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Testimony on Behalf of The Pew Charitable Trusts' Flood-Prepared Communities Initiative
Presented by Velma Smith
Senate Banking, Housing, and Urban Affairs Committee
Reauthorization of the National Flood Insurance Program, Part 1
May 18, 2021

Chairman Brown, Ranking Member Toomey, and Members of the Committee, thank you for your invitation to share The Pew Charitable Trusts' (Pew) perspective on the reauthorization of the National Flood Insurance Program (NFIP). My name is Velma Smith. I have a Masters in Urban and Regional Planning, and I am a senior officer in government relations with Pew's flood-prepared communities initiative.

Pew's flood-prepared communities initiative—like this Committee—has taken on one of these complex and truly difficult problems: the costly and common problem of floods and flooding damage. Our aim is to reduce the impact of flood-related disasters on the U.S. economy, communities, and environment. Pew applies a rigorous, analytical approach to improving public policy that prioritizes investments in flood-ready infrastructure, mitigates the impact of disasters, modernizes flood insurance, and promotes nature-based solutions to flooding. The NFIP, now 50 years of age, has long been an essential component of our nation's management of flood risk. While the program must be adjusted and reformed, we understand that Congress must consider fully the consequences of changes to a program that serves so many flood-weary communities across the country. That is why Pew thanks the Committee for starting this important discussion now in anticipation of a timely reauthorization prior to the program's expiration on September 30th.

Pew supports changes to the NFIP that will:

- keep flood insurance available to those who need it without asking taxpayers to subsidize risky development;
- help drive new development away from flood-prone areas, including areas that will be at high risk for flooding or even permanent inundation in the future;
- foster fixes or buyouts of problem properties, make significant new investments in mitigation action, and provide additional assistance to the most vulnerable communities;
- promote the conservation and restoration of natural resources that can help in flood management;
- accelerate the collection, dissemination, and use of information on flood risk; and
- ultimately, make the nation better prepared for tomorrow's severe storms.



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As the Committee considers changes to the NFIP, we believe it is critical to balance the multiple aspects of the program and remain focused on the fact that the program is much more than a vehicle to sell insurance. The NFIP was established, not just to provide insurance and to lower federal disaster relief expenses, but also to communicate risk, improve disaster response, and enable local governments to make sound decisions about land use and development. The fixes the Committee considers, therefore, should recognize and address these multiple goals.

Flood Maps

First, let me touch briefly on a central component of the flood program: Flood Insurance Rate Maps (FIRMs) that determine who is covered by the program's mandatory purchase requirements and provide critical information for local communities, mitigation planners, and emergency responders.ⁱ Though the slow pace of map production and the information—or misinformation—conveyed through the mapping program may appear far less pressing than issues of rates and affordability, we would urge the Committee to consider how to support and improve this foundational aspect of the NFIP.

Flood maps and the studies that underlie the maps can help state and local decision-makers steer public investment into areas least likely to flood during the lifetime of newly constructed infrastructure. Informed by maps, communities can construct critical facilities, such as hospitals, utilities, and emergency shelters outside of the most hazardous zones, thereby lowering future response and recovery costs. Maps can show areas of “residual risk” behind levees or dams that could be affected by overtopping or structural failure, identify areas that might be preserved as parks and natural areas to absorb floodwaters, help coastal communities plan sensibly for sea level rise, and pinpoint priorities for storm drainage improvements. But none of this is possible for communities that still lack updated maps or, even more commonly, rely on maps that give no clues to what the future of flood risk may be.

Flood map production is, in part, a matter of money, and Pew has for many years advocated for significant increases in the level of general appropriations for flood mapping. But map production can also be affected by process, including multiple levels of appeals and delays in map adoption and by the chosen metrics of success.ⁱⁱ Right now, FEMA measures success in the program largely by the percentage of the nation's population living in areas with completed maps. Those numbers are indeed impressive, but it is also true that many of the more rural areas lack even the most basic information about risks. This data gap can mean that as those locales begin to experience development pressures, builders and investors will not be guided by risk information. The result, in too many instances, will be new construction of homes and businesses that become tomorrow's NFIP problems.



