

NATIONAL FLOOD INSURANCE REFORM AS A TOOL FOR MUNICIPAL CLIMATE
RESILIENCE ENHANCEMENT

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I. INTRODUCTION

The National Flood Insurance Program (NFIP)² plays a significant role in the land use policy and floodplain management of coastal municipalities. In coastal communities, flood insurance from the NFIP covers losses to properties exposed to both riverine and coastal flooding. The NFIP is a major factor influencing coastal land use patterns, especially among coastal residential property owners, many of whom are required to hold flood insurance as a provision of a federally backed mortgage.³

The program faces Congressional reauthorization in September, 2017,⁴ the first since major reforms were enacted in the Biggert-Waters Flood Insurance Reform Act of 2012 (BW12)⁵ and the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA14).⁶ About one in five policyholders in the NFIP pay premiums below actuarial rates.⁷ Federal subsidization of coastal flood risk has played a significant role in driving development in the coastal zone over the latter

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² National Flood Insurance Act of 1968, Pub. L. No. 90-448, 82 Stat. 572 (codified as amended at 42 U.S.C. § 4001–4129 (2016)).

³ 42 U.S.C. § 4012a(b) (2016).

⁴ The NFIP’s current authorization expires on September 30, 2017.

⁵ Pub. L. No. 112-141, 126 Stat. 405 (2012).

⁶ Pub. L. No. 113-89, 128 Stat. 1020 (2014).

⁷ U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-15-111, FLOOD INSURANCE: FORGONE PREMIUMS CANNOT BE MEASURED AND FEMA SHOULD VALIDATE AND MONITOR DATA SYSTEM CHANGES 7 (2014).

half century.⁸ Significant reforms are expected from Congress to shore up the ailing program, but the national policy discussion is still ongoing about precisely what shape these reforms will take.

This discussion is of particular importance to municipal policymakers and managers in coastal communities interested in increasing their resilience to climate change. Changes to the NFIP could serve as a vehicle for proactive land use reform and incentivizing private resilience behavior on the municipal level, or they could complicate ongoing municipal resilience planning. This article analyzes the state of reform proposals in the policy literature from the perspective of municipal land use management, and assesses the implications of various reform options on the ability of communities to enhance resilience.

The state of NFIP policy is critically significant to coastal municipalities' resilience planning efforts. NFIP services such as the Community Rating System (CRS) incentivize coastal municipalities to undertake flood control initiatives,⁹ and NFIP information products, especially Flood Insurance Rate Maps (FIRMs), are used by many states and municipalities as a framework for their hazard management and adaptation plans and regulations.

However, NFIP policy is currently in a state of flux. The program has been forced to draw \$24.6 billion dollars from the U.S. Treasury to cover claims resulting from two major coastal flooding disasters in the last twelve years: the 2005 hurricane season including Hurricanes Katrina and Rita and 2012's Hurricane Sandy.¹⁰ It has an outstanding debt of \$23 billion.¹¹ The program is regarded as financially unsustainable in a time when an increasing portion of the United States population and economic activity is located in coastal hazard areas, and risk exposure will only increase with

⁸ See Kenneth J. Bagstad, et al., *Taxes, Subsidies, and Insurance as Drivers of United States Coastal Development*, 63 *ECOLOGICAL ECON.* 285, 287-88 (2007); Walter A. Rosenbaum & Gary Boulware, *The Developmental and Environmental Impact of the National Flood Insurance Program*, in *EVALUATION OF THE NATIONAL FLOOD INSURANCE PROGRAM* 17 (2006).

⁹ See Abdul-Akeem Sadiq & Douglas S. Noonan, *Flood Disaster Management Policy: An Analysis of the United States Community Ratings System*, 7 *J. NATURAL RES. POL. RESEARCH* 5 (2014) (finding that flood risk, socio-economic characteristics, political economy, and local capacity can drive CRS participation); *but see* Phillip R. Berke, et al., *Impacts of Federal and State Hazard Mitigation Policies on Local Land Use Policy*, 34 *J. PLAN. EDUC. & RES.* 60 (2014) (arguing that state policy is more influential on land use patterns).

¹⁰ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-17-317, *HIGH RISK SERIES: PROGRESS ON MANY HIGH-RISK AREAS, WHILE SUBSTANTIAL EFFORTS NEEDED ON OTHERS* 619 (2017) [hereinafter GAO, *HIGH RISK SERIES*].

¹¹ *Id.*

climate change induced sea level rise and changes in coastal storm frequency and intensity.¹² Significant reforms undertaken in 2012 and 2014 are only the beginning of major changes which will inevitably come to the program in the coming decades.

This article reviews the policy debate around NFIP reform and analyzes the implications of key reform proposals on the NFIP as a tool for municipalities to influence land use in the coastal zone. Part II examines the structure of the program, its role in municipal resilience planning, the problems which have been identified in its structure and implementation, and how those problems have shaped the conversation about reform. Part III undertakes to assess key reform proposals and their implications as tools for municipal policymakers to understand flood risks, manage coastal hazards, and enhance community resilience. Part IV highlights key opportunities and challenges that NFIP reform through the reauthorization process may present to municipal planners.

II. MUNICIPAL IMPLEMENTATION OF THE NATIONAL FLOOD INSURANCE PROGRAM

Although insurance policies under the NFIP are issued to individual property owners, participation in the program is fundamentally a municipal policy decision, impacting insurance, hazard mitigation planning, building codes, and land use regulations. The NFIP is an opt-in program available to municipalities, which join by certifying compliance with minimum flood hazard mitigation requirements under 42 U.S.C. § 4022; primarily, by instituting flood control land use ordinances.¹³ The Federal Emergency Management Agency's (FEMA) NFIP operations fall into three core activities: mapping, regulation, and insurance. The participating community in turn is responsible for using FEMA maps and its own land use regulatory authority to implement flood hazard mitigation "on the ground." This federal-local relationship gives the NFIP an important role in municipal planning activities for hazard mitigation and climate change resilience enhancement. Discussed below are the structure of the program, its role in municipal resilience planning, the problems which have been identified in its structure and implementation, and how those problems have shaped the conversation about reform.

¹² See S. Hallegatte, et al., *Future Flood Losses in Major Coastal Cities*, 3 NATURE CLIMATE CHANGE 802 (2013); Jochen Hinkel, et al., *Coastal Flood Damage and Adaptation Costs Under 21st Century Sea-Level Rise*, 111 PROC. NAT'L ACAD. SCI. 3292 (2013); Carolyn Kousky, *Informing Climate Adaptation: A Review of the Economic Costs of Natural Disasters*, 46 ENERGY ECON. 576 (2014).

¹³ See 44 C.F.R. § 60 (2016).

A. Program Structure

FEMA implements the NFIP through mapping, regulation, and insurance. FEMA produces FIRMs for all coastal areas of the United States. FIRMs delimit Special Flood Hazard Areas (SFHAs), mapping flood risk by identifying the area within which the likelihood of being inundated in any single year exceeds a certain threshold.¹⁴ SFHAs include the AE-zone, VE-zone, X-zone, and other more specialized designations.¹⁵ FEMA contractors determine the boundaries of SFHAs by conducting hydrographic modeling of flood events, using a hypothetical 1% annual likelihood storm derived from historical flood records as the threshold (commonly called the 100-year storm).¹⁶ Modelers map the Base Flood Elevation (BFE) up to which floodwaters are calculated to reach during the hypothetical storm, and use that flood envelope to draw the SFHAs. SFHA boundaries in turn mark the regulatory extent of the program, as the type of SFHA into which a structure falls controls what regulatory provisions apply to it.

FEMA's regulatory role consists of using its mapping and its insurance service to incentivize development standards and land use practices along the coast that minimize risk exposure. Insurance is only available for structures in municipalities with compliant land use flood controls within enforceable city ordinances.¹⁷ Through NFIP financial regulations, proof of flood insurance is required for any loan secured by a structure within an SFHA, including a mortgage.¹⁸ This Mandatory Purchase Requirement (MPR), enforced by the

¹⁴ By dividing the map into zones exceeding specific risk thresholds – here, the 1% and 0.2% thresholds described below – the FIRM mapping process inherently makes a decision about risk tolerance, identifying structures on one side of the SFHA boundary as “at risk” and those on the other as “not at risk.” The implications of this implicit policy decision are explored in Part C.

¹⁵ AE-zones are areas with a 1% chance or higher in any single year of experiencing flooding. VE-zones are areas with a 1% annual chance or higher of experiencing flooding by waters driven up onto land by waves and storm surge. X-zones are yet-higher risk areas with a 0.2% annual chance to experience flooding. Zones are further distinguished by the risk of experiencing sheet flow, ponding, or mudslides.

¹⁶ The 1% annual likelihood threshold was a regulatory standard instituted in 1971 by the Federal Insurance Administration, the Department of Housing and Urban Development agency that was responsible for the NFIP prior to it moving into FEMA's portfolio. *See* Gerald E. Galloway et al., *Assessing the Adequacy of the National Flood Insurance Program's 1 Percent Flood Standard*, in EVALUATION OF THE NATIONAL FLOOD INSURANCE PROGRAM (2006).

¹⁷ 44 C.F.R. § 59.22 (2016).

