

# Flood Insurance Redesigned: Regulatory Considerations for a Viable and Sustainable Private Market

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**IMPORTANCE** Explores the environment for growing private markets for U.S. flood insurance, and recommends state-level policy strategies to encourage these markets' viability and sustainability.

**OBJECTIVES** This study contributes to the literature on flood risk and insurance by ( ) exploring the market challenges in the development of private flood insurance;

a viable and sustainable private flood insurance market, the states themselves must determine the eco-system that simultaneously best encourages private insurers to

enter the market and most reliably protects solvency and consumers. The importance of risk-based rates and premiums, as well as the importance of allowing insurers to update the pricing in light of the dynamic risk assessment and modeled losses are key to market health. The best state public policies will create an environment in which program and insurer flexibility are embedded in the design. We explore seven states – Alabama, Florida, New Jersey, North Carolina, Pennsylvania, South Carolina and Virginia – in an effort to understand the regulatory environments for private flood insurance as they unfold. Of these, Florida and North Carolina have implemented clear rules that new rating variables are allowed and that there exists a model approval process. Therefore, in these two states it is clear that there is a focus, not just on growing the private flood insurance market, but also on rate solvency, reasonability, and objectivity. Taking a closer look then at the Florida and North Carolina policy

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## ABSTRACT

Several factors have converged in recent years, bringing the need for admitted-market, private flood insurance options in the U.S. to the fore. Meanwhile, other factors have coincided that make modeling and pricing large segments of the U.S. flood risk exposures more accessible and more accurate than was historically possible. The National Flood Insurance Program (NFIP), despite recent rating reforms, faces daunting financial and market challenges. The U.S. flood risk has increased: The risk of severe flooding and the cost of such events continues to grow. Flood loss models that can support granular pricing are now commercially available, outperforming the Federal Emergency Management Agency's (FEMA's) flood maps historically used for rating and loss mitigation purposes. Several states have begun encouraging admitted insurance markets to provide flood insurance in addition to the NFIP and the excess and surplus lines coverages already available. This paper examines the private market opportunity and challenges, highlights state-level strategies, and demonstrates the importance of flexibility in program legislation and regulation—with respect to both program design and implementation. Our work contributes to the literature by: ) exploring the market challenges in the development of private flood insurance; ) demonstrating the importance of local risk considerations and flexible program features for state-level, private strategies that provide a sustainable framework for insurers to consider; and ) highlighting the alignment of recent model laws and several state programs with the recommended features.



years cannot be explained by precipitation patterns alone and that river engineering and agricultural expansion are responsible for up to 50% of the increased flood risk (Union of Concerned Scientists, 2017). A direct example of land use effects on disaster outcomes is the response of the land to the rainfall in the Houston, Texas area resulting from Hurricane Harvey. Not only have researchers found that Harvey-related flooding was exacerbated by urbanization, but they estimate that the probability of 'extreme' flooding was 10 times what it would have been without the changes in land use.<sup>5</sup> As a result, properties outside of the traditional high-risk flood zones face significant flood risk. This geographic diversification of flood risk creates an important opportunity for insurers to enjoy increased flood insurance demand and diversification.

Increasingly, governmental budgetary pressures and the shift of resources to other, more immediate projects (such as environmental initiatives) have left critical infrastructure needs for mitigating flooding or its effects in a state of aging disrepair. Complicating the infrastructure problem, damage from flooding (and other natural disasters) further degrades infrastructure, making it weaker against future floods. This adverse cycle is measurable and significant (Neal, 2017).

The American Society of Civil Engineers' (ASCE's) Infrastructure Report Card (ASCE, 2017) depicted the condition and performance of infrastructure across and within categories.<sup>6</sup> The report card gave the nation an overall grade of C-, pointing to the need for significant increases in infrastructure investment and modernization. Notably, three areas of infrastructure that are important to protecting against flooding—levees, dams, and stormwater—individually received grades of D, below the C- grade given to infrastructure overall. The U.S. Congress passed the Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act) in the first half of 2021, in part to address such concerns.<sup>7</sup> The legislation is the largest investment in the resilience of physical and natural systems in American history, yet staggering inflation rates have already decreased its real value, forcing states to cancel or delay projects (Snyder, 2021).