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Pew, therefore, urges the Committee to consider options for accelerating map production in underserved areas and to resist any changes that would add time and complexity to what is already a very lengthy map review and appeals process. We also support direction to the Agency to include additional data on future risks in new maps products as quickly as possible. This future risk information will be helpful not only to local developers and homebuilders but also to decision-makers targeting new monies for infrastructure investments and upgrades.

Rates and Affordability

As Members on this Committee know, flood insurance rates have proven to be a key sticking point. There are those who see rates as too low, enticing people to build or live in risky areas. Others believe the opposite or expect to recoup every dollar spent on insurance in eventual claims payments. Given the chasm between these points of view, it may be useful to consider a bit of history and to proceed with caution on any initiatives to further lower rates across the board.

When the NFIP was started, its proponents were wary of flood insurance providing an indirect subsidy for development in risky areas.ⁱⁱⁱ Nonetheless, they were driven by what, at the time, seemed like large federal disaster expenditures, and they were compelled to find a way to assure that those already living in flood-prone areas could make some sort of down payment on future federal assistance. The program's drafters were cognizant of the fact that land use decisions and building practices affect flood risk and that those decisions are made, not at the federal level, but by individual communities. They saw federal flood insurance as a means of leveraging improved floodplain management by local governments to reduce overall risk.^{iv}

They assumed that a very limited number of communities would be at risk for flooding and that flood maps could be produced rather quickly and prove useful for long periods of time. They aimed for covering risks for the average "normal" year and allowed for borrowing from the Treasury for "extreme" events. At the same time, they seemed certain that there would be enough years with few storms to allow quick repayment of borrowed funds.

When Congress pressed ahead with rate reductions to attract more policyholders, it also assumed that the need for subsidies would diminish over time as local floodplain management improved and as older structures were leveled by storms or rebuilt entirely.

Some of these assumptions were on point. Others, with the benefit of hindsight, appear naïve.



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Today, we are beginning to understand that where it rains, it can flood and that even in communities that sit above a river or far from the coast, heavy rainstorms can overcome storm drainage infrastructure. We are also beginning to understand that flood risk is dynamic and that assessing risk must be an ongoing process. Now we see, all too clearly, that large events can follow on the heels of other large events, diminishing opportunities for building up financial reserves. We can also see that many at-risk homes and businesses have remained at risk for multiple decades, and that discounted rates that were once seen as temporary have endured.

Now, it seems, the space between the rock and the hard place that the program occupies has become tighter. Although \$16 billion of program debt to the Treasury was forgiven in recent years, experts see no realistic chance that the program will be able to repay, with interest, the currently owed \$20 billion plus.^v

Therefore, to the extent that Congress makes no changes to the structure of the program but offers new risk rate relief to policyholders, you may run the risk of increasing the NFIP program's current financial shortfall and threaten its ability to pay claims. On the other hand, to the extent to which rates are perceived as too high, lower-risk policyholders may drop coverage, thereby increasing the pressure to raise rates on the remaining properties. In addition, as some policyholders pay off loans and, thereby, fall out of the group that is required to carry flood insurance, they may drop coverage as well. If those individuals suffer uninsured losses in the future, Congress will be pressed to offer other types of disaster relief.

Clearly, this is a tough problem to solve, and we recognize that adjusting the NFIP's rate structure is a delicate business, because of the way it impacts people's ability to live and work in places they love. As the Committee approaches this difficult issue, Pew offers the following considerations:

First, we suggest to the Committee that FEMA has taken step one on affordability—in the form of the recently announced Risk Rating 2.0 pricing methodology. We understand that there is considerable apprehension about the impact of these changes, but we see these updates as ones that remedy a basic unfairness built into the program. As Carolyn Kousky of the University of Pennsylvania's Wharton Risk Management and Decision Process Center states: "Right now, low-valued homes pay too much for flood insurance and high-value homes too little."^{vi} With adjustments to the program's previous differential between base rates and additional coverage rates and a modernized approach to considering costs of repairs, Risk Rating 2.0 would address this unfairness. From FEMA's preliminary nationwide data, we estimate that Risk Rating 2.0



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would actually lower insurance rates for more than 1.1 million policyholders nationwide. We urge the Committee to let this important initiative proceed.