¹⁸ 42 U.S.C. § 4012a(b) (2016); *see* 12 C.F.R. § 22.3 (2016) (Office of the Comptroller of the Currency); 12 C.F.R. § 208.25(c) (2016) (Fed. Reserve Bd.); 12 C.F.R. § 339.3 (2016) (Fed. Deposit Ins. Corp.); 12 C.F.R. § 614.4930 (2016) (Farm Credit Admin.); 12 C.F.R. § 760.3 (2016) (Nat'l Credit Union Admin.).

lenders, makes flood insurance a *de facto* requirement for many residents of those zones. Private insurance companies and banks also impose similar requirements for other vulnerable structures.

NFIP insurance is available through a variety of products: for primary residences under the dwelling form policy, for commercial residential buildings under the residential condominium building association policy, and for second homes, rental homes, commercial buildings, and agricultural buildings under the general policy.¹⁹ Through the Write Your Own (WYO) program, these policies are sold and managed by private insurers and underwritten by the NFIP. Dwelling form policies offer \$250,000 of coverage for building damage and up to \$100,000 of coverage for contents.²⁰ The commercial policies offer \$500,000 of coverage for building damage and up to \$500,000 of coverage for contents, which does not extend to loss of business.²¹ Municipalities can earn premium reductions for its residents by attaining flood control measures above minimum standards through the Community Rating System (CRS).²²

Insurance premium rates fall into two categories: full-risk rates and subsidized rates. Full-risk rates, also called actuarial rates, reflect the likelihood of paying out under the policy. They are determined by the structural features of the property, the zone it is in, its height above BFE, and other risk factors.²³ Subsidized rates are available primarily to structures which were built code-compliant before FIRMs were published for their communities, but do not comply with tighter post-FIRM floodplain regulations.²⁴ Those rates also account for certain risk factors but do not reflect full risk in the premium. Most importantly, subsidized rates do not account for height above BFE.²⁵ This subsidy also runs with the land, ending only

¹⁹ 44 C.F.R. § 61 app. A (2016).

²⁰ *Id.*

²¹ *Id.*

²² The CRS, discussed in Part B below, gives credits to municipalities and states that implement hazard reduction policy measures above NFIP minimum requirements. Those credits in turn reduce premiums for policies within the enrolled CRS community.

²³ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-16-59, NATIONAL FLOOD INSURANCE PROGRAM: CONTINUED PROGRESS NEEDED TO FULLY ADDRESS PRIOR GAO RECOMMENDATIONS ON RATE-SETTING METHODS (2016) [hereinafter GAO, RATE SETTING].

²⁴ Until 2012, subsidized rates were set by subtracting the expected revenue of full-risk premiums from the "historical average loss year," or HALY, and distributing the difference across subsidized policies. This inherently undercapitalized the program for catastrophic loss years, during which the program was intended to use its Treasury borrowing power to cover the gap. FEMA has indicated to the Government Accountability Office that it no longer uses the HALY capital target. *Id.* at 9.

²⁵ Many properties built prior to NFIP-required building code revisions lie significantly below BFE. *See* FED. EMERGENCY MGMT. AGENCY, FACT SHEET FOR INSURANCE AGENTS: NFIP

if the structure undergoes substantial damage or substantial improvement,²⁶ or if the property owner does not maintain continuous coverage.²⁷ FEMA also allows policy holders to retain grandfathered rates if their property is mapped into a higher-risk flood zone or BFE by the FIRM update process, regardless of whether the change was because the map became more accurate with newer science or because conditions had changed to increase the property's actual risk exposure.²⁸

Ultimately, it is the municipal government, as a participating community,²⁹ which is responsible for enforcing NFIP mitigation requirements and implementing its risk-reduction policy goals,³⁰ typically through the building code, zoning codes, subdivision regulations, or an independent flood ordinance.³¹ Municipalities implement floodplain management ordinances through their zoning and police powers. The designated Floodplain Manager who administers the regulations is usually the local building inspector or zoning officer.³² The Floodplain Manager often also becomes responsible for public education, as the point of contact for homebuyers seeking to comply with building code, insurance, and rate-setting requirements.³³ Under the law as written, lending institutions have the responsibility to ensure that property owners in SFHAs subject to the MPR are aware of their obligations; however, enforcement is poor, and the building inspector often must provide the first notice to residents.³⁴

GRANDFATHER RULES (2009).

²⁶ Substantial damage is a loss where the cost of repairing the structure to pre-loss conditions exceeds 50% of the pre-loss market value of the structure. Substantial improvement is a modification or renovation with a cost greater than 50% of the pre-improvement market value of the structure. 44 C.F.R. § 59.1 (2016).

²⁷ 42 U.S.C. § 4014(g)(1) (2016).

²⁸ 44 C.F.R. § 59.1.

²⁹ "Community" is defined for the purposes of NFIP eligibility as "any State or area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or Alaska Native village or authorized native organization, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction." 44 C.F.R. § 59.1.

³⁰ 44 C.F.R. § 60.3 (2016).

³¹ See, e.g. International Building Codes from the International Code Council, incorporating by reference ASCE 24-05 and ASCE 7-10, Minimum Design Loads for Buildings and Other Structures.

³² Roy D. Sedwick, *Who Is This Masked Individual Called the FPA?*, in FLOODPLAIN MANAGEMENT IN A MUTIFACETED WORLD (1997).

³³ *Id.*

³⁴ NAT'L RESEARCH COUNCIL, AFFORDABILITY OF NATIONAL FLOOD INSURANCE PROGRAM PREMIUMS: REPORT 1 31 (2015) [hereinafter REPORT 1].

B. *The NFIP in Municipal Planning and Climate Resilience*

NFIP planning and enforcement plays a significant role in municipal hazard mitigation planning, and can also influence municipal resilience enhancement efforts for coastal communities.

The NFIP provides key data and incentives for state and local flood hazard mitigation planning. The CRS is the NFIP's primary policy instrument to incentivize flood mitigation. Communities are rated on the extent to which they undertake collective mitigation projects such as tightening land use and building regulations, improving stormwater infrastructure, preserving open space, or educating the public on flood risks.³⁵ Communities reaching higher rating classes are awarded progressively higher premium discounts for their property owners.

This incentive has driven many of the communities with the highest proportion of insured properties to join the program;³⁶ however it has not been as successful at incentivizing communities to “climb the ladder” and undertake the higher-cost, higher-reward activities listed under the CRS's highest rating classes. Municipal policymakers do not benefit directly from undertaking CRS mitigation strategies; instead, they benefit indirectly from the political approval of residents receiving premium discounts. The marginal benefit of reaching each next rating class is not proportionate to the cost of implementing higher classes' requirements; thus, communities see diminishing returns for pursuing more expensive CRS ratings and most remain at the lower classes.³⁷ Unfortunately, significant reductions in flood claims and property damages typically manifest only at higher rating classes, meaning that the CRS does not efficiently incentivize the maximum feasible risk reduction.³⁸

Outside the NFIP, FEMA incentivizes municipalities to undertake hazard mitigation planning, including risk assessment, mitigation, and long-term implementation, by providing technical support and by conditioning certain

³⁵ See generally FED. EMERGENCY MGMT. AGENCY, FIA-15/2017, CRS COORDINATOR'S MANUAL (2017).

³⁶ This implies that the CRS effectively targets highly risk-exposed communities. FED. EMERGENCY MGMT. AGENCY, COMMUNITY RATING SYSTEM FACT SHEET (May 2016) (“Although CRS communities represent only 5 percent of the over 22,000 communities participating in the NFIP, more than 69 percent of all flood insurance policies are written in CRS communities.”).

³⁷ CAROLYN KOUSKY & LEONARD SHABMAN, A PROPOSED DESIGN FOR COMMUNITY FLOOD INSURANCE 21 (2015).

³⁸ Wesley Highfield & Samuel Brody, *Evaluating the Effectiveness of Local Mitigation Activities in Reducing Flood Losses*, 14 NAT. HAZARDS REV. 229, 235 (2013).

federal aid on the submission and implementation of a satisfactory Local Hazard Mitigation Plan.³⁹ FEMA also offers up to a 20% bonus in non-mitigation post-disaster relief to municipalities which have established an “enhanced” mitigation plan above minimum requirements.⁴⁰ NFIP regulation and insurance is tied into this policy: Stafford Act recovery funds are not available for properties which are noncompliant with NFIP requirements,⁴¹ and meeting some CRS standards contributes toward “enhanced” mitigation plan status.⁴²

Hazard mitigation planning, a long-established subject of expertise for municipal planning officials, dovetails well with the comparatively novel field of climate resilience planning. Hazard mitigation planning includes identifying and characterizing hazards, mitigating the risk of human casualty and property damage, and increasing the community’s infrastructural and economic capacity to quickly recover from disasters.⁴³ Climate resilience planning encompasses identifying and characterizing climate change threats, adapting to future climate conditions through sustainable economic and infrastructural development, and mitigating climate change impacts such as more frequent storm damages and increased infrastructure maintenance costs.⁴⁴ These two planning priorities have significant overlap.⁴⁵

Tools in the municipal toolbelt for resilience planning include both policy changes (e.g., private land use incentives and regulation) and infrastructure projects (e.g., stormwater system improvements and open space protections). Activities which municipalities may seek to undertake to enhance resilience include: obtaining better risk exposure information, conducting public education about climate impacts, enacting land use controls such as building codes, set-backs, open space requirements, and drainage regulations, incentivizing private

³⁹ 42 U.S.C. § 5165 (2016); 44 CFR § 201 (2016) (an enforceable LHMP is a prerequisite for Hazard Mitigation Grant Program funds).

