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Hearing on Reauthorization and Reform of the National Flood Insurance Program: Improving
Community Resilience
U.S. Senate Committee on Banking, Housing, and Urban Affairs
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Good morning. I would like to thank Chairman Brown, Ranking Member Scott, and the esteemed members of the committee for the invitation to speak to you today. I would also like to thank this committee for its support and attention to the National Flood Insurance Program (NFIP) and their focus on increasing the resilience of our communities. I am pleased to have the opportunity to testify today and share my perspectives on policy priorities for the program.

I am the Associate Vice President for Economics and Policy at the Environmental Defense Fund. I have been researching the NFIP for over fifteen years. This has included studies on the mandatory purchase requirement, drivers of demand, design of increased cost of compliance coverage, adverse selection in the program, pricing, and the private flood insurance market. I am also the author of the book *Understanding Disaster Insurance: New Tools for a More Resilient Future*. My research on this program, and that of the broader research community, informs my testimony today.

The Important Role of Flood Insurance in Recovery

Severe floods, like other natural disasters, impose enormous and wide-ranging costs on households. These include repairing property damage to homes, possessions, and vehicles, as well as the cost of emergency and preparedness supplies, evacuation expenses, temporary living expenses if people have to leave their homes, higher food expenses if families need to eat out more, potential health impacts or additional care for vulnerable family members, and the costs of cleaning up debris generated from the disaster. If power is lost, people may need to purchase generators and fuel; if the transportation network is down, they may incur higher commuting costs; and if businesses are impacted, they may lose income at the same time they face an increase in expenditures.

How do households cover these disaster-related costs? Most households have insufficient liquid savings to cover expenses outright. This is more severe for people with lower incomes

and people of color; research has shown these populations have lower levels of emergency savings, due to systemic inequalities and limited access to resources.¹ Disaster loans are often a first-line of defense provided to those impacted by disaster, but for lower-income households, additional debt is more likely to make their financial situation more precarious and limited repayment ability will mean many lower-income households will be completely locked out of access to credit altogether. Federal disaster aid is too limited or too delayed or creates unnecessary burdens for households.²

With limited other options, insurance plays a critical role in getting households financial resources they need to rebuild their homes and replace damaged possessions. This is why insurance is a necessary component of securing financial resilience to disasters. In ongoing research, for example, a colleague and I find that after a hurricane, households with insurance are less likely to report high financial burdens both three months and a year after the disaster and are less likely to report having unmet funding needs.³ In the same paper, we find that widespread take-up of flood insurance improves local economic recovery by increasing visitations to local commercial establishments. This echoes other research by colleagues, which have similar findings that insurance improves recovery⁴ and that lack of flood insurance can widen inequality post-disaster.⁵

For over fifty years, the National Flood Insurance Program has been providing this necessary coverage for millions of households and businesses around the country. That said, we still face the challenge that many at-risk households are uninsured against flooding. FEMA estimates that on average nationwide, only about 35% of households in Special Flood Hazard Areas have flood insurance, while less than 2% of those outside this area have flood insurance.⁶ There is,

¹ Ratcliffe, C., B. Middlewood, M. Knoll, M. Davies, and G. Guillory (2022). *Emergency Savings and Financial Security: Insights from the Making Ends Meet Survey and Consumer Credit Panel*. Washington, DC: Consumer Financial Protection Bureau.

² May, R. (2020). "Accessing Disaster Recovery Assistance Requires a Map and a Compass." Wharton Risk Management and Decision Processes Center, University of Pennsylvania. Online at: <https://riskcenter.wharton.upenn.edu/labs/recoveryassistancerequiresamap/>

³ You, X. and Kousky, C. (2023). "Improving Household and Community Disaster Recovery: Evidence on the Role of Insurance." EDF Economics Discussion Paper 23-01. Available at SSRN: <https://ssrn.com/abstract=4365715> or <http://dx.doi.org/10.2139/ssrn.4365715>

⁴ For example: Turnham, J., K. Burnett, C. Martin, T. McCall, R. Juras, and J. Spader (2011). *Housing Recovery on the Gulf Coast, Phase II: Results of Property Owner Survey in Louisiana, Mississippi, and Texas*. Washington, D.C.: U.S. Department of Housing and Urban Development, Office of Policy Development and Research. More studies reviewed in: Kousky, C. (2019). "The Role of Natural Disaster Insurance in Recovery and Risk Reduction." *Annual Review of Resource Economics* 11(3).