Second, we know there is a desire to go beyond Risk Rating 2.0's changes to address affordability. On that point, we recommend that the Committee use the information provided in FEMA's affordability framework study to craft an affordability program that is carefully targeted to those policyholders that need it most.

Again, we caution that an overly generous program—especially one that is not tied to other program reforms—will continue to undermine the program's claims-paying abilities and simply hasten the date by which Congress will again be debating loan forgiveness or changes to the borrowing cap.

Pew believes the Committee should work to avoid an affordability approach that is administratively complex and costly. While we understand the desire to help those who are severely housing-burdened, we would remind the Committee that the task of determining each policyholder's current income and assets as well as outlays for mortgage and other insurance payments would require extensive and potentially costly data collection. In addition, an affordability program focused solely on mortgage-holders may also overlook the needs of many low-income homeowners who do not currently carry mortgages.

To ensure that artificially low insurance rates do not encourage more risky development in flood-prone areas, Pew also recommends that the Committee consider clearly restricting any additional rate subsidies for new construction.

Third, we urge the Committee to ensure that any new affordability program compensates clearly for the price signals that new discounts convey. Too many individuals assume that a low insurance rate equals low risk; many will see a lowering of rates as confirmation of minimal risk. Where this is not the case, people should be fully informed and educated about their true risks. An affordability program should not feed flood complacency.

Finally, Pew recommends beginning a triage of the program's financial ailments by moving more vigorously to improve the floodplain management aspects of the program, including by accounting for future risk with respect to land use regulations. The program should also address the costly repeat loss properties and, at the same time, provide more robust mitigation funding and resources in order to lower risk, not just premiums. Additionally, we believe that a reformed program must provide the public with information that can help families and individuals make sensible and affordable decisions about where to live.



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Flood Risk Disclosure

As many flood experts have noted, an understanding of flood risk is fundamental to preparedness and protection, but individuals frequently underestimate their own risk of flooding, the extent of the damage that flooding can cause, or both. Some may not realize that the standard homeowner's insurance policy does not cover flooding. Others assume that their chances of significant loss to a flood are remote or believe that federal disaster assistance will allow for full recovery and restoration. Many do not realize that for those living in the one-percent-annual-chance or 100-year floodplain, the chances of a flood occurring during the lifetime of a 30-year mortgage are roughly one in four, far greater than the risk for fire.^{vii} Others mistakenly believe that if they reside outside of a flood hazard area, their chances of experiencing a flood fall to zero.

This lack of awareness or understanding can have devastating consequences for families and their property. Flooding can wreak havoc on what may have seemed like a sensibly balanced family budget. Flood victims, who may have lost their belongings, means of livelihood, cars, pets, or even loved ones to floodwaters can become trapped financially, unable to sell or to break a lease; they may be making rent or mortgage payments while flood damages force them to live elsewhere. They may have foregone flood insurance, simply because they had no means of recognizing their own flood risk.

Upfront disclosures about flood risk—available before financial commitments are made—could change those results. Informed about a structure's loss history, for example, homebuyers could consider alternative neighborhoods, purchase flood insurance, or investigate mitigation options, such as landscaping improvements, building elevation, or special placement of costly mechanical equipment. An informed buyer who has not yet finalized financing may be able to roll the costs of flood-resiliency improvements into a long-term loan that will protect the structure and lower insurance rates. For most, this would be much easier than facing a costly repair bill on top of a mortgage payment post-storm.

For renters, flood knowledge can allow for the same sort of informed decision-making. The individual with mobility issues may choose a safer location, for example. A renter with expensive computer equipment might opt for the second floor rather than the basement apartment. And, again, more individuals may decide that an insurance policy to cover loss of their belongings is a sensible safeguard.