⁴⁰ *Id.* §201.5(a) (2016).

⁴¹ Ernest B. Abbott, *Flood Insurance And Climate Change: Rising Sea Levels Challenge the NFIP*, FORDHAM ENVTL. LAW REV. 10, 44 (2014); see Matthew J. Kutner, *Idea: One for Ten Dollars, Two for Thirty: The Value of the National Flood Insurance Program Dwelling Policy for the Insured*, 43 HOFSTRA L. REV. 169, 175 (2014).

⁴² 44 CFR § 201.5(a) (2016).

⁴³ FED. EMERGENCY MGMT. AGENCY, LOCAL MULTI-HAZARD MITIGATION PLANNING GUIDANCE (2008).

⁴⁴ Matthew Sienkiewicz, *Flood Insurance*, in LEGAL TOOLS FOR CLIMATE ADAPTATION ADVOCACY 3 (2015).

⁴⁵ FED. EMERGENCY MGMT. AGENCY, INTEGRATING HAZARD MITIGATION INTO LOCAL PLANNING (2013).

adaptation behavior, improving infrastructure, relocating development, and protecting ecosystem services such as barrier marshes and dunes from changing conditions or human disruption. Climate change adaptations implicate flood hazard mitigation because sea level rise, and the concomitant increase of flood activity it causes, will be a primary climate change impact in the next century for many coastal communities.⁴⁶

C. Program Challenges

The NFIP faces significant challenges to its fundamental capacity to achieve its statutory purpose. It has become increasingly difficult and expensive for FEMA to manage, and has been listed as a “high risk” program by the Government Accountability Office since 2006.⁴⁷ When Congress created the NFIP in 1968, it was intended to be funded by premiums collected from policyholders, not by general treasury funds. The program sought to intercede into coastal risk exposure at a time when storm experiences, in particular Hurricane Betsy in 1965,⁴⁸ were driving up private insurance rates above what economically vulnerable populations already on the coast could afford to pay.⁴⁹ Coastal land use patterns and climatic conditions have changed since then, revealing flaws and inefficiencies in the program’s design.

Financial sustainability remains the most immediate vulnerability of the NFIP. Generous subsidization, which was intended to tail off as more and more homes in the flood zone were built to modern standards, has instead accumulated as the housing stock ages in place, as well as grandfathering provisions that allow structures to hold on to low rates despite more accurate FIRMs and remain structurally noncompliant despite tightened floodplain regulations.⁵⁰ FEMA estimates that most subsidized policyholders pay between 40% to 45% of full-risk

⁴⁶ Changes in precipitation patterns may additionally increase or decrease flood activity for different coastal communities, depending on regional variability. For instance, see Effects of Climate Change on the Southeast, N.C. STATE UNIV. (Aug. 1, 2013, 1:52 PM), <http://climate.ncsu.edu/edu/k12/climatechange.SE>.

⁴⁷ GAO, HIGH RISK SERIES, *supra* note 10.

⁴⁸ Hurricane Betsy struck Louisiana as a Category 3 storm and was the first natural disaster to cause more than \$1 billion in damages, devastating an area where few property owners had flood insurance. RAWLE O. KING, CONG. RESEARCH SERV., RL32972, FEDERAL FLOOD INSURANCE: THE REPETITIVE LOSS PROBLEM 12 (2005).

⁴⁹ Erwann Michel-Kerjan, *Catastrophe Economics: The National Flood Insurance Program*, 24 J. ECON. PERSPECTIVES 165, 167 (2010); Kutner, *supra* note 41, at 170-71.

⁵⁰ Ernest B. Abbott, *Floods, Flood Insurance, Litigation, Politics – and Catastrophe: The National Flood Insurance Program*, 1 SEA GRANT L. & POL. J. 129 (2008).

rate;⁵¹ however, the extent of these properties' risk exposure due to their noncompliance with flood regulations is so great that many subsidized properties nevertheless pay higher premiums than the average full-risk policy.⁵²

Severe repetitive loss structures, properties that account for only about 1% of policies but require repeated payouts because of their particular risk exposure,⁵³ generate an average of 30% of annual claims.⁵⁴ These burdens on the program's revenue undercapitalized it, making it less capable of managing costs during catastrophic loss years such as 2005 and 2012.⁵⁵ Catastrophic loss years will only become more frequent and more severe as population density on the coast increases and coastal storm impacts become more severe.⁵⁶ Moreover, as sea level rises and increases BFE, grandfathering will prevent rates from increasing correspondingly.⁵⁷

The NFIP also makes an implicit risk tolerance decision for participating communities by basing the regulatory extent of the program on SFHAs, which do not communicate detailed risk information to residents or municipal planners and may obfuscate actual exposure. Currently, the NFIP risk assessment process simply groups flood-exposed structures into those which are inside the SFHA and those which are not. The line drawn by the SFHA, which corresponds to the probabilistic maximum flood extent during a 1% annual chance flood event, is often incorrectly perceived as the line between flood exposure and safety.⁵⁸ In reality, it is a policy-derived standard rather than a statistically or hydrologically derived threshold.⁵⁹

⁵¹ THOMAS L. HAYES & D. ANDREW NEAL, FED. EMERGENCY MGMT. AGENCY, ACTUARIAL RATE REVIEW 9 (2011).

⁵² Carolyn Kousky & Howard Kunreuther, *Addressing Affordability in the National Flood Insurance Program*, 1 J. EXTREME EVENTS 1, 3 (2013).

⁵³ Severe repetitive loss properties are those that have received cumulative payments exceeding \$20,000, or at least two claims with a cumulative total exceeding the value of the property. 42 U.S.C. § 4014(h)(1) (2014).

⁵⁴ Kousky & Kunreuther, *supra* note 52, at 19.

⁵⁵ Industry standards for private insurers include folding the potential costs of catastrophic loss years into annual premium rate determinations, or otherwise capitalizing the program to be able to withstand such blows. Until BW-12, FEMA did not fold the potential costs of catastrophic loss years into any premium rates, but instead based premium rate determinations on the HALY; *See* Highfield & Brody, *supra* note 38.

⁵⁶ Jennifer Wriggins, *Flood Money: The Challenge of U.S. Flood Insurance Reform in a Warming World*, 119 PENN ST. L. REV. 361 (2014).

⁵⁷ Abbott, *supra* note 41, at 32.

⁵⁸ Galloway et. al, *supra* note 16, at 20.

⁵⁹ *Id.* (finding that "[t]he 1 percent standard was never envisioned as an optimal standard by those who proposed and implemented it. At the time of its establishment, it represented a compromise that could be agreed upon by decision makers and the people who would be affected by its

The FIRMs' simplification of risk exposure creates a moral hazard for coastal property developers, by obfuscating actual flood risks and by suppressing the price signal of flood risk in the real estate market through subsidized rates.⁶⁰ The vast majority of structures outside the SFHA are not insured against flood perils, even though nearly 25% of NFIP claims come from outside SFHAs.⁶¹ Because primarily properties within the highest risk zone pay into the system—a form of adverse selection—and many of them receive subsidized rates, the NFIP is prevented from robustly distributing flood risk across policyholders, and taxpayers are on the hook for the balance of costs during catastrophic loss years.

D. Recent Reforms

In 2009, prompted by the 2005 hurricane season of Katrina and Rita⁶² and significant riverine flooding in the Midwest in 2008,⁶³ FEMA established a NFIP Reform Working Group to convene program stakeholders, solicit practical input on programmatic failings and opportunities for improvement, and identify key reforms to overhaul the system.⁶⁴ That Working Group released a report in 2011 identifying key potential reforms⁶⁵ including premiums increased to actuarial rates,⁶⁶ tightened mapping and regulatory standards, transition to a private market model, transition to a direct post-disaster assistance model, and community-based flood insurance.⁶⁷

implementation. It would provide a point of departure for adjustments that could reflect the differences that might exist in floodplains across the country and in the objectives of the States and localities that would implement the standard.”).

⁶⁰ Michel-Kerjan, *supra* note 49, at 180.

⁶¹ Wesley Highfield et al., *Examining the 100-Year Floodplain as a Metric of Risk, Loss, and Household Adjustment*, 33 RISK ANALYSIS 186, 189 (2012).

⁶² Katrina cost the NFIP \$16.27 billion in paid losses, the greatest damage cost of any natural disaster until that point, while Rita impacted the same region less than a month later for an additional \$470 million in paid losses. RAWLE O. KING, CONG. RESEARCH SERV., NATIONAL FLOOD INSURANCE PROGRAM: BACKGROUND, CHALLENGES, AND FINANCIAL STATUS 6 (2012).

⁶³ Major floods especially in Indiana, Iowa, and Wisconsin caused widespread damage, but did not trigger a substantial NFIP payout because program take-up in the region was very poor, highlighting the challenges faced by the program nationwide in incentivizing take-up and enforcing the MPR. RAWLE O. KING, CONG. RESEARCH SERV., MIDWEST FLOODING DISASTER: RETHINKING FEDERAL FLOOD INSURANCE? 7 (2008).

