR> 0.75	\$2,418	\$4,735	\$4,075	\$8,048	\$5,916	\$11,729
\$5,000	With obstruction, RCR 0.5 – 0.74	\$3,606	\$7,108	\$4,903	\$9,704	\$6,663	\$13,225
	With obstruction, RCR> 0.75	\$2,872	\$5,648	\$3,887	\$7,673	\$5,659	\$11,216
	No obstruction, RCR>0.75	\$1,946	\$3,792	\$3,267	\$6,432	\$4,734	\$9,366

*RCR: replacement cost ratio (amount of coverage purchased divided by replacement cost of building).

Finally, we turn to properties outside the SFHA. In 2014, just over 20 percent of all NFIP contracts in force were outside the SFHA. Outside the SFHA there is an X zone rate and a PRP rate for properties with a preferable loss history. They are not elevation rated and thus not “risk-based.” Note that X zone rates—like all other policies—are subject to the reserve fund

assessment of 15 percent as well as the \$25 surcharge for primary residences. The X zone rates vary by type of basement, as shown in Table 3. Since they are not elevation rated, they can be higher than the AE zone for properties above BFE.

TABLE 3. ANNUAL PREMIUM FOR A POST-FIRM HOUSE IN AN X ZONE

<i>Deductible</i>	<i>Property</i>	<i>\$125,000 Coverage</i>	<i>\$250,000 Coverage</i>
\$1,250	No basement or enclosure	\$1,009	\$1,417
	With basement	\$1,185	\$1,764
\$5,000	No basement or enclosure	\$820	\$1,146
	With basement	\$961	\$1,422

The PRP premium is for properties with a favorable loss history, as described above. Most policies in force outside the SFHA are PRP policies. It is offered only in set combinations of building and contents coverage (or contents only) and varies by presence of a basement or enclosure. A few examples are shown in Table 4. Properties must be located in a B, C, or X zone and meet the loss criteria. For building coverage up to \$100,000, the deductible is \$1,000 for both building and contents coverage; over \$100,000, the deductible is \$1,250.

TABLE 4. ANNUAL PREMIUM FOR A PRP QUALIFYING PROPERTY

	<i>\$75,000 Building, \$30,000 Contents</i>	<i>\$125,000 Building, \$50,000 Contents</i>	<i>\$250,000 Building, \$100,000 Contents</i>
No Basement	\$316	\$366	\$450
Basement	\$352	\$403	\$499

Discounted Premiums

As discussed earlier, there are two significant groups of policyholders that currently receive lower rates: pre-FIRM properties and grandfathered properties. For reference, this section will first provide some indication, for an example pre-FIRM property, of the savings (or costs) of using pre-FIRM rates and an indication of the increase in rates these policyholders may see in the future, and then examine the savings that a homeowner receives from grandfathering.

Pre-FIRM rates do not vary with elevation. For a primary residence in an AE zone, pre-FIRM premiums range from about \$1,000 with low levels of coverage to more than \$3,500 for the highest coverage level. Rates are higher if the property is not a primary residence or is a

severe repetitive loss property. If a property was substantially improved before April 1, 2015 it is rated as post-FIRM. Pre-FIRM rates for properties in a VE zone can range from about \$2,000 (for only \$100,000 of coverage) to up to \$8,000 for primary residences purchasing the highest coverage and the minimum deductible. Again, premiums are higher for non-primary residences and severe repetitive loss properties.

Properties in the SFHA that are at or above BFE will generally do better with post-FIRM rates, which are elevation rated, than with pre-FIRM rates, which are not. Assuming property owners have been informed of this by agents, the remaining policies in the program currently receiving a pre-FIRM rate are likely to be below BFE. And properties below BFE receive substantial cost savings from using pre-FIRM rates. Focusing here on primary residences, we compare pre-FIRM and post-FIRM rates for an example property. We consider a single-family home in an AE zone that has one floor, no basement, \$250,000 of building coverage, and the minimum deductible. As seen in Table 5, if the home is below BFE, the pre-FIRM rate provides savings of thousands of dollars every year. At BFE, however, post-FIRM rates are lower, and thus, there is a cost to using pre-FIRM rates, which becomes greater as the property is raised above BFE. This general pattern holds for other types of properties and policy choices.

TABLE 5. COMPARING PRE-FIRM AND POST-FIRM RATES FOR A SINGLE-FAMILY HOME IN AE ZONE

<i>Elevation</i>	<i>Pre-FIRM</i>	<i>Post-FIRM</i>	<i>Savings of Pre-FIRM Rate</i>
-4 Below BFE	\$2,644	\$10,263	\$7,619
-2 Below BFE	\$2,644	\$6,347	\$3,703
At BFE	\$2,644	\$1,890	-\$754
+2 Above BFE	\$2,644	\$593	-\$2,051
+4 Above BFE	\$2,644	\$449	-\$2,195

As noted above, pre-FIRM rates are being slowly eliminated. This will impose costs on properties below BFE that are currently receiving this discount. Every year, rates on residential pre-FIRM properties will be increasing between 5–18 percent per year. For our example property that is two feet below BFE, this will bring its premium to a post-FIRM premium in eight years if the increase is 18 percent per a year, the maximum property-level increase allowed under current legislation (and assuming post-FIRM rates grow at a constant 3 percent per year³). At an annual increase of only 5 percent per year (the minimum increase required), however, pre-FIRM rates still will not have reached a post-FIRM rate in two decades. Thus the impact on the homeowner of losing the pre-FIRM rate will depend substantially on how much FEMA raises these rates each year, as well as on the elevation of the property relative to BFE. For primary residences, FEMA increased pre-FIRM rates by 15 percent in 2015 and by 5 percent in 2016. Note that for non-primary residences, businesses, severe repetitive loss properties, cumulative loss properties, and those substantially damaged or improved, FEMA must increase

³ This was the assumption made in a presentation by Andy Neal of FEMA to the 2016 Association of State Floodplain Managers Conference.

rates at 25 percent a year, leading to a much faster elimination of pre-FIRM rates for these properties.