⁵ Rhodes, A. and M. Besbris (2022). *Soaking the Middle Class: Suburban Inequality and Recovery from Disaster*. New York: Russell Sage Foundation.

⁶ Federal Emergency Management Agency (FEMA). 2018. *An Affordability Framework for the National Flood Insurance Program*. Washington, DC, April 17.

however, high regional variation, with take-up rates much higher in communities along the Gulf and Atlantic coasts.⁷ But, as flood after flood reminds us, far too many Americans at risk do not have the necessary flood insurance coverage. This is driven by many factors, such as lack of public and accessible information on flood risk and the potential damages flooding can cause. In addition, those who need insurance the most are often simply unable to afford it.

Those least able to afford insurance have greater need of financial protection since they have little access to other sources of recovery dollars. Without the resources to recover and obtain safe housing again, households must often cover recovery expenses in ways that have negative long-term impacts or limit their ability to build wealth, such as deferring medical expenses, falling behind on bills, or draining retirement savings. Research finds that after suffering flood or disaster damage, credit score declines, mortgage delinquencies, and bankruptcies are more likely for households that are financially constrained as well as those who live in a community of color.⁸ The need for more inclusive insurance is an important policy topic for other disaster and property insurance beyond flooding, as well.⁹

The Need to Lower Risk

Insurance and risk reduction need to be viewed as complements. When the underlying risk is lowered, insurance becomes more affordable. Over its long history, FEMA and the NFIP have invested in efforts to lower flood risk and these efforts have paid dividends around the country. The NFIP minimum floodplain regulations provide communities baseline requirements to support less risky development, but updates to these requirements are now needed to reflect modern best practices and the realities of changing conditions. Grants to mitigate impacts to individual properties have reduced damages in many communities. And the Community Rating System, a program designed to reward communities that take actions to better manage flood risk, has led to lower flood claims and lower overall losses in participating communities,¹⁰

⁷ Kousky, C. (2018). “Financing Flood Losses: A Discussion of the National Flood Insurance Program” *Risk Management and Insurance Review*. 21(1): 11-32.

⁸ Ratcliffe, C., W. Congdon, T. Teles, A. Stanczyk, and C. Martín (2020). “From Bad to Worse: Natural Disasters and Financial Health.” *Journal of Housing Research* 29 (sup1): S25–S53; Billings, S.B., E. A. Gallagher, and L. Ricketts (2022). “Let the Rich Be Flooded: The Distribution of Financial Aid and Distress after Hurricane Harvey.” *Journal of Financial Economics* 146 (2): 797–819.

⁹ Kousky, C. and K. French (2023). *Inclusive Insurance for Climate-Related Disasters: A Roadmap for the United States*. Boston, Ceres: January.

¹⁰ Gourevitch, J.D. and N. Pinter (2023). “Federal incentives for community-level climate adaptation: an evaluation of FEMA’s Community Rating System.” *Environmental Research Letters* 18(3): 034037; Highfield, W. E. and S. D. Brody (2017). “Determining the effects of the FEMA Community Rating System program on flood losses in the United States” *International Journal of Disaster Risk Reduction* 21: 396-404; Kousky, C. and E. Michel-Kerjan (2015). “Examining Flood Insurance Claims in the United States.” *Journal of Risk and Insurance* 84(3): 819-850.

although some improvements could make it more widely accessible and help communities focus on the most impactful interventions.

Beyond the NFIP, at this moment, there are more federal dollars for reducing the losses from extreme climate events than have ever been previously available. This includes \$3.5 billion to the Flood Mitigation Assistance Program from the Infrastructure Investment and Jobs Act, \$2.3 billion in FY22 for the new Building Resilient Infrastructure in Communities (BRIC) grant program, \$0.5 billion to the new state revolving loan funds (Safeguarding Tomorrow through Ongoing Risk Mitigation Act), as well as the \$3.5 billion to the Hazard Mitigation Grant Program, due to the 4% set aside from the Covid-19 declarations. In addition, funding from the Community Development Block Grant – Disaster Relief (and CDBG – Mitigation) program, when authorized, can provide substantial funds for risk reduction.¹¹ These dollars are creating important opportunities for states and local governments to invest in flood mitigation that will improve household and community resilience.