In the face of this increasing risk (and market opportunity), financial challenges that exist within the NFIP (FEMA, 2019) lead to uncertainty regarding its long-term viability as well as its capacity to keep up with changes in the likelihood and impact of flood losses. Even if one did not directly consider the financial uncertainties associated

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<sup>5</sup> Using the Weather Research and Forecasting model—a numerical model for simulating weather and climate at regional scales—and statistical models, the researchers quantified the separate contribution of urbanization to rainfall and flooding. They found the probability of extreme flood events, like Harvey, increased on average by about 10 times (i.e., by 900%) during August 2017, because of urbanization alone (Zhang, Villarini, Vecchi and Smith, 2018).

<sup>6</sup> The report included scores for aviation, bridges, broadband, dams, drinking water, energy, hazardous waste, inland waterways, levees, ports, public parks, rail, roads, schools, solid waste, stormwater, transit, and wastewater. Today, our infrastructure needs are more diverse and fragmented than in the past, with most centered at a local rather than national level. Most U.S. infrastructure is owned and funded primarily at the state and local level, and these governments are being asked to deliver more and better services with constricted revenues. Exacerbating the challenge is the scarcity problem with federal funding. Although federal assistance at first seems a mitigator of these state and local outflows, most infrastructure projects do not receive federal funding. Yet even the possibility of federal funding to assist in projects incentivizes delays on the part of state and local officials (Gribbin, 2017).

<sup>7</sup> This U.S. federal legislation for \$110 billion in infrastructure improvements includes over \$55 billion pledged



been unwilling to provide long-term renewal of the NFIP since [redacted], instead opting for short-term reauthorizations (with some lapse periods). Policymakers are aware of the need for reform to protect the program's future. Even with the intended changes, the program will offer inadequate coverage capacity for most property owners and cross-subsidization will remain an important feature for the highest-risk exposures. As a result, we assert that if a viable private flood risk market can be established, the NFIP's best future utility is as a market of last resort for residual (primarily highest-flood-risk) properties.

### . . Self-Limiting Demand, Lack of Per-Exposure Capacity, and Low Take-Up Rates

Although NFIP coverage is available to anyone in a participating community, [redacted]<sup>10</sup> purchase is generally voluntary, with the exception of those in Special Flood Hazard Areas (SFHAs). Mandatory purchase of flood insurance is required only of property owners within SFHAs as a condition for any mortgage made, guaranteed, or purchased by any federal agency, federally regulated lending institution, or government-sponsored enterprise (Horn & Webel, [redacted]).<sup>11</sup> The residential coverage provided is limited to a \$ [redacted] dwelling limit, which is below both the U.S. average and median replacement-cost values of residential structures. Therefore, only the relatively low-cost structures can be sufficiently insured.

It does not seem surprising, then, that while estimates of the NFIP's insurance penetration rate vary widely by location, take-up rates for NFIP coverage among homeowners are low. According to a [redacted] survey from the National Association of Insurance Commissioners (NAIC Survey, [redacted] a), [redacted] % of respondents either agreed or strongly agreed that flood insurance is a "good idea," while only [redacted] % said they had

property's flood risk, and set risk-based rates. New policies written on or after October 1, 2017, are calculated using the new rating methodology. All existing policies renewing on or after April 1, 2018, are calculated using Risk Rating 2.0 methodology.<sup>15</sup> A brief comparison of Risk Rating 2.0 to the NFIP's historical rating structure is provided in Appendix B. Unfortunately, for property owners at the highest risk, the new rating system inevitably means that a federally provided insurance policy premium may become prohibitively expensive for homeowners in the lower-income strata. Without viable alternatives for coverage, these homeowners may be forced to relocate. Such a result goes against the traditional purposes of government insurance programs.

Following Risk Rating 2.0, FEMA, in May 2017, proposed to Congress a number of additional reforms intended to stabilize the NFIP. While some of these reforms would provide social benefit, other proposed reforms appear to be intended as NFIP-program preserving strategies. For example, proposed federal legislation to: (1) establish certain minimum flood-risk reporting requirements for sellers and lessors at or before residential transaction closings as a necessary condition for participation in the NFIP; and (2) strengthen the minimum standards for local flood plain management and address repetitive loss and severe repetitive loss properties<sup>16</sup> would have social-welfare improving effects. But the proposed strategies for NFIP premium affordability and program financial stability questionably are more about "propping up" the NFIP than they are about any social welfare benefit.