⁶⁴ FED. EMERGENCY MGMT. AGENCY, NFIP STAKEHOLDER LISTENING SESSION: FINDINGS & NEXT STEPS PHASE I REPORT (2009).

⁶⁵ FED. EMERGENCY MGMT. AGENCY, NFIP REFORM: PHASE III REPORT 4-5 (2011) [hereinafter NFIP REFORM: PHASE III REPORT].

⁶⁶ Actuarial rates would reflect the full risk of paying out on the policy, and would require ending subsidies.

⁶⁷ Community-based flood insurance, discussed further in Section III, consists of the NFIP issuing insurance policies directly to communities rather than to individual property owners.

Spurred on by the public attention surrounding FEMA's internal analysis, legislative reform proposals gained momentum in the Congress, supported by the Obama Administration⁶⁸ and a combined lobbying effort from allied environmentalist and private insurance interests.⁶⁹ This movement led to the passage of the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12),⁷⁰ which instituted broad and aggressive reforms including an immediate end to grandfathering for properties when sold, a graduated increase in premiums for other grandfathered properties to actuarial rates over five years, and a rise in all other premiums to actuarial rates at a capped pace of no more than a 25% cost increase per year.⁷¹

Within months, Sandy struck the East Coast.⁷² As catastrophic damage brought to light the breadth of subsidized properties which would lose their subsidies and see rate hikes after suffering substantial damage. This, coupled with new rate hikes introduced under BW-12, raised public concern with the NFIP.⁷³ Congress responded to these concerns with the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA-14),⁷⁴ which reversed the discontinuation of grandfathering for primary residences, delayed some premium increases, and refunded monies paid in from increased premiums in the preceding two years.⁷⁵

Congress directed FEMA through BW-12 and HFIAA-14 to investigate a range of further potential systematic reforms, including privatization, a community-based flood insurance model, mitigation assistance methods, and affordability programs.⁷⁶ This program of research, including the formation of the Technical

⁶⁸ OFFICE OF MGMT. & BUDGET, STATEMENT OF ADMINISTRATION POLICY: S. 1940 – FLOOD INSURANCE REFORM AND MODERNIZATION ACT OF 2011 (June 25, 2012) (supporting the Senate bill which would become the Biggert-Waters Act).

⁶⁹ See Eli Lehrer, *Strange Bedfellows: Smartersafer.Org and the Biggert-Waters Act Of 2012*, 23 DUKE ENVTL. L. & POL. FORUM 351 (2013).

⁷⁰ Pub. L. No. 112-141, 126 Stat. 405 (2012).

⁷¹ For a comprehensive review of BW-12 reforms and their implications, see Alexander B. McDonnell, *Note: The Biggert-Waters Flood Insurance Reform Act of 2012: Temporarily Curtailed by the Homeowner Flood Insurance Act of 2014 - A Respite to Forge an Enduring Correction to the National Flood Insurance Program Built on Virtuous Economic and Environmental Incentives*, 49 WASH. U. J.L. 235 (2015).

⁷² Sandy made landfall at New Jersey as a post-tropical cyclone rather than a hurricane, although it had hurricane-force winds and an unusually intense storm surge. ERIC S. BLAKE, *et al.*, NAT'L HURRICANE CTR., AL182012, TROPICAL CYCLONE REPORT: HURRICANE SANDY (2013).

⁷³ Kousky & Kunreuther, *supra* note 52, at 6.

⁷⁴ Pub. L. No. 113-89, 128 Stat. 1020 (2014).

⁷⁵ *Id.*

⁷⁶ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-15-178, FLOOD INSURANCE: STATUS OF FEMA'S IMPLEMENTATION OF THE BIGGERT-WATERS ACT, AS AMENDED (2015).

Mapping Advisory Council (TMAC)⁷⁷ and the commissioning of several studies by the National Academies of Science⁷⁸ have shaped the reform discussion in subsequent years.

Currently, FEMA is in the process of redesigning the risk assessment and underwriting process for NFIP insurance policies,⁷⁹ including increasing the total program capitalization target when setting subsidized rates, to better handle catastrophic loss years.⁸⁰ FEMA has also announced plans to implement a five-year operational planning cycle starting in 2017.⁸¹

III. PROPOSED REFORMS FOR THE 2017 REAUTHORIZATION

The regulatory structure of the NFIP has evolved dramatically from its original form in 1968. The MPR, CRS, and WYO Program were all products of legislative reform spurred by major disasters.⁸² Therefore, there is precedent to expect significant changes to the program during legislative review. Moreover, FEMA's statutory mandate to "establish and carry out" the NFIP gives the agency broad latitude to unilaterally institute systems, regulations, and agency policy through regulatory reform.⁸³ This statutory authority is intended to provide FEMA with "flexibility in the program so that such flood insurance may be based on workable methods of pooling risks, minimizing costs, and distributing burdens

⁷⁷ The TMAC, a committee of experts and stakeholders, has issued reports and recommendations regarding FEMA's mapping and risk assessment methodology, including a comprehensive review of the mapping program, an annual report issuing recommendations for improving the creation and delivery of NFIP map products, and a report and recommendations for incorporating future conditions into FEMA methodologies.

⁷⁸ The National Academies of Science have generated two reports on potential affordability frameworks and a report on community-based flood insurance, discussed *infra* in Section IV.

⁷⁹ *The National Flood Insurance Program: Reviewing the Recommendations of the Technical Mapping Advisory Council's 2015 Annual Report: Hearing Before the S. Comm. on Banking, Housing, and Urban Affairs*, 114th Cong. 5 (2016) (statement of Roy Wright, Deputy Associate Administrator, Federal Insurance and Mitigation Administration, FEMA) [hereinafter Roy Wright Statement].

⁸⁰ GAO, RATE-SETTING, *supra* note 23, at 9 (stating that FEMA no longer uses the "historical average loss year" to set revenue targets); see 42 U.S.C. § 4015(i) (2014) (requiring FEMA to incorporate catastrophic loss years in premium calculations).

⁸¹ Roy Wright Statement, *supra* note 79, at 6.

⁸² See Rachel Lisotta, *Comment: In Over Our Heads: The Inefficiencies of the National Flood Insurance Program and the Institution of Federal Tax Incentives*, 10 LOY. MAR. L.J 511, 516-22 (2012) ("Following each natural disaster that occurred throughout the second half of the 20th century, more federal legislation was enacted to amend the original National Flood Insurance Act of 1968 to solve the inherent problems that arose with each new flood.").

⁸³ 42 U.S.C. 4001(d) (2016).

equitably among those who will be protected by flood insurance and the general public.”⁸⁴ Consequently, proposals for NFIP reform through both new legislation and new FEMA regulation have dominated the policy debate leading up to the 2017 reauthorization.

This Part undertakes to assess key reform proposals and their implications as tools for municipal policymakers to understand flood risks, manage coastal hazards, and enhance community resilience. Key themes in the reform debate include improving risk assessment and underwriting methodologies to incorporate future conditions and to provide more detailed individual-property risk information, the conflicting goals of rate reform to keep the indebted program solvent through future catastrophic loss years versus providing affordable insurance for flood-exposed properties, mitigating the overall flood risk exposure of the U.S. housing stock, and increasing private sector participation in flood insurance.

A. Risk Assessment and Future Conditions

A primary purpose of the TMAC established by BW-12 is to improve the NFIP’s risk assessment methodology.⁸⁵ The major recommendations from TMAC which potentially affect municipal resilience planning are for FEMA to individualize the risk assessment conducted by NFIP underwriting⁸⁶ and to incorporate future conditions into risk information products.⁸⁷

TMAC recommended that FEMA transition away from the 1% annual chance basis for risk rating to a “structure-specific flood frequency determination,”⁸⁸ published through modern digital platforms. A move to structure-specific risk assessment is supported by the private insurance industry, which maintains that the NFIP’s public mapping and risk assessment activities are critical to a more open private market, but that FEMA’s current data sharing policy of releasing information on a per-community rather than per-property basis is inadequate.⁸⁹

⁸⁴ *Id.*

⁸⁵ FED. EMERGENCY MGMT. AGENCY TECHNICAL MAPPING ADVISORY COUNCIL, ANNUAL REPORT, 2016 4 (2016) [hereinafter TMAC ANNUAL REPORT].

⁸⁶ *See generally id.*

⁸⁷ FED. EMERGENCY MGMT. AGENCY TECHNICAL MAPPING ADVISORY COUNCIL, FUTURE CONDITIONS RISK ASSESSMENT AND MODELLING (2016) [hereinafter TMAC FUTURE CONDITIONS RISK ASSESSMENT].

⁸⁸ TMAC ANNUAL REPORT, *supra* note 85, at Recommendation 10.

⁸⁹ However, FEMA has indicated that Privacy Act (5 U.S.C. § 552a) requirements restrict the agency from providing detailed NFIP policy and claims data to private insurers. U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-16-611, FLOOD INSURANCE: POTENTIAL BARRIERS CITED TO

FEMA has not affirmatively committed to this radical shift, but it has begun studying the reform as a long-term goal alongside its ongoing revision of the rate-setting process.⁹⁰ It has also begun to send annual letters to policyholders, starting in January 2017, explaining their real risk exposure and how it may not fully be reflected by their rates, pursuant to a requirement of HFIAA-14.⁹¹

Better, more specific risk information from FEMA would be helpful to municipal planners for communicating risk to homeowners and as a decision support tool for targeting local resilience projects. Under the current system, conflicts over the strict delineation of SFHAs dominate the FIRM revision process,⁹² because placement inside a SFHA has a negative impact on property values, especially for lower priced homes.⁹³ However, the 1% annual exceedance threshold which determines SFHA boundaries is essentially an arbitrary cut-off, and implicitly makes risk tolerance decision on behalf of participating communities. A transition away from line-drawing to structure-specific risk determinations could improve public risk communication and reduce political controversy around FIRM revisions. It could also partially remedy the current lack of price signal for flood risks in the real estate market, bolstering local land use policies to disincentivize development in exposed areas.