With such funds available, attention now needs to turn to helping communities access these funds, along with providing support for developing cost-effective, impactful, and equitable resilience projects. This is especially true for communities with fewer resources to navigate the sometimes challenging process of securing federal grant funds.

While this new funding is substantial, it is still far below demand. For instance, in 2022, FEMA received requests for the BRIC funding that were four times greater than the amount available to allocate, despite a record amount of funds to award. As the risk of climate extremes continues to grow, so will the need. There is, therefore, still more to do to help lower flood risk and the NFIP should play a key role, as it has throughout its long history, in those efforts. There are multiple places where the program could do more to support flood risk reduction.

Several mitigation options for properties are quite expensive and policyholders simply do not have the necessary funds for such changes. When a property is damaged by a flood, it should be seen as an opportunity to build back in a way that lowers future damages. To support this, the NFIP could make greater funding available at the time of rebuilding to pay for investments in risk reduction and couple this, perhaps in partnership with local organizations, with action-oriented advice for policyholders.

Currently, NFIP policies have Increased Cost of Compliance (ICC) coverage, which provides up to \$30,000 when a property is substantially or repetitively damaged to bring it into compliance

¹¹ For more on this program see the testimony of Carlos E. Martín before the Committee on Banking, Housing, and Urban Affairs, United States Senate on December 15, 2021.

with current floodplain regulations (although subject to the overall cap on NFIP coverage of \$250,000 for residential policies¹²). While important, this program is underutilized by policyholders and does not go far enough in supporting investments in risk reduction at the time of rebuilding.¹³ The mitigation measures it supports include elevation, relocation, demolition, and floodproofing for non-residential buildings. All of these are very expensive changes and ICC is typically insufficient. Higher ICC payouts could help cover the costs of these more expensive mitigation investments, but this requires a determination as to how to pay for these higher ICC payouts: should it remain an insurance coverage or be treated as a grant coupled to an NFIP policy? If the former, the NFIP would have to charge a higher premium for ICC coverage than it does today in order to cover the cost of higher payouts. In the latter case, the extra premium could be paid for with federal funds, treating ICC more like a grant, and sparing policyholders the higher premium costs necessary to access greater post-flood dollars for resilient rebuilding.

Second, the NFIP continues to have a group of highly risky properties that have seen repeated flooding—aptly named repetitive loss properties. They make up only a small share of policies, but a larger, and disproportionate, share of claims. From 1978 to 2015, just 160,000 repetitive loss properties (about 3% of all policies) received \$9 billion, or roughly 25% of all claims payments.¹⁴ Many observers of the program have argued for more aggressive mitigation of these properties. FEMA has suggested that Congress allow the program to stop insuring them altogether after a certain number of losses. Certainly, a private firm would never continue paying to rebuild a home that was destroyed time and time again. FEMA’s proposal to stop insuring repetitive loss properties should be coupled to dedicated grant funds for mitigation of these properties to enable them to qualify for continued coverage or buyout funds for those homeowners ready to relocate somewhere safer.

Since the costs of continued occupancy are greater than the costs of relocation for these properties, they are often targeted for buyouts through certain mitigation grant programs. These programs provide federal grant dollars for state and local governments to purchase risky properties and return them to open space in perpetuity. Unfortunately, these programs are too often missing important opportunities and wasting financial resources. Federal buyout dollars

¹² Residential policies can only be insured up to \$250,000 through the NFIP. ICC payouts are also currently subject to that cap (so if someone received a claims payout, for example, of \$24,0,000, they would only be eligible for \$10,000 in ICC).

¹³ Kousky, C. and B. Lingle (2017). The NFIP’s Increased Cost of Compliance Coverage. Wharton Risk Center Issue Brief. University of Pennsylvania, Philadelphia: Summer.