**Premium affordability.** FEMA has asked Congress to consider a targeted assistance program that would offer low- and moderate-income current and prospective NFIP policyholders a graduated risk premium discount (while still providing them with knowledge of the full-risk price). As previously mentioned, the change in rating structure has affordability implications for many property owners. Under existing legislation and authority, the NFIP can only improve affordability by offering discounts and cross-subsidies, primarily based on a building's age, flood risk map changes at a building's location, or by considering mitigation activities undertaken by the property owner or community. Such affordability strategies, while providing social benefit, should be considered with caution as they may be inconsistent with risk-premium incentives, can contribute to policyholders misunderstanding their actual flood risk, and lead to negative externalities (Kelly & Kleffner, 2012; Maroney et al., 2013; Medders et al., 2014; Browne & Medders, 2015).

**Financial.** FEMA has requested a financial framework that allows the NFIP to "balance affordability and fiscal soundness." Congress authorized FEMA to borrow from the U.S. Treasury up to \$ 5 billion to pay claims. The NFIP currently carries \$ 1.5 billion in debt to the U.S. Treasury and pays approximately \$ 100 million in interest expenses annually—using the current premiums to pay for past claims. As currently structured, the program may be unable to ever fully pay this debt.

## 2. A Market for Private Flood Insurance

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<sup>15</sup> Details of Risk Rating 2.0 are available at <https://www.fema.gov/flood-insurance/risk-rating>.

<sup>16</sup> About 10% of insured properties are considered unmitigated repetitive loss properties, having a high risk





the opportunity include (re)insurer risk appetite, improving knowledge of flood risk, and a favorable lender acceptance environment.

### . . Risk Appetite

The (re)insurance industry's capacity (potential and willing) to absorb large, catastrophic losses is a concern not only for insurance providers, but also for regulators and policymakers (Cummins et al., ). Although many primary insurers are not equipped to retain the full risk of a catastrophic flood in a single year, reinsurance is available to protect against such contingencies. Globally, over the past decade, reinsurers have expressed robust interest in advancing the private flood market. Several have flood



## . . Lender Acceptance

Households with federally-insured mortgages in the SFHA are required to buy flood insurance, and close to half of the NFIP's policies are in the SFHA (Kousky, ; Kousky et al., ). To comply with this mandate, coverage must be purchased through the NFIP or private insurer coverage must be at least as broad as the coverage of the NFIP. <sup>23</sup>

Historically, it was unclear whether private flood coverage satisfied the mandatory purchase requirement, and lender compliance concerns prevented consumers from purchasing private flood coverage. With fewer consumers able to purchase, insurers were discouraged from writing the segment of the market with the highest take-up rates, premiums, and awareness of flood risk (Watkins & Evans, ). A federal rule impacting this issue became effective on July , , implementing provisions of the Biggert-Waters Flood Insurance Reform Act of (BW- ). The rule requires lenders to accept

As previously discussed, NFIP policy limits are relatively low, notably so for non-residential properties or properties in high-cost areas. <sup>26</sup> Private market property insurance can offer limits over and above the maximum limits highlighted here. In addition to limited coverage, the NFIP policy includes coverage restrictions that are

## . . Access to Catastrophe Capital for the NFIP

Another way in which the private market already interacts with flood insurance is via reinsurance. The Homeowner Flood Insurance Affordability Act (HFIAA) enabled the private market to begin bearing a portion of the NFIP flood risk by giving FEMA the authority to secure reinsurance for the NFIP from private reinsurers as well as the capital market (Horn & Webel, 2013). There were a few motives for implementing this change, the most notable being that it reduces the chance that FEMA will need to borrow from the U.S. Treasury to pay claims. Additionally, it allows FEMA to price policies more efficiently because FEMA can factor what it is paying in reinsurance premiums into its own pricing model. The main benefit of reinsurance is that it creates

– period is expected to show a marked increase in the residential premium share. In North Carolina, one private program was led and approved in , and in Florida, has already seen an increase in the number of private insurers ling to write ood business. <sup>30</sup>