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Pew believes that buyers and renters need to have all the information necessary to make informed decisions on what is often their largest and most important purchase. Sellers and lessors should be compelled to share the information they know about past flood damages and claims, obligations to carry insurance based on previous access to federal disaster assistance, and designation of a home as repetitive loss property, which can have serious implications for flood insurance rates. They should also be compelled to share the results of any elevation survey completed on the property. Such information can round out the broader picture of flood risk for a given property, giving consumers the equivalent of the repair and accident history that has become standard for automobiles.

We were delighted to find broad agreement on this issue with groups such as the National Association of Realtors and the Natural Resources Defense Council. Further, such a proposal enjoys bipartisan support by the public. A Pew poll released in 2019 shows that three quarters of respondents support a single, national standard to ensure that potential homebuyers are aware if a property has flooded repeatedly and if that property is required to carry flood insurance.

Pew urges the Committee to direct FEMA to move quickly to develop national standards for disclosure of past flood losses by sellers and lessors and to ensure that those standards become a basic part of the NFIP program. We also support directing FEMA to make flood claims data, aggregated at block or census level, readily available to the public on its website.

Repeatedly Flooded Properties

Where should Congress begin the financial and mitigation triage? Pew believes that Congress must start with the long-standing but still growing problem of repetitive loss properties.

This subset of insured properties that flood over and over again has strained the program's finances for decades. In some years, repetitive loss properties account for as little as one percent of the program's policyholders but cover 25 to 30 percent of its claims.^{viii} Since the 1990s, Congress, FEMA, the Government Accountability Office (GAO), and others have probed this imbalance problem, documenting multiple cases of properties repaired and rebuilt numerous times at the NFIP's expense.

In 2009, the Department of Homeland Security's Inspector General (IG) said that about one in ten repeatedly flooded homes had cumulative claims exceeding the value of the house.^{ix} The IG also said the increase in new repeat loss properties was outpacing mitigation efforts by a factor of ten to one. At that time, the universe of these properties was estimated to be growing at roughly 5,000 per year. A 2016 report by Resources for the Future and the Wharton Risk Center notes



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that claims filed by repetitive loss properties run 5 to 20 percent higher than the average of claims overall.^x And as recently as 2020, the GAO again noted the growing number of non-mitigated repetitive loss properties—despite significant federal expenditures on property acquisitions and other flood mitigation action.^{xi}

The NFIP program currently allows for a more rapid escalation of rates for repetitive loss and severe repetitive loss properties compared with other premium-discounted properties. It also directs FEMA to prioritize mitigation assistance to such properties through Flood Mitigation Assistance grants and requires even more rapid rate escalation if an offer of mitigation assistance is refused. However, these are simply starting points to reducing the growth of properties that flood over and over.

In the 115th Congress, a House-passed bill included a mandatory deductible that would have required owners to shoulder more of the repair costs, and it also included a measure that Pew supports aimed at addressing the root causes of repeated flooding. The Senate version of this bill has been championed by Senator Tim Scott, working along with Senator Brian Schatz.

Inspiration for what was called the Repeatedly Flooded Communities Preparation Act came from work already being done. A few jurisdictions participating in FEMA’s Community Rating System (CRS) were already conducting what have been called repetitive loss area analyses, using FEMA data to map and evaluate concentrations of repeated claims. Some appeared to be having real success reducing the number of unmitigated repetitive loss properties.

While such efforts could be sophisticated, they might also be as simple as using a paper map and a marker to look for patterns in the data, following up, as necessary, with field visits, and looking at options for identified flooding hotspots. The bill uses a specific number to identify the very small set of communities that would be required to participate, but it does not dictate specific outcomes. It directs FEMA to set up rules and calls on communities to make progress mitigating these hotspots. The legislation also reflects the fact that progress for one community might look very different from progress in another.