¹⁴ See: NFIP (2017). Developing a Repetitive Loss Area Analysis for Credit under Activity 510 (Floodplain Management Planning) of the Community Rating System, online at: <https://crsresources.org/files/500/rlaa-guide-2017.pdf>.

can take too long to reach homeowners ready to move after a damaging flood.¹⁵ Households—especially those of limited means—cannot wait for years for the buyout process to be undertaken. Floodplain managers have observed that at times, households may begin the rebuilding process to make their home safe for habitation, often using partial or full flood insurance payouts, since they need a safe place to live immediately, only to have the home demolished later in a buyout.

A critical reform would make some federal buyout dollars available immediately after a flood or allow for local reimbursement of floodplain buyouts for repetitive loss properties. But the federal delay is only one contributing factor to the often long timeframes for buyouts. Another source of delay comes from the administrative tasks required for local implementation of buyouts. These can be reduced through pre-disaster evaluation and prioritization of where buyouts will occur, which properties are eligible, and conducting the necessary appraisals and approvals. To encourage local communities with high-risk areas to complete this necessary pre-disaster work, the expedited or reimbursed federal buyout funds could be tied to demonstration of a pre-disaster buyout planning process, perhaps piloted in repetitive loss areas. In addition, support could be made available for restoration of these properties to provide environmental benefits, including natural flood protection.

While reforms such as these are needed across all communities, the committee should also consider greater efforts, building on FEMA's current priority to support greater equity in its programs, to direct resources for both household and community level investments in flood mitigation to lower-income communities at high risk of floods. This will also require increases in technical support and easing the process for under-resourced communities to access federal dollars. As noted earlier, this could help lower overall risk and thus also bring down the costs of insurance for those struggling to afford coverage.

Finally, the program could provide greater incentives and information to support investments in low-cost mitigation options, since many homeowners simply do not have the funds to pay for high-cost mitigation, such as elevation, or the desire, funds, or ability to relocate. This includes actions such as improving grading around the home; using flood-resistant materials in basements or lower floors; elevating mechanicals, utilities, and appliances; reducing impervious surfaces around the home; installing flood vents or sump pumps; and sealing foundation and basement walls.¹⁶ According to FEMA, elevating machinery and equipment will now be given

¹⁵ Wiley, H. J. P. and C. Kousky (2020). "Speeding Up Post-Disaster Housing Buyouts." *Solutions* 11(3).

¹⁶ For more information, see: [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf](https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf).

credit in premiums under Risk Rating 2.0. The only other two mitigation efforts receiving a premium credit are installing flood openings and elevation. While this is a good start, the ICC coverage could also be revised to allow the funds to be used for less costly mitigation, such as those just listed, even if unrelated to current building codes.

Improving the Fiscal Soundness of the Program

Insurance is predicated on the idea of risk pooling. When independent losses are grouped together, the aggregate loss is stable and well-predicted. Natural disasters, however, present a challenge. Losses from disasters are correlated—entire communities are hit simultaneously—and events themselves can be very severe. This possibility for extreme losses creates annual losses that are very spiky and can fluctuate wildly from one year to the next. To stay solvent, insurers must have access to enormous sums of capital to cover high loss years.

The NFIP was originally designed to borrow from the U.S. Treasury when it faced losses that exceeded retained funds and premium revenues. This worked when the losses were never catastrophic. Hurricane Katrina and the 2005 hurricane season, however, disrupted this model and plunged the program into massive debt. Hurricanes in subsequent years only further added to the debt, including Hurricane Harvey, after which Congress forgave \$16 billion. Still, with such severe losses and inadequate financing, the debt today stands at \$20.5 billion.

Debt is not a typical part of private insurance operations. Insurance companies collect most of their revenue in advance, before having to pay claims and expenses. While the NFIP is a public-sector program, and thus financed quite differently, this large debt is unsustainable. FEMA now pays almost \$1 million in interest daily; the program has paid over \$5.7 billion in interest since 2005.¹⁷ The Union of Concerned Scientists notes that the program pays more in interest than it does for flood mapping and that interest payments are the third largest NFIP activity by cost.¹⁸ This is paid for entirely out of premium revenue, placing an unnecessary burden on policyholders and the program itself.