### . Unique Features and Challenges of Flood Risk

Flood risk involves several features and challenges that call for regulatory exibility in building forms and rates. Insurers seeking to provide ood insurance in the admit - ted market must obtain approval from the state regulator. The regulators evaluate the form language while considering the goal to be at least as broad as NFIP. The rating model and nancial viability of the product are evaluated to ensure solvency. State regulators are required to comply with their speci c state insurance laws while addressing the concerns of property owners, realtors, and lenders. There are special problems in attempting to insure ood that must be acknowledged. First, the ood hazard has unique features that must be assessed properly. Second, insurers are beset by practical barriers to developing ood insurance products and programs (e.g., providing proof of concept, obtaining the appropriate expertise, modeling costs, and ling requirements). The resultant uncertainty in expected returns creates business challenges.

### . . Level of Granularity Required

of risk. Furthermore, modeling the dependence of flood risks across different spatial and temporal dimensions is important for, at the very least, the sake of good modeling and to reap its benefits by realizing the diversification effect.

### . . Limited Historical Loss Availability and Reliance on Catastrophe Models

The private market needs an extensive amount of data regarding both past flooding events and resulting claims in order to develop useful flood loss models as well as for use in other steps of the rate-making process. Since flood insurance has not been offered by private companies for so long, they are facing a severe lack of this necessary data. NFIP data on flood losses and claims was largely unavailable to the private market until (Watkins & Evans, ). Improved access to past NFIP data allows insurers to better estimate future losses and price their policies, which ultimately will determine whether they are willing to enter the market and which properties they might be willing to insure.

Even with the recent release of NFIP data, detailed exposure data—critical to loss estimation and insurance pricing—can be difficult to obtain. Construction, number of stories, basement (and use), and first-floor height all contribute to flood risk, as do measures taken to mitigate the flooding itself and the damage to the property. Historically, flood certifications have been required by FEMA. With the advance of mapping, technology now exists so that variables like first-floor height can be mathematically obtained without a flood elevation certificate.

### . . Inherent Variability and Risk of Flood

Flood risk is complex, but so are hurricane and earthquake risks, for which rating is already largely based on loss estimates from catastrophe models. <sup>31</sup> The inherent



## . Differing Goals and Objectives Between Private Markets and the NFIP

The NFIP program, unlike private insurance, has a long history of intentional cross subsidies and suppressed top-end premiums. If subsidies stay within the NFIP program (as opposed to being shifted to taxpayers more widely), then low-risk NFIP policyholders must necessarily pay artificially higher premiums to create affordable premiums for the high-risk NFIP policyholders.

It is important to note that the goals of the NFIP do not align with the goals of private insurers. While the NFIP is charged with making flood coverage available to those who need it at an affordable price, private insurers are focused on making flood coverage available at an adequate (although not excessive) risk-based price.

with the risk rating that the private market would assign to the same property <sup>32</sup>

## . Private Flood Insurance Design for the Admitted Market

We now turn our attention to the practical elements of market design. If an appropriate policy objective is to build a viable and sustainable private

In the vast majority of states, no laws explicitly apply to private flood coverage, so new flood insurance programs are evaluated against rules that were designed for residential property insurance. Applied to flood, these state laws and rules may be so onerous and misaligned that they unintentionally discourage private insurers from entering the market. For instance, California does not allow the cost of reinsurance to be built into most property insurance rates. The laws and/or regulatory rules in some states prohibit insurers from or are highly frictional for insurers attempting to increase rates due solely to claims occurring from catastrophes.<sup>34</sup> In many states, regulators express a willingness to work with carriers to create a private flood market, yet most provide no explicit information about which of the standard rules are suspended or how long this suspension will last. It may not make sense for large insurers to invest in a private flood program if the rules are known for only a handful of states. Therefore, despite much policy collaboration and regulatory cooperation, legal and regulatory uncertainty creates legitimate hesitation for potential market entrants.