Let me be frank. This modest proposal to press communities to deal with repeatedly flooded areas has drawn some criticism. On the one hand, some believe it too unambitious. A more straightforward approach would simply remove some of the worst properties from the NFIP program—perhaps after a certain threshold of claims has been paid. Others see it as too tough on localities. Local governments don’t want to be singled out as a problem for the NFIP; they have other high priorities to consider.

We believe that the legislation, however, is a true attempt to hit the sweet spot—a spot that tries to focus attention on a nagging and growing problem, a directive that acknowledges the difficulty of the problem and offers a good dose of flexibility for finding solutions even as it creates a new level of accountability.

We know that among the repeatedly flooded properties, there are older homes built long ago on filled wetlands, on the edges of stream, or in a narrow valley below a rapidly growing area whose parking lots and new construction are sending water flowing downstream. Among these may be neighborhoods plagued by frequent low-level flooding tied to undersized drainage ditches cleaned out far too infrequently. The solutions to flooding, in some cases, may not be in the hands of the impacted homeowners. The bill would compel communities to get serious about addressing such problems.

At the same time, the list of repeatedly flooded properties might also include apartment buildings, beach houses, or businesses where flood claim payments have never been and will likely never be directed into improvements to protect those structures from the next storm—even though such improvements might be possible.

Pew supports The Repeatedly Flooded Communities Preparation Act, and we are hopeful that the Committee will include it in its reauthorization legislation. In our view, this proposal recognizes the size and seriousness of the repeat loss problem but also recognizes the need for locality-by-locality solutions. It does not penalize the homeowner, who may or may not have any means of controlling the flood threat. It allows for multiple solutions. Overall, such legislation would foster thoughtful floodplain management and careful priority-setting by local governments—very much in keeping with the original intent of the NFIP program.

Investment in Mitigation

Pre-flood preparation, mitigation, and adaptation: To date, these have been the missing pieces of the NFIP puzzle—despite the fact that multiple studies have shown that mitigation pays for itself in the long-term.

The most widely quoted of these studies comes from the National Institute of Building Sciences (NIBS) Multi-Hazard Mitigation Council, a panel of experts in fields related to the building sciences. This group has completed numerous reviews of mitigation projects of various types, concluding over and over that investments in mitigation save money and in some cases lives.^{xii} These studies also show that the sooner mitigation actions are taken, the more the associated benefits will multiply. The amount of savings varies by type and by project, but overall, the



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numbers run in ranges from \$2 in savings per mitigation dollar invested to as high as \$11 saved per dollar invested.

As you know, there are existing mitigation programs attached to the NFIP. The Flood Mitigation Assistance (FMA) program and the Increased Cost of Compliance (ICC) insurance riders have been helpful, and my colleagues at the Association of State Floodplain Managers have proposed an important expansion of the ICC program. Even if the ICC program is altered to become more generous to policyholders and even if the amounts appropriated for the FMA program increase to meet the full demand for yearly project applications, the nation's huge mitigation gap would remain, however.

That is why Pew sees the State Flood Mitigation Revolving Fund Act, a proposal from Senators Reed, Kennedy, and Menendez as a solid approach for expanding flood mitigation investment. It is a concept that is supported by over 120 national and local organizations from Florida to Minnesota to Texas to California.^{xiii}

Modeled on the success of similar programs for wastewater treatment and drinking water, this approach would put a real emphasis on flood preparedness, allow the states to develop their own in-house institutional capacity in the field of mitigation, and help break the flood-damage-and-repair cycle that cripples so many communities.

Under the proposal, the states, which already have good experience in managing revolving loan funds, will be able to evaluate needs across communities and set priorities. Some communities would be given loans—to be repaid over time—rather than being faced with enormous “repair bills” that come due all at once following a storm. Other communities might need more assistance. Where incomes and economic circumstances dictate, states could offer grants rather than loans, and, as loan payments return or “revolve” back to the fund, more communities will be helped over time.

Overall, we see this proposal as one that will save lives, livelihoods, and money, and we hope it will become a central feature of the NFIP reauthorization this Committee moves forward.

Equity and Social Vulnerability

Related to the issues of premium affordability, but in many respects larger than that is the issue of equity and social vulnerability.