TMAC also recommended that FEMA produce risk assessments for future conditions, especially for the impact of sea level rise on storm frequency and severity.⁹⁴ Importantly, TMAC explicitly recommended that FEMA *not* incorporate future conditions into FIRMs, but instead to publish separate, non-regulatory information products.⁹⁵

INCREASED USE OF PRIVATE INSURANCE 32 (2016) [hereinafter GAO, POTENTIAL BARRIERS].

⁹⁰ Roy Wright Statement, *supra* note 79, at 5.

⁹¹ FED. EMERGENCY MGMT. AGENCY, FEMA LETTERS: FLOOD RISK AND POLICY OPTIONS (2017), available at <https://www.fema.gov/cost-of-flood>.

⁹² See, e.g., Mark Scheifstein, *Tulane Professor's Op/Ed on Flood Maps Draws Critique from Public Officials*, TIMES PICAYUNE (June 1, 2016) (summarizing public controversy over new FIRMs which place many areas of New Orleans outside the SFHA).

⁹³ Okmyung Bin et al., *Flood Hazards, Insurance Rates, and Amenities: Evidence From the Coastal Housing Market*, 75 J. OF RISK AND INSURANCE 63 (2008) (finding that location within a flood zone lowers property value); Lei Zhang, *Flood Hazards Impact on Neighborhood House Prices: A Spatial Quantile Regression Analysis*, 60 REGIONAL SCI. AND URBAN ECON. 12 (2016) (finding that the negative impact of flood hazards on property values are stronger among lower-priced homes). Bin et al. note a common finding in the literature “that location within a floodplain lowers property value from 3 to 12 percent.” *Id.* at 65.

⁹⁴ TMAC FUTURE CONDITIONS RISK ASSESSMENT, *supra* note 87.

⁹⁵ TMAC FUTURE CONDITIONS RISK ASSESSMENT, *supra* note 87.

Municipalities must plan for the flood risk exposure over the entire lifetime of coastal structures when making land use policy. Climate resilient communities may seek to disincentivize new development in areas which are currently low-risk but will see greater risk in the future. Municipal governments must also anticipate the effects of changing real estate prices on the local economy and on property tax revenues. A SFHA on a FIRM published today indicates the area with at least a 1% chance of being flooded this year, and does not model or account for changes in that risk as sea level rises. This means that municipalities cannot rely on SFHAs alone for planning information over either the 30-year period of a typical mortgage or the 50-year and longer planning horizons necessary for many infrastructure investment decisions. A snapshot of annual risk exposure today may be appropriate for the FIRM's core purpose of insurance rate-setting on one-year policies, but more information beyond that is necessary for long-term planning. FEMA pilot studies on sea level rise flooding risks may, if implemented nationwide, provide some of that additional information.

B. Rate Reform

Flood insurance reform must confront the fundamental conflict in policy between keeping the NFIP financially solvent across catastrophic loss years and keeping flood insurance broadly available and affordable for property owners.⁹⁶ The NFIP has, throughout its existence, offered substantially subsidized insurance to coastal development through subsidized and grandfathered rates, which has undercapitalized the program for catastrophic loss years. In order to sustain this policy choice favoring affordability and broad participation over the program's financial stability, FEMA retained authority to borrow from the U.S. Treasury to make up shortfalls; the agency rarely had to exercise this authority before 2005, but high-cost catastrophic loss years like 2005 and 2013 are now understood to likely be more frequent as coastal development density increases and climate changes.⁹⁷

A central prong of BW-12 reforms was to end subsidies and grandfathering and raise rates to actuarial levels. Proposals for NFIP reform still emphasize achieving actuarial rates for a variety of policy goals, including to enable competition by private insurers, secure program financial solvency, create an accurate price signal for flood risk, and end inequitable subsidization of coastal flood risks by taxpayers.⁹⁸ Although FEMA is not able to precisely determine by

⁹⁶ See Abbott, *supra* note 50.

⁹⁷ See Abbott, *Flood Insurance and Climate Change*, *supra* note 41, at 14-20.

⁹⁸ See, e.g., ASS'N OF STATE FLOODPLAIN MANAGERS, FLOOD INSURANCE AFFORDABILITY: ASFPM RECOMMENDATIONS TO ADDRESS THE IMPACT OF NFIP REFORM 2012 (BW-12) (2013)

how much rates would increase,⁹⁹ ending subsidies would require increasing many existing subsidized premiums by 200% to 250%,¹⁰⁰ without accounting for future changes in risk exposure from sea level rise.

For coastal municipalities with high flood risk exposure, changes to the NFIP that shift the balance in favor of program solvency over affordability can have strong impacts on the local economy. Increased insurance rates imply decreased property values, negatively effecting the local economy as well as property tax revenue.¹⁰¹ The potential tax impact of rate hikes is especially significant for coastal towns which rely on the property tax revenues from high-value, high-exposure beachfront property. Municipalities in ten out of twenty-three coastal states rely on property taxes for 30% or more of their revenue.¹⁰² For some coastal towns in these states, the first row of homes represent a significant fraction of the entire town's taxable property value. These properties are also often the most risk exposed and most likely to see significant premium hikes. NFIP reform to end grandfathering on these structures may affect the market value of these properties and in turn impact municipal revenue.

(recommending raising rates to secure the program's finances and inform property owners of flood risks) [hereinafter ASFPM]; McDonnell, *supra* note 71 (recommending raising rates to end taxpayer subsidization of flood risks); SMARTER SAFER, NATIONAL FLOOD INSURANCE PROGRAM REFORM PRIORITIES (2016) (recommending raising rates to create a more accurate price signal of flood risk); MARSH, REFORMING THE NATIONAL FLOOD INSURANCE PROGRAM (2015) (recommending raising rates to enable private competition); RACHEL CLEETUS, UNION OF CONCERNED SCIENTISTS, OVERWHELMING RISK 16 (2014).

⁹⁹ FEMA is unable to calculate full-risk rates without an Elevation Certificate confirming the structure's height above BFE, and applicants for subsidized policies are not required to obtain one. The agency estimates that it would cost "several hundred million dollars" to obtain the missing elevation information. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-16-190, NATIONAL FLOOD INSURANCE PROGRAM: OPTIONS FOR PROVIDING AFFORDABILITY ASSISTANCE 33-34 (2016) [hereinafter GAO, AFFORDABILITY ASSISTANCE].

¹⁰⁰ FEMA estimates that most subsidized policies pay 40% to 45% of full-risk rates. HAYES & NEAL, *supra* note 51, at 9.

¹⁰¹ Municipalities must prepare for not just the magnitude but also the pace of rate increases. HFIAA-14 stopped BW-12's 5-year increase to actuarial rates for primary homes due to public blowback, meaning that future rate increases are likely to be more gradual.

¹⁰² Those states are: Rhode Island (51%), New Hampshire (51%), New Jersey (50%), Connecticut (49%), Maine (46%), Massachusetts (44%), Hawaii (37%), North Carolina (35%), Oregon (33%), and Virginia (30%). NAT'L LEAGUE OF CITIES, CITIES AND STATE FISCAL STRUCTURE 18 (2015).

Increased rates also disproportionately affect low-income households.¹⁰³ The risk of foreclosure for these properties is particularly acute: if a grandfathered rate is set to increase to actuarial levels too high for a resident to afford, the cost of that mandatory insurance may also decrease the value of the property below the outstanding debt of the mortgage,¹⁰⁴ stranding homeowners in at-risk properties they can afford neither to live in nor to sell.¹⁰⁵ Such properties represent candidates for homeowners assistance programs as well as potential targets for mitigation, relocation assistance, and open space acquisition projects. Overall decreases in property values in flood prone areas also serve to decrease development pressure there.

C. Incentivizing Mitigation and Assisting Affordability

To soften the negative impacts of rate increases, BW-12 and HFIAA-14 directed FEMA to investigate options for assisting with flood insurance affordability, which resulted in a two-part National Academies of Science affordability study.¹⁰⁶ Some affordability options which have gained traction in the reauthorization discussion include means-tested vouchers, tax credits,¹⁰⁷ higher deductibles,¹⁰⁸ premium caps,¹⁰⁹ and mitigation assistance. Methods which mitigate the flood risk exposure of individual insured structures are especially popular, as they serve multiple policy goals at once: reducing actuarially correct premiums and so making the program more affordable, reducing overall NFIP payouts by improving the resilience of the national housing stock, and protecting public safety.¹¹⁰

¹⁰³ Earthea Nance, *Exploring the Impacts of Flood Insurance Reform on Vulnerable Communities*, 13 INT. J. OF DISASTER RISK REDUCTION 20 (2015) (finding that low-income neighborhoods saw greater market value decreases immediately after the implementation of BW-12 than other nearby neighborhoods).