Other states have taken a flexible approach in response to insurer concerns. The Alabama department of insurance (ALDOI), for instance, commissioned Milliman, Inc. in 2017 to conduct a survey of insurers, reinsurers, managing general agents, and other industry stakeholders about their concerns and perspectives around writing private flood insurance in Alabama (Watkins & Evans, 2018).<sup>35</sup> There were four notable areas of response upon which Milliman developed recommendations for the ALDOI. One fairly consistent response from survey participants was the desire for flexibility in forms, rates, and exposure management. The second and third areas of strong respondents suggested that the state requires flood risk disclosures be made to consumers and that the state collaborates with agents, lenders, insurance industry organizations, floodplain managers, and other government agencies to raise consumer awareness about flood risk and insurance. The final area of response was a call for the ALDOI to promote mitigation and responsible building to reduce the underlying flood risk.

In order to minimize the uncertainty that insurers face, and thereby optimize the promotion of private flood insurance, we advocate for state flood insurance programs that incorporate flexibility and insurer choice in their planning. Regulating the market while maintaining flexibility is possible, especially if the regulator allows for insurer and modeler confidentiality and clearly defines what rating a rate for flood means as well as standardizes and communicates rating requirements.<sup>36</sup> Even though the state may have a commonly-understood definition of a rate rating for other lines of business, it may be necessary to clearly define a flood insurance rate rating separately, as it may be different than for other lines.

Overall, flexibility (within reason) is of paramount importance to market growth. We suggest both areas in which flexibility is critical and areas in which flexibility is helpful, even if not critical.

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<sup>34</sup> Findings from a recent working paper by Oh et al. (2018) indicate that California, Hawaii, Minnesota, North Carolina, Texas, and Wyoming are particularly high-friction jurisdictions from a rating standpoint in the wake of catastrophe losses.

<sup>35</sup> See the survey report at <https://aldoi.gov/PDF/Misc/DOIFloodInsuranceSurveyReport.pdf>

<sup>36</sup> Regulators may desire periodic data from insurers writing flood insurance business, including competitive comparisons, exposure, and expected loss summaries. To best monitor the competitiveness of the market and ensure fairness across competitors, a thoughtful means to standardize the data is important.

## . . Areas where Flexibility is Critical

Limit the level of detail required in filing. A requirement to share full details in the rate filing can be problematic for at least two reasons. First, given the granularity of food insurance modeling, including an entire rate table in a rate filing may not be possible as it has been in traditional lines of insurance. Second, even if it is available, it may expose substantial intellectual property and may not be able to be filed because it is proprietary.

Allow reinsurance, capital, and/or risk costs to enter pricing. In an effort to promote the affordability of private food insurance, states may be tempted to restrict insurers from fully reflecting food model results, reinsurance costs, and cost of capital in rates and prices. Risk and premium loading provisions that allow insurers to pass on all real costs are preferable since private insurers cannot justify market entry without reasonable expectations of profitability.

of one for which the value has been established.<sup>38</sup> A key to fairness in dealing with flood loss model vendors, especially if vetting their models for acceptability, is to credibly and reliably promote trust with them that detailed model results (and other proprietary information) will not be disclosed. The Florida Commission, for instance, makes provision for closed meetings to discuss a modeler's intellectual property and competitive intelligence, after which all shared information is immediately returned to the modeler.<sup>39</sup> Additionally, insurers seek improved certainty around the possibility of offering flood insurance, especially as pertains to residential flood insurance. For reasons previously discussed, the process ideally does not require them to be publicly led.

Focus on rate solvency, reasonability, and objectivity. The key to regulating rates with desired flexibility built in hinges on limiting rigorous regulation to solvency issues, and not subjecting carriers to rigorous defense of rating components (similar to other property lines of business). There is substantial uncertainty in estimating flood risk, and regulators do well to recognize that two companies can come to equally valid conclusions for pricing flood that lead to very different results.

## . Guidance and Model Laws for States to Consider

### . . NAIC Guidance

The NAIC has not developed a model law for flood insurance. In late 2013, the organization did document information regarding concrete ways for a department of insurance (DOI) to encourage the growth of private residential flood insurance (NAIC, 2013b). The NAIC's Property and Casualty Insurance (C) Committee has enhanced the collection of private flood data to include: (1) collecting information that separates residential private flood insurance premiums from commercial private flood insurance premiums; and (2) breaking the information down by stand-alone policies and endorsements to homeowners insurance policies, by both first dollar and excess. Additionally, the supplement provides flood claims and policy data (NAIC, 2013b).