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As FEMA’s Federal Advisory Council reminds us in their 2020 report to the Agency: “[D]isasters disproportionately affect those who are already socio-economically marginalized in a community, subjecting them to even greater depths of poverty.”^{xiv} Numerous studies provide evidence that disasters take a heavy toll on the well-being of those who are economically or otherwise disadvantaged—among them the elderly, the disabled, and those struggling to support their families. Without ready access to temporary housing or savings to repair homes and cars, many of these individuals will struggle for many months or years to recover from floods. Some will be permanently impacted. Many of you don’t need to read the studies, for you’ve met those constituents as they sheltered in temporary housing, waited desperate for word of modest disaster assistance, or returned to homes with mold-covered wallboard.

We know these most vulnerable families may be on your mind as consider how to reform the NFIP, and we believe there are opportunities to better serve these individuals and families through the insurance program.

First and foremost, we would remind the Committee that the current insurance law does not appear to directly authorize FEMA to consider poverty levels or other social vulnerabilities in the administration of its programs. Creating a program for rate affordability based on income would alter that, but there may be other actions that Congress should consider as well—policies that could draw on the data being made available through the Centers for Disease Control and Prevention’s Social Vulnerability Index^{xv}, FEMA’s own National Risk Index^{xvi}, or the Environmental Protection Agency’s Environmental Justice Screening and Mapping Tool.^{xvii} Congress might consider authorizing, either permanently or on a pilot project basis, the use of these vulnerability factors in scoring or awarding of grants and technical assistance. We understand that the Reinsurance Association of America has also begun looking at overlays of disaster risk data and social vulnerability and is formulating ideas for promoting private investments into those areas most in need. Their proposals go beyond the issue of flooding but may be of interest as well.

The Committee might also delve into the extent to which current approaches to benefit-cost-analysis (BCA) may bias mitigation investment decisions against neighborhoods or homes of lower values; a reform bill may be able to shift considerations from property value to people, including equity and social vulnerability factors, for such evaluations.

On this point, we would note that when it comes to property buyouts, it may not be the FEMA cost analyses that create a barrier for low-income residents. FEMA adjusted its procedures several years ago to allow for BCA waivers for cases in which a property is within the designated flood hazard zone and the appraised value of the home is below a certain level.^{xviii}



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The waiver policy was based on an analysis of 11,000 structures acquired or elevated, which found that the average benefits for each project type are \$276,000 and \$175,000 respectively. This change makes it easier for projects seeking to buy lower-value homes to be deemed cost-effective.

The larger problem, however, occurs when a family is unable to accept a buyout offer because the appraised value of their home is not enough to enable them to find alternative, safe housing. To address this barrier, Congress might look to the buyout program run by the City of Austin, Texas or the state program used in North Carolina. In the case of Austin, the city works to help the flood-trapped lower-income families with procedures based on the Uniform Relocation Assistance and Real Property Acquisition Act (URA).^{xix} URA provides for payments beyond appraised value in cases of mandatory buyouts. North Carolina has done something similar by providing localities with financing to help add funds to standard buyout offers in certain cases.^{xx}

Looking Forward

Touching again on issues of mapping, I will finish by asking you to look to the future, pressing the Agency to change the program not only to supplement our current depictions of flood risk but also to promote floodplain management solutions that will result in lasting protection.

Though it can flood just about anywhere, the federal government long ago opted to use the line associated with a certain statistical construct of a flood—the imaginary one-percent-annual-chance or 100-year flood—as the arbitrary marker of where flood insurance is required and where it is not.

As a statistical calculation, this line is drawn from data observed in past events, so it has been criticized as unduly optimistic and worthless in the face of possible climate change impacts. Indeed, it has been widely misinterpreted as the indicator of safe and not safe, though it is not. But, if an arbitrary line is needed to look at a single year's flood insurance policies, this line can, perhaps, serve that purpose.