¹⁰⁴ The effect of the rate hike on home values may be sensitive to how quickly the rate increases and whether a subsequent purchaser can inherit the graduated rate with the property or must immediately accept full-risk rates. Complicating the issue, flood insurance rates typically are not disclosed until closing.

¹⁰⁵ Abbott, *supra* note 41, at 54.

¹⁰⁶ REPORT 1, *supra* note 34; NAT'L RES. COUNCIL, AFFORDABILITY OF NATIONAL FLOOD INSURANCE PROGRAM PREMIUMS REPORT 2 (2016).

¹⁰⁷ See ASFPM, *supra* note 98, at 3.

¹⁰⁸ See REPORT 1, *supra* note 34, at 106 (also additionally proposing the use of tax-deductible "disaster savings accounts" to hold income for paying off deductibles).

¹⁰⁹ GAO, AFFORDABILITY ASSISTANCE, *supra* note 99, at 18.

¹¹⁰ For most subsidized properties, the most effective mitigation option in terms of reducing risk exposure is elevation to above BFE; however, this is also a very expensive modification. See Kousky & Kunreuther, *supra* note 52, at 12.

Means-tested vouchers, which would tether the level of federal assistance to the financial ability of the property owner, replace grandfathering and subsidized rates by separating affordability assistance from the rate-setting system, allowing the NFIP to create an accurate price signal for flood risk while still assisting homeowners and promoting broader insurance participation.¹¹¹ The advantage of this approach is that it connects assistance to the income needs of the policyholder rather than the history of the insured structure, and would not run with the land at sale. FEMA has noted, however, that implementing a means test could significantly complicate the enrollment process, which may increase the implementation burden for the local floodplain manager.¹¹²

Some commentators have suggested combining means-tested subsidization with individual mitigation assistance.¹¹³ For instance, means-tested vouchers could be used to cover both increased premiums and a low-interest mitigation loan from the Small Business Administration or Hazard Mitigation Grant Program to bring the structure into compliance with building codes.¹¹⁴ This setup would advantage municipalities pursuing resilience enhancement planning, as such a program could be used in concert with local mitigation incentives or to assist compliance with enhanced building regulations.

A related proposal by the Natural Resource Defense Council (NRDC) for a Voluntary Buyout Commitment Program (VBCP) integrates means-tested payment assistance with buyout programs.¹¹⁵ Existing programs funded through the Repetitive Flood Claims and Flood Mitigation Assistance grant programs assist municipalities to identify repetitive loss or high exposure properties for buyouts.¹¹⁶ However, participation is low.¹¹⁷ Under the NRDC proposal, instead of approaching private property owners directly with an offer of sale,¹¹⁸ this program purchases a commitment, bound to the land, to buy-out the property at

¹¹¹ See REPORT 1, *supra* note 34, at 103; GAO, AFFORDABILITY ASSISTANCE, *supra* note 99, at 10.

¹¹² GAO, AFFORDABILITY ASSISTANCE, *supra* note 99, at 14.

¹¹³ Kousky & Kunreuther, *supra* note 52, at 14; see also Jennifer Wriggins, *In Deep: Dilemmas of Federal Flood Insurance Reform*, 5 U.C. IRVINE L.REV. 1443, 1461 (2015); ASFPM, *supra* note 98, at 2.

¹¹⁴ Kousky & Kunreuther, *supra* note 52, at 14.

¹¹⁵ B. Hayat & R. Moore, *Addressing Affordability and Long Term Resiliency Through the National Flood Insurance Program*, 45 ENVTL. L. REP. 10338 (2015).

¹¹⁶ See, e.g. NAT'L RES. COUNCIL, A COMMUNITY-BASED FLOOD INSURANCE OPTION 34 (2015).

¹¹⁷ Cleetus, *supra* note 98, at 17-18.

¹¹⁸ Typical buyout programs offer to purchase the property but do not, for instance, assist with moving expenses. U.S. DEP'T HOUSING & URBAN DEV., HUD-1041-CPD, WHEN A PUBLIC AGENCY ACQUIRES YOUR PROPERTY 2 (2005).

the next occasion it experiences substantial damage in exchange for an opportunity to retain subsidized premiums when rates rise.¹¹⁹ By agreeing to relocate after the next major storm, the property owner locks in an affordable rate and guaranteed minimum proceeds on the sale to the government at pre-casualty market value.¹²⁰

The NRDC proposal is designed to achieve managed retreat from coastal areas exposed to mounting threats from sea level rise. By purchasing a commitment from property owners long before a catastrophe, the VBCP manages expectations and avoids the difficult situation of government officials attempting to negotiate a buy-out within weeks after a traumatizing and economically disruptive emergency. Because the commitment puts a shelf life on occupancy of the property, it likely would decrease its market value, implicating all the attendant municipal revenue concerns discussed in Part B above. However, because it mitigates the exponentially increasing monthly costs of ending subsidies, the decrease should be less severe than in the absence of affordability assistance. As more buy-out commitments in at risk areas are honored, the municipality can reduce development in exposed areas and the burden of providing infrastructure and services there. A VBCP reform would grant significant leverage to a municipality's capacity for neighborhood-scale resilience planning, in exchange for an increased administrative burden.¹²¹ As with other affordability reforms, it would not however reduce the net costs of the national program or assist it with financial solvency.

D. Community Based Flood Insurance

Community-Based Flood Insurance (CBFI) proposes a voluntary alternative for communities participating in the NFIP to directly purchase a flood insurance policy which covers the entire jurisdiction, relegating individual policies to a form of supplemental coverage.¹²² Coverage under this community policy would insure against the same perils as under the present system. The

¹¹⁹ Hayat & Moore, *supra* note 115, at 10,339.

¹²⁰ Hayat & Moore, *supra* note 115, at 10,339.

¹²¹ To participate, municipalities would need to identify eligible properties and formulate a plan for targeted acquisition. However, the post-storm administrative burden would be decreased. The present buyout system is costly, time-consuming, and burdensome, requiring eligibility documentation and multiple rounds of property owner commitment. Under a VBCP, the municipality would be able to execute funding obligations and eligibility confirmation during normal operations, while deferring direct costs until the window after a disaster when federal assistance is at its highest.

¹²² See KOUSKY & SHABMAN, *supra* note 37; see also Kousky, *supra* note 12.

community would negotiate what types of properties would be covered, including individual homes and businesses, community infrastructure, continuity of services, and municipal equipment.¹²³ The community would pay premiums to the NFIP, at a rate determined by the aggregate monetary value of individual risk assessments for all the structures in the covered area,¹²⁴ and distribute the costs of coverage to the policy's private beneficiaries through its tax power. After a flood, the NFIP would issue a payout both to the community, which would be used to cover damages to public property, and directly to owners of covered private property.¹²⁵ Most importantly, a community with a policy would have the opportunity to lower its premium through mitigation measures, including resilience enhancing projects and policies.¹²⁶

Proposals for CBFI have gained traction in the conversation on NFIP reform within the last decade.¹²⁷ CBFI was one of four policy alternatives developed by FEMA's NFIP Reform Working Group in 2011, leading up to BW-12.¹²⁸ Congress has called for a study of CBFI as a potential reform opportunities multiple times, including prior to BW-12¹²⁹ and in the text of HFIAA-14.¹³⁰ Fulfilling its requirement under HFIAA-14, FEMA convened an expert committee through the National Academies of Science in 2015 to "prepare a consensus report on the future prospects for a CBFI option."¹³¹ FEMA's report to Congress, which included the NAS study, concluded that CBFI should not be implemented through NFIP regulations as currently authorized.¹³² The agency cited high implementation costs compared to benefits, lack of community interest, and lack of resources as factors in not pursuing the option administratively.¹³³ Congress could still pursue the proposal legislatively, however.

¹²³ MICHAEL DEPUE ET AL., COMMUNITY-BASED FLOOD INSURANCE: IMPACTS ON THE FLOOD HAZARD MANAGEMENT CYCLE 4 (2014).

¹²⁴ *Id.* at 5.

¹²⁵ KOUSKY & SHABMAN, *supra* note 37, at 15.

¹²⁶ DEPUE ET AL., *supra* note 123, at 4.

¹²⁷ See Michael DePue, *A Conceptual Approach to Floodplain Management 2050*, in FLOODPLAIN MANAGEMENT 2050 67-69 (2007) [hereinafter DePue, *A Conceptual Approach*].

¹²⁸ NFIP REFORM: PHASE III REPORT, *supra* note 65, at 5.

¹²⁹ 42 U.S.C. 4001(d) (2016).

¹³⁰ Pub. L. No. 113-89 § 23 (2014) ("The Administrator shall conduct a study to assess options, methods, and strategies for making available voluntary community-based flood insurance policies through the National Flood Insurance Program.")

¹³¹ DEPUE, *supra* note 123.

¹³² U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-16-766, FLOOD INSURANCE: REVIEW OF FEMA STUDY AND REPORT ON COMMUNITY-BASED OPTIONS (2016).

¹³³ *Id.* at 16.