Lastly, the document expresses the NAIC's view that while there are several barriers to the residential private flood insurance market, the most significant barrier for private insurers may be uncertainty about the state regulatory environment. In response to this uncertainty, the NAIC suggests that states might want to consider permitting insurers to sell private flood insurance products without a prior approval requirement, allowing them to submit rates on an informational basis,<sup>40</sup> consistent with our recommendations for flexibility in state regulation.

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. States should consider how to enable efficient reviews. A 2013 issue paper released by the American



Pennsylvania<sup>45</sup>, South Carolina<sup>46</sup>, and Virginia<sup>47</sup> are among the earliest states to promote admitted-market residual flood insurance (and in some cases to significantly deregulate flood rates) and have provided sufficient information about their programs to be included in this discussion. Furthermore, each of these states allows private flood insurance to insure residential structures for amounts far above the NFIP coverage limit (into the millions of dollars), based on replacement cost value. Private insurers may also offer coverage for additional living expenses.

The program features differ between these states with respect to their clarity and flexibility for use by interested insurers. Florida and North Carolina provide the clearest roadmap for insurers with flexibility in the design. The policies of the other five states are noteworthy as well and appear to be aligned with insurer flexibility, even if not as clearly mapped as those of Florida and North Carolina.

### . . Overall State Comparisons

Table compares the seven states' current policies with regard to the areas in which flexibility is critical and warranted. "YES" indicates the state's policies are consistent with flexibility in the stated area of concern. So far, all seven states require a limited level of detail in filing rates and forms, allow all risk costs to enter the insurance pricing, and allow insurers flexibility as to whether to use one or multiple models in the derivation of rates. Although not clarified for all, none of these seven require insurers to expose their book of business to severe repetitive loss properties.

Table : State Flood Insurance Regulatory Comparisons

	Alabama	Florida	New Jersey	North Carolina	Pennsylvania	South Carolina	Virginia
Flexibility is Critical							
Limited level of detail required in filing?	YES	YES	YES	YES <sup>8</sup>	YES	YES <sup>9</sup>	YES

<sup>8</sup> . The Pennsylvania DOI has focused on consumer education, collaboration with the Department of Banking,







- Include, within the definition of flood, losses from water intrusion originating from outside the structure that are not otherwise covered under the definition of flood.
- Include coverage for additional living expenses.
- Require that any loss under personal property or contents coverage that is repaired or replaced be adjusted based upon replacement cost settlement, up to the policy limits.

Flexible flood insurance policies issued by private insurers must cover losses meeting the NFIP flood definition and may also include coverage for losses from water intrusion originating from outside the structure which is not otherwise covered by the definition of flood. Flexible flood insurance must include one or more of the following provisions:

- An agreement between the insurer and the insured that the flood coverage is in a specified amount, such as coverage that is limited to the total outstanding mortgage applicable to the covered property.
- A requirement for a deductible in an amount authorized under s. 58-100, including a deductible in an amount authorized for hurricanes.
- A requirement that flood loss to a dwelling is adjusted based upon replacement cost settlement or adjusted on the basis of the actual cash value of the property.
- A restriction limiting flood coverage to the principal building defined in the policy.
- A provision including or excluding coverage for additional living expense.
- A provision excluding coverage for personal property or contents as to the peril of flood.

## .. North Carolina <sup>58</sup>

North Carolina utilizes a unique system for rating residential property insurance through the North Carolina Rate Bureau (NCRB).<sup>59</sup> Today, North Carolina is the only state remaining that uses a rating bureau to establish full rates in residential property insurance. Licensed insurers writing residential property insurance are required to participate, thus the rate approval process in North Carolina is unique to that found in other states. The NCRB proposes and promulgates (with the approval of the commissioner) standard insurance policy forms and base rates, which are filed on behalf of all licensed North Carolina residential property insurers.