The trouble we have been creating for ourselves, however, is that we use the very same line to make decisions with consequences that run much longer than a single year. The NFIP asks local communities to evaluate the potential flood impacts only for those activities that fall within that arbitrary 100-year line—a line that will undoubtedly move in the future. Though many structures will likely stand for decades if not centuries, we still make siting and building decisions based on this line that offers no real glimpse of the future.

We would ask the members of this Committee to examine how the NFIP program might be changed to make better, more forward-looking decisions, how FEMA can be directed to provide communities with data and tools that tell a more nuanced story of evolving flood risk, and of how the program's basic land use regulations might be changed to consider and account for future risks. On this point, we would note that the Association of State Floodplain Managers and the Natural Resources Defense Council have a petition before FEMA that argues for changes to the long-standing and grossly outdated NFIP regulations on floodplain management. We applaud our colleagues for pressing this point, and we are hopeful that the Agency will engage in a comprehensive review of possible improvements.

In closing, I again thank the Committee for the opportunity to testify and for allowing The Pew Charitable Trusts to be a part of this important discussion. We look forward to working with all the Members of the Committee to improve and sustain the Nation Flood Insurance Program.

ⁱ Association of State Floodplain Managers, "Flood Mapping for the Nation: A Cost Analysis for Completing and Maintaining the Nation's Flood Map Inventory," January 2020, <https://www.floodsciencecenter.org/products/flood-mapping-for-the-nation/>

ⁱⁱ Federal Emergency Management Agency, "Adoption of Flood Insurance Rate Maps by Participating Communities," January 2019, https://www.fema.gov/sites/default/files/2020-07/fema_adoption-flood-insurance-rate-maps-participating-communities_bulletin.pdf

ⁱⁱⁱ See, for example, U.S. Task Force on Federal Flood Control Policy, "A Unified National Program for Managing Flood Losses," House Document No. 465, 89th Congress, second session, August 10, 1966, <https://www.loc.gov/law/find/hearings/floods/floods89-465.pdf>

^{iv} See, for example, Federal Emergency Management Agency, "A Chronology of Major Events Affecting the National Flood Insurance Program," October 2002, prepared by The American Institutes for Research, The Pacific Institute for Research and Evaluation, and Deloitte & Touche LLP, https://www.dhs.gov/xlibrary/assets/privacy_pia_mip_apnd_h.pdf and Michel-Kerjan, Erwann O., 2010, "Catastrophe Economics: The National Flood Insurance Program," Journal of Economic Perspectives, 2010, 24(4): 165-86, <https://www.aeaweb.org/articles/pdf/doi/10.1257/jep.24.4.165>

^v U.S. Government Accountability Office, High Risk List: National Flood Insurance Program, 2019, https://www.gao.gov/highrisk/national_flood_insurance/why_did_study#t=0; FEMA, Federal Insurance and Mitigation Administration, Watermark, Fiscal Year 2021, First Quarter Volume 13, https://www.fema.gov/sites/default/files/documents/fema_watermark-report_12-2020.pdf

^{vi} Kousky, Carolyn, "Stopping price reform won't eliminate flood risk," The Hill, April 2, 2021, <https://thehill.com/changing-america/opinion/546158-stopping-price-reform-wont-eliminate-flood-risk>

^{vii} See, for example, National Association of Insurance Commissioners, "Flood Insurance Basics," undated, https://www.naic.org/documents/cmtc_c_trans_read_wg_related_flood_insurance_basics_v4.pdf?modal; and U.S. Geological Survey, "100-Year Flood—It's All About Chance," April 2010, <https://pubs.er.usgs.gov/publication/gip106>

^{viii} Federal Emergency Management Agency, Severe Repetitive Loss Property Locations in FEMA Region IV and VI, 2009, <https://kymn.net/wp-content/uploads/2018/08/FEMA.RepetitiveLoss.Southeast.pdf>

^{ix} Department of Homeland Security, Office of the Inspector General, FEMA's Implementation of the Flood Insurance Reform Act of 2004, March 2009, https://www.oig.dhs.gov/assets/Mgmt/OIG_09-45_Mar09.pdf



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