All observers, including FEMA,¹⁹ the GAO,²⁰ and others, have stressed that the NFIP will never be able to repay this debt. The program was simply never designed to be able to handle the catastrophic loss years it has faced. And the percentage of NFIP revenue that is consumed by

¹⁷ <https://www.fema.gov/case-study/rising-interest-expenses>

¹⁸ Udvardy, S. (2021). Three Reasons the House Reconciliation Bill is Good News for Flood Resilience and Communities. The Union of Concerned Scientists: September 20.

¹⁹ <https://www.fema.gov/case-study/rising-interest-expenses>

²⁰ GAO (2017). Comprehensive Reform Could Improve Solvency and Enhance Resilience. U.S. Government Accountability Office, Washington, D.C.: April 27.

debt services could increase from higher interest rates. There is not a path forward to repay this debt based on premiums without imposing untenable financial burdens on policyholders and undermining the ability of the program to pay claims. As such, all analysts of the program believe this debt must be forgiven. As David Maurstad, the Assistant Administrator for the Federal Insurance Directorate and Senior Executive of the NFIP said in a hearing last Friday: “as currently structured, the program is burdened with interest expense and unable to pay this debt back in full.”

Forgiving the debt would allow the program to begin fresh with a new approach to fiscal soundness. FEMA has suggested additional reforms to contribute to this broader goal. One has already been undertaken, which is aligning prices with risk. GAO²¹ and other stakeholders have repeatedly raised concerns, especially in the years after Hurricane Karina, that the NFIP’s approach to rate-setting failed to reflect risk at the property-level, instead including multiple cross-subsidies and discounts that led to perverse incentives. In response, over many years, FEMA modernized its approach to pricing, the result of which is Risk Rating 2.0. This new approach reduces cross-subsidies across flood zones and eliminates price “cliffs,” where, in the past, two properties at similar risk could have faced substantially different premiums if a flood zone boundary crossed between them. It also has undone a regressive cross-subsidy where higher values homes were paying too little and lower value homes paying too much.

Risk Rating 2.0, however, did not include any type of means-tested assistance program, which is needed, but would require congressional authorization. Disaster insurance, including flood insurance, when risk-based, can be very expensive.²² Even with the NFIP only managing to a one-in-twenty year event, far lower than a private sector firm, prices in areas at high risk of flooding are going to be expensive, reflecting that risk. At the launch of Risk Rating 2.0, FEMA noted that just under a quarter of existing policyholders would see rate decreases and two-thirds would see premium increases of less than \$10 per month.²³ These numbers, however, were not full-risk rates, which are being phased in over time, but only the immediate premium changes. The program has not made information available on property-level full-risk rates, but did last week release aggregate information on the average full-risk premiums for zip codes, counties, and states. For a little more than a quarter of U.S. counties, the average full-risk premium is greater than the average current cost of insurance by 100% or more. Properties that have maintained insurance are on a glidepath to paying these higher rates, so they will not

²¹ GAO (2008). FEMA’s Rate-Setting Process Warrants Attention. U.S. Government Accountability Office, Washington, D.C.: December 1.

²² Kousky, C. (2022). Understanding Disaster Insurance: New Tools for a More Resilient Future. Washington, DC: Island Press.

²³ <https://www.fema.gov/flood-insurance/risk-rating>

see the full cost for years to come, following a congressional cap on rate increases of 18% per year. But many households already cannot afford the current cost of flood insurance and the number struggling with flood insurance costs will continue to grow as the rates rise. For those not mandated to purchase flood coverage, many will drop their flood coverage.

As has been noted by FEMA,²⁴ the National Academy of Sciences,²⁵ RAND,²⁶ researchers,²⁷ and many other stakeholders for at least a decade, Congress should authorize a means-tested assistance program to help low- and moderate-income households with the costs of flood insurance. Assistant Administrator Maurstad also stressed this again in his testimony last week. There has been substantial investigation into how to design such a program from the aforementioned groups. It is time to use that combined research to adopt and implement such a program. It should be supported, not by cross-subsidies within the program, but through taxpayer dollars. This is an important safety net, akin to other federal safety net programs for those most in need. In addition, the affordability program should be scaled, so that the amount of support phases out as income increases. And it should be available to anyone—current or future policyholder—who wishes to purchase flood insurance.