In early 2011, the North Carolina DOI approved a private flood insurance program for use by the member companies of the NCRB (NCRB, 2011).<sup>60</sup> The NCRB program provides a unique structure for flood insurance that sets all private insurers on the same foundation for developing their own respective programs. NCRB's responsibility for promulgating residential property (including flood) insurance rates for insurers

<sup>58</sup> Information on the North Carolina Flood Insurance Program is largely sourced from Marlett et al., 2011. The report provides in-depth explanation and evaluation of the program's development and features.

<sup>59</sup> The enabling legislation was N.C.G.S. § 58-100 (2011). Karl et al. (2011) provide detailed discussion of the NCRB, its purposes, and operations. The NCRB is a nonpro fit, nongovernment, uninconnies ocne9vperly insurers4nco6e pr l 40 710 60 16 0

in the state provides a framework from which individual insurers can deviate. The program provides coverage at least as generous as that afforded by the NFIP. In 2011, the North Carolina Legislature passed a bill that allows carriers to offer optional enhanced endorsements related to the flood insurance policy, which allows individual private insurers flexibility in developing flood products in North Carolina, and further encourages the development of admitted, private market products (Statute 68-100).

The North Carolina program is based on a stand-alone flood insurance policy and is a product that can be sold by insurers who are NCRB members. The use of a stand-alone product helps to ensure the existence of “continuous coverage” under

percentage of coverage limits, unlike either the NFIP or typical homeowners policies, which allow for a limited number of deductible options.

## . Considerations and Implications for Future Public Policy Regarding Flood Insurance

This paper advocates for a private flood insurance marketplace that is supplemented by the NFIP (for residual-risk properties). Such a financing system would require sustainable growth in the existing private market for flood insurance and state strategies that accommodate private insurer needs for short-term experimentation and long-term profitability. Therefore, state-level public policies related to private flood insurance that are designed with program and insurer flexibility in mind may work best. Nevertheless, flexibility embedded at the expense of meeting regulatory goals would be folly. A key to any risk-financing system's financial viability and loss reduction is risk-based pricing. The prior literature, as discussed in earlier sections, is clear that price-to-risk matching is an important element within the system—including both the private and public segments. Any subsidies in a market for residential flood insurance are best limited to residual risks (where the nonsubsidized price is prohibitively expensive) that are primary residences (as a means to avoid resident displacement), based on financial need (e.g., an income-based sliding scale), and made transparent to the property owner (so the true cost of risk and amount of subsidy are clear). In the development of a viable marketplace, three elements of state-level policies are important to ensure the long-term viability of private programs:

- Promote rates that optimize program solvency and sustainability
- Determine the critical and reasonable disclosures
- Ensure regulator access to rates

Rates that optimize program solvency and sustainability. Developing an environment where insurers can successfully and fairly write flood insurance business and sustain a reasonable level of profitability on a long-term basis is a critical objective in private market design. Long-established actuarial principles generally determine the setting of insurance premiums for the private market. Insurance premiums are required to yield revenues that will pay expected future claims (losses) and insurance program expenses (costs), and theoretically, premiums for an individual policy are based on the long-term expected claims plus fees for each individual policy. Also, theoretically, no cross-subsidy exists, where one group of policyholders pays artificially higher premiums so that other policyholders will pay artificially lower premiums. Last, premiums are no higher than necessary to ensure that these principles are met.

Determine the critical and reasonable disclosures. Provisions for agent, lender, and consumer disclosures are important for program promotion, and are equally important for consumer awareness and loss mitigation purposes. Important disclosures may include flood risk, lender acceptance, limitations of coverages, loss of any NFIP subsidies if applicable, among others.

Ensure regulator access to rates. Provided they are not publicly available pr

imperative that regulators be able to access insurers' rating plans and meaningfully understand how they are developed, so regulator access to the rates is important. Confidential access for regulators can be achieved by simply including in the rules a provision for confidentiality. Require from flood insurance writers the attestation that rates do not change without filing and that they are available for access by regulators.

Flood risk is widespread and dynamic: The geography of every U.S. state holds significant exposure. According to FEMA ( ), % of U.S. counties were impacted by flooding during - . Meanwhile, FEMA records indicate that over , people have dropped their NFIP coverage since the implementation of Risk Rating . . Many consumers clearly do not see an appealing value proposition when considering NFIP insurance for their properties. We assert that the private insurance market has a substantial opportunity to build a viable, admitted market for flood insurance. What is needed for private market viability centers on flexibility—to serve the coverage needs of consumers at rates that are adequate and equitable based on best-practice flood loss modeling and actuarial work. We have outlined in this paper ways in which state legislators and regulators can aid in creating and preserving the flexibility needed to attract admitted insurers to the private market.