Under a CBF program, the volunteering municipality takes responsibility for buying and funding a single umbrella insurance policy,¹³⁴ which it can extend to structures within its jurisdiction. Communities can also further spread the risk by entering into risk pools with other CBF communities, which is a particular advantage for communities where a major part of structures are in floodplains.¹³⁵

Because the municipal government directly negotiates the terms of the policy, CBF offers the community more flexibility and leverage to control costs and incentivize resilience.¹³⁶ The community can fine-tune its requirements and incentives for private resilience-building activity by setting the regulations for individual property payouts, including rate setting – essentially mirroring the CRS on a local scale. This gives municipalities more options to undertake joint community/private adaptation projects, such as targeted landscape improvement in a neighborhood with poor drainage and to avoid undesirable land-use.

Beyond providing more management options, CBF *directly incentivizes* municipalities through the CRS not only to undertake proactive resilience-building programs, but to incorporate resilient policies into day-to-day decision-making. Under the current CRS, communities are *politically* incentivized to seek CRS premium discounts for property owners, but are not *financially* incentivized to participate. The CBF program rewards communities which achieve higher CRS ratings by granting premium discounts directly to the community rather than to individual property owners, more strongly incentivizing the municipality to undertake projects and providing new funds to encourage private projects. Moreover, because premiums are determined by the aggregate monetary value of individual risk assessments for all the structures in the covered area, the municipality has a price signal for individual land use decisions, such as subdivision permitting, incentivizing it to minimize risk exposure on private property.¹³⁷

¹³⁴ Municipalities have several options to pay for premiums. They may opt to extract premium costs from those properties which benefit the most from coverage, either through property taxes or through utility fees, or they may spread the risk across the whole population, through sales and business taxes. Costs could also be collected by stormwater utility districts, water and sewage utilities, watershed or levee districts, or dedicated flood districts with appropriate taxing authority, allowing the municipality to target specific flood-prone areas. In choosing which method to use to recover costs, the municipality must make an up-front policy decision about how to spread the risk. A direct fee, proportionate to risk exposure and property value, creates a price signal for risk on the land; however, setting such a fee accurately may be technically challenging, politically divisive, and limited by the municipality's existing fee-setting authority.

¹³⁵ DePue, *A Conceptual Approach*, *supra* note 127, at 68.

¹³⁶ DePue, *A Conceptual Approach*, *supra* note 127, at 68.

¹³⁷ KOUSKY & SHABMAN, *supra* note 37, at 21-22.

Undertaking a CBFi policy would however have administrative burden implications for the municipal government.¹³⁸ Contrary to a common misconception,¹³⁹ municipalities would not have to receive a single lump-sum payout after a flood and then process payments to all of its covered properties; as with the present NFIP, insurance payments can be handled by an WYO insurer. The municipality would, however, need to institute a pricing system that meets its policy goals for risk allocation and covers the premium it must pay, which may involve new tax regulations such as creating a utility district. Some CBFi proposals envision the state or local government taking on more of FEMA's mapping and risk assessment functions in implementing community policies,¹⁴⁰ which would require either increased technical capacity or outside expert consultation.¹⁴¹

E. Privatization

Privatization of flood risk exposure has become a central topic in the 2017 reauthorization discussion,¹⁴² following a FEMA study of privatization options mandated in BW-12.¹⁴³ The federal government originally instituted the NFIP to fill a gap in coverage availability in exposed floodplains because the private insurance industry perceived the segment as too subject to adverse selection and too predictable to adequately cover risk through market penetration and

¹³⁸ A CBFi policy could make the immediate post-disaster administrative burden lighter, however, by quickly and reliably infusing municipal coffers with recovery funds. This can make post-flood permitting and economic recovery more efficient, because insurance generally pays out sooner than federal aid, and because the insured would not need to first identify and secure matching funds. *Id.* at 9.

¹³⁹ *Id.* at 15; *see supra* note 24.

¹⁴⁰ DePue, *A Conceptual Approach*, *supra* note 127, at 69 (“States would be the primary developer and keeper of technical data under this plan.”).

¹⁴¹ One option to reduce the complexity of implementing a CBFi policy is to use a parametric design for the policy, where payout is triggered by a predefined event, such as a threshold flood stage, and automatically pays out a fixed sum to covered properties which can demonstrate damage in fact. Inspections are simpler under this design because on-site valuation is not necessary; often sufficient damage to qualify can be established with a photograph. The fixed payout incentivizes individual property mitigation investments to reduce actual damage closer to the payout level, but may nevertheless require supplemental individual coverage to reach MPR requirements for more exposed structures. *See* KOUSKY & SHABMAN, *supra* note 37, at 10.

¹⁴² *See, e.g.*, Flood Insurance Market Parity and Modernization Act, H.R. 1442, 115th Cong. (as reported by committee June 21, 2017) (allowing private policies, including surplus line policies, to fulfill the MPR); Taxpayer Exposure Mitigation Act of 2017, 115th Cong. (as reported by committee, June 21, 2017) (requiring FEMA to cede risk to private markets).

¹⁴³ FED. EMERGENCY MGMT. AGENCY, REPORT TO CONGRESS ON REINSURING NFIP INSURANCE RISK AND OPTIONS FOR PRIVATIZING THE NFIP (2015).

diversification.¹⁴⁴ Insurers and the government were concerned that catastrophic shocks to the insurance network could drive firms to insolvency.¹⁴⁵ Today, market interest in the sector has increased because risks can be more accurately quantified, and more sophisticated financial instruments such as reinsurance, risk pooling, and catastrophe bonds reduce the threat posed by sudden shocks.¹⁴⁶ Although significant barriers to private involvement in the sector remain,¹⁴⁷ some private flood insurance is already available. Excess coverage on high-value properties is offered through the surplus lines market,¹⁴⁸ and Lloyds of London has introduced a primary coverage product through the surplus lines market in fifteen states through a Florida agency.¹⁴⁹

The federal government has flexibility in how much control over the flood insurance process it might opt to retain or privatize through the reform process, ranging from purchasing reinsurance for private risk diversification to ceding entire blocks of business to the private industry.¹⁵⁰ Under existing statutory authority, FEMA can cede risk to the private market through reinsurance or risk pooling. The agency used that authority twice in 2016, first to place \$1 billion with three reinsurers in September, and then again in December to place \$1.042 billion with twenty-five reinsurers through January 1, 2018.¹⁵¹ Privatization reforms could go further to open the primary coverage market for private insurers. New legislation could achieve this by subsidizing risk, securing insurer holdings, or relaxing MPR regulations. Given adequate access to the primary coverage market and investment from the capital markets, private insurers can absorb the majority of the housing stock which can be insured profitably, leaving the

¹⁴⁴ JEFFERY CZAJKOWSKI et al., A METHODOLOGICAL APPROACH FOR PRICING FLOOD INSURANCE AND EVALUATING LOSS REDUCTION MEASURES: APPLICATION TO TEXAS (2012).

¹⁴⁵ *Id.* at 8.

¹⁴⁶ *Id.*

¹⁴⁷ See GAO, POTENTIAL BARRIERS, *supra* note 89.

¹⁴⁸ Surplus lines insurance is insurance available from insurers not licensed in the state where the policy is issued, and is used to insure high risks or risks with unusual underwriting requirements where insurers would not be able to profitably offer coverage complying with state regulations. They are not covered by state insolvency funds. For a description of surplus lines insurance, see U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-14-136, PROPERTY AND CASUALTY INSURANCE: EFFECTS ON THE NONADMITTED AND REINSURANCE REFORM ACT OF 2010 (2014).

¹⁴⁹ See Andrew G. Simpson, *Private Flood Insurance Agency Now Selling in 15 States*, INS. J. (Feb. 10, 2014).

¹⁵⁰ For a succinct summary of the spectrum of options, see FED. EMERGENCY MGMT. AGENCY, *supra* note 143, at Appendix C.

¹⁵¹ FED. EMERGENCY MGMT. AGENCY, HQ-17-001, FEMA'S 2017 REINSURANCE PROGRAM BETTER MANAGES FUTURE FLOOD RISK (Jan. 3, 2017).

unprofitable remainder to the NFIP as a residual program.¹⁵² Alternately, the federal government could reduce its role in primary coverage further by converting to a reinsurance backstop program or exiting the market entirely.

Privatization implicates changes to the municipality's leverage over mitigation incentives. Presently, towns can obtain premium discounts for residents by participating in the CRS; there is unlikely to be a directly comparable mechanism for municipal governments to influence or improve private insurance rates by pursuing mitigation projects.¹⁵³

IV. OPPORTUNITIES AND CHALLENGES FOR MUNICIPAL RESILIENCE EFFORTS

The NFIP reform proposals assessed in Part III implicate changes to the way municipal and state governments manage risk in coastal hazard areas. Some changes may incentivize and assist coastal municipalities to increase their climate change resilience, or even provide a framework for new adaptations. Others may complicate municipal resilience initiatives. This Part highlights key opportunities and challenges that NFIP reform may present municipal planners through the reauthorization process.

A. More Advanced Risk Information

FEMA will continue to improve its systems for updating, digitizing, and publishing FIRMs and other risk assessment products pursuant to existing statutory directives. Program reform in 2017 may also add new risk information responsibilities to that portfolio, such as individual property risk assessments, elevation certifications for all properties, future condition modelling, or needs-testing for income-based financial assistance. Alternately, reforms may empower communities to substitute their own maps and risk information for FIRMs.¹⁵⁴

¹⁵² FED. EMERGENCY MGMT. AGENCY, *supra* note 143, at 37.