Private vs Public Flood Insurance

As everyone on this committee knows, the NFIP was established over fifty years ago in response to a lack of available flood coverage in the private sector. Floods are not the only peril for which the public sector has had to step in with support. Every state exposed to hurricanes has a so-called wind pool or beach plan for those who cannot find or afford wind coverage in the private market. California has the California Earthquake Authority, as well as their FAIR (Fair Access to Insurance Requirements) program, which is now writing increasing numbers of wildfire insurance policies. Federally, we have the Terrorism Risk and Insurance Program to backstop commercial terrorism coverage.

These programs were typically put into place when a severe event made clear that there was insufficient availability or affordability from the private sector. The fact that losses can be so

²⁴ FEMA. (2018). An Affordability Framework for the National Flood Insurance Program. Department of Homeland Security, Federal Emergency Management Agency.

²⁵ National Research Council. (2015). Affordability of National Flood Insurance Premiums: Report 1. National Academies Press.

²⁶ Dixon, L., Clancy, N., et al. (2017). The Cost and Affordability of Flood Insurance in New York City: Economic Impacts of Rising Premiums and Policy Options for One- to Four-Family Homes. RAND Corporation.

²⁷ Kousky, C. and H. Kunreuther (2014). "Addressing Affordability in the National Flood Insurance Program." *Journal of Extreme Events* (1)1: Article ID 1450001; Miller, B., Dixon, L. and N. Clancy (2019). "Reasonable and Risk-Based? Replacing NFIP Generally Subsidized Rates with a Means-Tested Subsidy" *Southern Economics Journal* 85(4): 1180-1195.

severe, and impact so many people simultaneously, means that some of the underlying principles of risk pooling, on which insurance is based, fail to hold for catastrophic risks. This makes disaster insurance fundamentally more expensive than non-disaster insurance. At times, there may not be any price at which insurance companies can profitably offer disaster coverage that consumers are able or willing to pay. These breakdowns in insurance markets, often witnessed after disasters, have led to the creation of many of the public sector programs just mentioned. This is also true internationally, where there is even greater variation in how such programs are designed.

In the case of flooding, these difficult insurance dynamics for the private market, coupled with lack of information and understanding of flood risk on the part of both consumers and insurers, as well as ongoing concerns about adverse selection, led the NFIP to be the dominant source of flood insurance in the U.S. for decades. More recently, advances in data and modeling have improved understanding of the flood hazard and some private insurers have started to offer flood policies. According to data from the end of 2021 from the National Association of Insurance Commissioners,²⁸ at that time, about 9.4% of residential, first-dollar flood policies (those not written exclusive in excess of the NFIP coverage cap) were with the private sector.

While private flood policies can provide consumers with more options, which could include better prices or more expansive coverage, it is unlikely the private sector will ever be able to provide flood insurance for a large share of those at risk. This is due to the difficulty just discussed with insuring catastrophic risks at a price point people can afford to pay. This will only be exacerbated as climate change and continued development increase flood risk in many places around the country. This could make private flood insurance simply unaffordable to many households at risk. And since flood losses can be catastrophic and threaten insurer solvency, many insurers simply do not want to take the risk onto their books at any feasible price point. Indeed, we are seeing private insurers pull back from all climate perils that are now increasing, such as insurers in Louisiana and Florida reducing their willingness to offer homeowner's insurance and some in California pulling back in the high wildfire risk areas of the state. As such, the NFIP will continue to play a dominant role in providing full indemnity flood insurance for the foreseeable future.