## Appendix A

### NFIP's History and Present Status

During 1988, legislation passed that significantly impacted the NFIP. The Biggert-Waters Flood Insurance Reform Act of 2012 was passed to address the fiscal insolvency of the NFIP by funding the national mapping program and allowing certain rate increases to transition the program from subsidized to full actuarial rates reflective of true risk (FEMA, 2012). In 2014, the Consolidated Appropriations Act of 2014 (P.L. 113-76) authorized the continuation of the program through fiscal year 2015. The Act also authorized the continuation of the program through fiscal year 2016. The Act also authorized the continuation of the program through fiscal year 2017. The Act also authorized the continuation of the program through fiscal year 2018. The Act also authorized the continuation of the program through fiscal year 2019. The Act also authorized the continuation of the program through fiscal year 2020. The Act also authorized the continuation of the program through fiscal year 2021. The Act also authorized the continuation of the program through fiscal year 2022. The Act also authorized the continuation of the program through fiscal year 2023. The Act also authorized the continuation of the program through fiscal year 2024. The Act also authorized the continuation of the program through fiscal year 2025. The Act also authorized the continuation of the program through fiscal year 2026. The Act also authorized the continuation of the program through fiscal year 2027. The Act also authorized the continuation of the program through fiscal year 2028. The Act also authorized the continuation of the program through fiscal year 2029. The Act also authorized the continuation of the program through fiscal year 2030.

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homes and contents from the risk of flooding.” (See <https://www.fema.gov/ood-in-surance/rules-legislation/congressional-reauthorization/legislative-proposals>.) In May , FEMA proposed to congress a -year reauthorization with program reforms.

## Appendix B

### Risk Rating . versus Historical NFIP Rating

[Note: We keep our discussion of the NFIP Risk Rating . here brief because: ) our purpose is not a primer on Risk Rating . , which is readily, publicly available online through FEMA; and ) to the extent that Risk Rating . improves the NFIP program's competitiveness with a private marketplace, this competitiveness is discussed in the main body of the paper.]

Historically, NFIP insurance rates have been predominantly based on relatively static measurements, focused on a property's elevation within a Flood Insurance Rate Map (FIRM) zone. The NFIP rates in different ways dependent upon whether a FIRM has been issued for the community (FEMA, ). All buildings constructed after a FIRM are charged full-risk, actuarially fair premiums; if the construction is in compliance with the floodplain management ordinances, the premium should be reasonable and affordable (Hayes & Neal, ).

This enhances the NFIP goal of discouraging building in high-risk flood areas because the full-risk premiums do not subsidize insureds. Additionally, all buildings found to be outside of SFHAs are charged full-risk premiums. In these areas, since the risk is generally low, the premiums are low as well (Hayes & Neal, ). Buildings in SFHAs that were constructed before the development of the FIRM are charged discounted, or subsidized, premiums, since their full-risk premiums could be extremely high in some instances (Hayes & Neal, ). It is notable that FEMA is not provided funds to offset the subsidized and discounted premiums. Subsidized and discounted premiums have contributed to FEMA's need to borrow from the U.S. Treasury to pay NFIP claims (Horn & Webel, ).

This historical approach does not incorporate as many flooding variables as Risk Rating . . These include flood frequency, multiple flood types—river overflow, storm surge, tsunami, great lakes flooding, coastal erosion and heavy rainfall—and distance to a water source along with property characteristics such as elevation and the cost to rebuild. FEMA utilizes flood hazard information by incorporating private sector data sets, catastrophe models, and evolving actuarial science to set rates that are fairer than in the past and ensure rate adjustments are equitable.

Historically, policyholders with lower-valued homes have paid disproportionately high premiums while policyholders with higher-valued homes paid disproportionately low premiums, relative to the property loss exposure represented. Because Risk Rating . considers rebuilding costs, FEMA can equitably distribute premiums across policyholders based on home value and a property's individual flood risk.

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