Turning now to grandfathering, there are two important points about the savings that zone grandfathering can provide to households newly mapped into higher-risk areas. First, if a property is below the new BFE, the financial savings from grandfathering can be substantial. That said, for homes above BFE, it may be cheaper to use the full risk rates of the new flood zone and not the X zone rate possible with grandfathering. This is because X zones rates are not based on elevation. Note that when newly mapped into the SFHA, properties will first be given a PRP rate (with a higher reserve fund assessment and federal policy fee), which will then be increased annually until the X zone rate is reached. Here, we are simply comparing the full X zone premium to the AE zone premium. The PRP premium will be lower and thus make grandfathering more favorable.

A comparison of zone grandfathering can be seen in Table 6, which compares a full-risk AE zone rate to a grandfathered X zone rate. As can be seen for the two different example homes in the table, grandfathering only provides savings when the home is below BFE. This can be a substantial savings for such a property, as seen for the one-story home without a basement. For this home at four feet below BFE, grandfathering saves \$7,054 annually. When a home is above BFE, the X zone rate may actually be costlier than being rated at the full-risk AE zone rate. If the same home was four feet above BFE, grandfathering would cost \$771 annually. These properties would do better opting out of grandfathering. Note that these patterns of savings and costs from zone grandfathering are roughly the same for lower coverage levels.

For elevation grandfathering, however, the grandfathered rates will always be preferable to the insured. The savings from this type of grandfathering can be seen by simply comparing the rates of a home at different elevations. As one example, consider a single-family home in the AE zone with one floor and no basement currently at BFE with \$250,00 of building coverage and a \$1,250 deductible. This home would pay \$1,890 annually. If a new BFE drops the home to four feet below BFE, the rate without grandfathering would skyrocket to \$10,263. In this case, grandfathering saves property owners over \$8,000 annually. FEMA has not presented data on the number of properties paying either type of grandfathered rate and there is no summary data on how BFEs have been changing around the country with new maps.

TABLE 6. SAVINGS FROM ZONE GRANDFATHERING

<i>Property</i>	<i>Building Coverage / Deductible</i>	<i>Elevation</i>	<i>X Zone (Grandfathered) Premium</i>	<i>AE Zone (Full Risk) Premium</i>	<i>Savings From Grandfathering</i>
2 Stories, Basement	\$250,000 / \$5,000	-4	\$1,422	\$2,263	\$841
		0	\$1,422	\$586	-\$836
		+4	\$1,422	\$346	-\$1,076
1 Story, No Basement	\$250,000 / \$5,000	-4	\$1,146	\$8,200	\$7,054
		0	\$1,146	\$1,522	\$376
		+4	\$1,146	\$375	-\$771

Note: These rates do not include any CRS discount. They do include the ICC coverage premium, the 15% reserve fund assessment, the \$25 HFIAA surcharge, and the \$50 federal policy fee.

Discussion

This brief has given a snapshot of current premiums in the NFIP. The program is actively considering reforms to its rating, however, which may ultimately move the program closer to structure-specific risk assessments and premiums. This will take many years and resources, although more modest changes may be expected in the nearer-term. This brief has shown a number of cross-subsidies in the program, often due to its coarse pricing structure, that may merit evaluation. This includes the fact that outside the SFHA elevation does not play a role in rating, that rates below \$60,000 are lower regardless of the value of the home, that grandfathered rates are paid for by others in the zone, that CRS discounts may not be fully offset by lower claim experience, and, not discussed here, but that A zones in coastal areas may sustain more damage from waves of 1 to 3 feet. Such cross-subsidies allow more fine-grained pricing in the private sector to identify homes that are overpriced in the NFIP and offer them a more competitive rate. The implications for the program should be explored.

References

- FEMA (Federal Emergency Management Agency). 2016a. *National Flood Insurance Program Flood Insurance Manual*. Washington, DC: US Department of Homeland Security, FEMA. <http://www.fema.gov/media-library/assets/documents/115549>.
- . 2016b. *National Flood Insurance Program Specific Rating Guidelines*. Washington, DC: US Department of Homeland Security, FEMA, April 16. http://www.fema.gov/media-library-data/1450374017262-8d8a14ee8c48efb5356e9fb5b24ff2a1/SRG_April2016.pdf.
- GAO (US Government Accountability Office). 2010. *Continued Actions Needed to Address Financial and Operational Issues*. Washington, DC: US GAO, April 21.
- Hayes, T.L. and D.A. Neal. 2011. *Actuarial Rate Review: In Support of the Recommended October 1, 2011, Rate and Rule Changes*. Washington, DC: FEMA.
- Kousky, C., B. Lingle, and L. Shabman. 2016. *The Pricing of Flood Insurance*. Washington, DC: Resources for the Future.
- Kousky, C., and E. Michel-Kerjan. 2015. "Examining Flood Insurance Claims in the United States." *Journal of Risk and Insurance*. DOI: 10.1111/jori.12106.
- National Research Council. 2015. *Affordability of National Flood Insurance Premiums: Report 1*. Washington, DC: National Academies Press.