¹⁵³ Municipalities would continue to have their interests represented by state insurance commissioners.

¹⁵⁴ *See, e.g.*, Taxpayer Exposure Mitigation Act of 2017, 115th Cong. (as reported by committee June 21, 2017) (allowing communities to submit maps to FEMA for approval, upon which the maps would “be considered the flood insurance rate map in effect for all purposes of the National Flood Insurance Program”); 21st Century Flood Reform Act, H.R. 2874, 115th Cong. (as reported by committee June 15, 2017) (requiring FEMA to use “other risk assessment data and tools, including risk assessment models and scores from appropriate sources” in rate-setting).

Better information about risk can help municipal planners make decisions about new resilience initiatives. Investments in infrastructure ranging from road and utilities maintenance to installing new coastal protection or stormwater management systems require robust information about current hydrological conditions, property conditions and levels of exposure, and future changes such as sea level rise, coastal erosion, and development intensity. FEMA, through its NFIP mapping activities, is a critical source of this information.¹⁵⁵

Better public information about flood risk will also have significant impacts on the real estate market, and consequently may also impact property tax revenue. As sea level rises, SFHAs will expand, placing MPRs on many more structures. If coupled with rate reform that creates a more accurate price signal for risk, this expansion of flood premiums will make the price of coastal living increase. More broadly, better mapping and public education will more robustly inform property buyers about present and future flood risks, dampening the moral hazard that has artificially inflated development and buying pressures on the coast. This threat has loomed over the real estate market for decades and may take decades more to take full effect,¹⁵⁶ but a change in NFIP pricing, especially a rapid one, risks accelerating the effect.¹⁵⁷

These changes to a more risk-aware marketplace are a blessing and a curse for municipal planners. A more accurate pricing signal assists private individuals to make better, more informed decisions and reduces development pressure on vulnerable areas. This provides an opportunity for municipalities to target vulnerable areas for costly adaptation investments such as buyouts, open space preservation, or ecosystem rehabilitation. However, it also threatens to depress local real estate economies and reduce property tax revenues. In affluent coastal areas, decreased

¹⁵⁵ Currently about 30-60% of FEMA mapping activities are funded by policy fees rather than Congressional appropriations. *Flood Insurance Reform: A Community Perspective: Hearing Before the Hous. and Ins. Subcomm of the H. Comm. on Fin. Servs.*, 115th Cong. (2017) (statement of Chad Berginnis, Exec. Dir., Ass'n of State Floodplain Managers). If privatization leads to a decrease in policies under the NFIP or FEMA's budget is significantly reduced, these mapping activities may contract rather than expand. This has led some advocates to propose adding a mapping fee to all private flood policies as well.

¹⁵⁶ For instance, Freddie Mac's Economic and Housing Research Group reported while considering mid- and long-term effects of climate change on the coast that "... rising sea levels and spreading flood plains nonetheless appear likely to destroy billions of dollars in property and to displace millions of people. The economic losses and social disruption may happen gradually, but they are likely to be greater in total than those experienced in the housing crisis and Great Recession." Sean Beckett & Brock Lacy, *Life's A Beach*, FREDDIE MAC ECON. & HOUSING RES. INSIGHT 6 (2016).

¹⁵⁷ This fear of a burst housing bubble triggered by rapid rate hikes was a major factor in HFIAA-14 reversing and delaying many of the rate reforms in BW-12.

tax revenues could dramatically cut into town budgets. In economically challenged coastal areas, falling house prices could impair property owners' abilities to sell their homes or pay off mortgages.

B. Increasing Individual Property Resilience

Communities committed to increasing coastal resilience have an array of tools to incentivize and assist in helping private property owners protect their own assets. Those tools include public education about climate impacts; land use controls such as building codes, set-backs, open space requirements, and drainage regulations; financial incentives such as grants, loans, and tax credits; and legal agreements such as conservation easements or buyout commitments. NFIP reforms could provide support for these activities.

Currently, simple floodplain code compliance is a serious challenge for municipalities, as significant portions of structures are grandfathered out of or otherwise not in compliance with elevation and other requirements.¹⁵⁸ NFIP policies currently include Increased Cost of Compliance coverage, which provides up to \$30,000 for noncompliant properties to come into compliance when so required after experiencing substantial damage.¹⁵⁹ Various other grants exist to assist mitigation without requiring flood damage as a prerequisite.

However, new targeted affordability programs such as low-interest mitigation loans could assist municipalities target the highest-risk properties and incentivize voluntary individual investment by directly tying it to a reduction in premiums. Municipalities could use these incentives to increase compliance or supplement them to encourage building resilience on the individual-property scale beyond compliance with NFIP minimum building codes, much as the CRS does on the community-wide scale. Programs which give municipalities more control over insurance costs, such as CBFI, would give them even more latitude to craft incentives to the particular needs of private property owners.¹⁶⁰ These

¹⁵⁸ In 2006, FEMA found that approximately 37% of structures in a sampled floodplain were not compliant with NFIP standards, and in particular 11% of structures were not properly elevated. Jacquelyn Monday et al., *An Evaluation of Compliance with the National Flood Insurance Program Part A: Achieving Community Compliance*, in EVALUATION OF THE NATIONAL FLOOD INSURANCE PROGRAM 27 (2006).

¹⁵⁹ See, e.g., 44 C.F.R. § 61 App. A(1), Coverage D (2009).

¹⁶⁰ Conversely, reforms which transfer more risk into the private market may reduce the ability of municipalities to leverage rates as resilience incentives. Currently, the CRS gives communities a direct lever on NFIP premium rates. Private policies likely would not be mandated to follow similar incentive schemes so as to keep rate-setting independent, although insurers may opt to

incentives could include local tax credits, premium or deductible reductions, and technical assistance.

C. Area-Based Mitigation

NFIP reforms can also support community-wide resilience building efforts. New risk information based on more detailed mapping, future condition modeling, actuarial rates, and affordability assistance programs could provide a wealth of data to municipal planners about the aggregate risk exposure of geographic areas within their jurisdictions. This data could be used in decision tools to make choices for targeting public education, financial assistance, and infrastructure investments. Municipalities could use flood models for siting protective infrastructure investments such as hardened barriers or nature-based flooding buffers, as well as for supporting funding applications. Model data and claims information could also be used to make investment decisions about stormwater infrastructure improvements and long-term maintenance strategies – including identifying zones where development pressure may ease and make the upkeep of roads and utilities disadvantageous. New programs such as the VBCP and CBFJ would augment new data with new policy tools like premium discounts to preserve open space and strengthen building codes.

D. Municipal Implementation Responsibilities

Although the NFIP is a federal program administered by FEMA and enforced by mortgage lenders, much of the technical and public-facing implementation of flood mitigation policies and insurance requirements regularly fall on the shoulders of floodplain managers, who are often local building inspectors or zoning officers. Many innovative program reforms provide novel opportunity for municipalities to enact resilience-building initiatives, but would require more, and sometimes a great deal more, staff training and hours to implement. Rate reforms and affordability assistance proposals are based on requiring the collection of more information on each property at the time of sale, including elevation certifications for all properties or means-testing for vouchers, grants, and loans. That information is intended to be obtained by property owners, but may still need to be enforced by code officers to comply with local law. Changes in MPR terms, such as expanding the range of private insurance policies which fulfill the requirement, could create confusion between property owners and lenders.

voluntarily develop incentive schemes of their own if they perceive the resulting risk reductions to be advantageous. Additionally, if flood policies continue to be offered primarily on surplus lines as they are now, state insurance commissioners would not have as direct influence over policy terms as they do with admitted carriers.

For example, under reforms proposed in one bill recently reported out of the House Financial Services Committee, communities with 50 or more repetitive loss structures would be required to “identify the areas within the community” with repeated flood losses and “develop a community-specific plan for mitigating continuing flood risks.”¹⁶¹ The bill requires FEMA to provide communities with claims information on repetitive loss structures, and allows it to “consider the extent to which a community has complied with this subsection and is working to remedy problems with addressing repeatedly flooded areas” when reviewing mitigation grant applications. This bill holds communities accountable for areas repetitively damaged by floods by creating additional implementation responsibilities for the municipal government and essentially conditioning future mitigation assistance on a policy commitment to abating repetitive loss structures.

New programs, such as targeted mitigation loans, voluntary buyout commitments, and community-based insurance policies, call for dramatic investments of time and effort by local decision makers to identify candidate properties, as well as work with property owners to generate new technical information and execute binding legal agreements. Nevertheless, for coastal communities that have already committed to investing in increasing community resilience, these programs would provide support and technical assistance for reaching that goal.

V. CONCLUSION

The policy debate around national flood insurance reform leading up to the 2017 reauthorization of the NFIP foreshadows extensive, fundamental changes to the program as it evolves to handle rising seas, more frequent and more expensive catastrophic loss years, and mounting programmatic debt. With both chambers of Congress and the White House controlled by a single party in 2017, and a new administration taking control at FEMA, there is significant opportunity for major program changes in the near-term. Many innovative structural reforms offer opportunities for municipalities to incentivize individual mitigation and pursue community-wide resilience planning. However, reforms may also confront municipalities with the challenges of protecting tax revenues from real estate market shocks and on the ground program implementation.

¹⁶¹ Repeatedly Flooded Communities Preparation Act, H.R. 1558, 115th Cong. (as reported by committee June 21, 2017).