That said, all of the various public disaster insurance programs—here and around the world—struggle with the basic question of who should pay for disaster losses. Some other countries take a “solidarity” approach to pricing disaster insurance, charging one flat fee to all residents

²⁸ Data online at:

https://tableau.naic.org/views/PFloodDataCall_16057353537510/PurposeandExplanation?%3Aembed=y&%3AisGuestRedirectFromVizportal=y

(perhaps varying by property type or coverage limit). They make disaster insurance universal and compulsory. The United States has shied away from embracing a solidarity approach to pricing, but some stakeholders also eschew a fully market-based approach of pricing each property according to its individualized risk level, as this can be quite high in flood-prone locations. Some stakeholders advocate that pricing only on risk levels could encourage safer building and better decisions about where to build. And there are those who believe that if someone chooses to live in a risky area, it is their responsibility to shoulder the costs of that decision. But we also have households trapped in risky locations, in need of support to secure risk reduction and financial protection against disaster losses. In practice, most of the disaster insurance programs in the U.S. have cross-subsides (if sometimes implicit or hidden) that keep costs lower for those in high-risk areas. This is true for several of the state wind pools and was also historically true for the NFIP. None of our programs yet, however, provide assistance with premiums based on ability-to-pay.

Addressing Climate Change

Flooding is the costliest natural disaster, and the risk is escalating in many places due to the combined effects of climate change, development, and land use decisions. Sea level rise has already led to an increased probability of coastal flooding, which will continue, and is projected to cause higher flood damages in the coming years.²⁹ Climate-induced intensification of rainfall is also projected to increase flooding in certain parts of the United States and this, in turn, could escalate flood damages.³⁰ It is not climate change alone, however, that is driving up flood risk. Our land use and development decisions have also, at times, increased flood risk. Decisions such as reducing impervious surface area, eliminating natural systems, such as wetlands, that can store floodwaters, continuing to build in areas known to be at high flood-risk, and failing to build in a way that is mindful of escalating risk, all worsen flooding.

²⁹ Sweet, W. V. and J. Park (2014). "From the extreme to the mean: Acceleration and tipping points of coastal inundation from sea level rise." *Earth's Future* 2(12): 579-600; Neumann, J. E., K. Emanuel, S. Ravela, L. Ludwig, P. Kirshen, K. Bosma and J. Martinich (2015). "Joint Effects of Storm Surge and Sea-level Rise on US Coasts: New Economic Estimates of Impacts, Adaptation, and Benefits of Mitigation Policy." *Climatic Change* 129(1-2): 337-349; Garner, A. J., M. E. Mann, K. A. Emanuel, R. E. Kopp, N. Lin, R. B. Alley, B. P. Horton, R. M. DeConto, J. P. Donnelly and D. Pollard (2017). "Impact of Climate Change on New York City's Coastal Flood Hazard: Increasing Flood Heights from the Preindustrial to 2300 CE." *Proceedings of the National Academy of Sciences* 114(45): 11861-11866.

³⁰ Wobus, C., M. Lawson, R. Jones, J. Smith and J. Martinich (2013). "Estimating Monetary Damages from Flooding in the United States under a Changing Climate." *Journal of Flood Risk Management* 7(3): 217-229; Mallakpour, I. and G. Villarini (2015). "The Changing Nature of Flooding across the Central United States." *Nature Climate Change* 5(March): 250-254; Prein, A. F., C. Liu, K. Ikeda, S. B. Trier, R. M. Rasmussen, G. J. Holland and M. P. Clark (2017). "Increased Rainfall Volume from Future Convective Storms in the US." *Nature Climate Change* 7(12): 880-884.

As climate change continues to intensify flood risk around the country, the costs of insurance will necessarily need to increase as well, absent subsidies to cover the growing risk. When many policyholders still are not paying rates adequate to today's risk—and many unable to afford the rates required for today's risk—this will create a growing challenge for the program.

As noted earlier, the best way to address growing risk is to reduce it—not simply transfer it. This requires changing our land use and building practices in areas of increasing flood risk. As discussed previously, Congress has appropriated increased funds for such efforts, but more is needed to support climate adaptation. This should begin with a better understanding of future risks. The NFIP could provide information on future flood risks to communities around the country. The current flood risk maps are inadequate tools of risk communication. While the Special Flood Hazard Area (SFHA) boundary is necessary for enforcement of building codes and the mandatory purchase requirement, this should not be the basis for our risk communication and our risk disclosure laws.

We have the tools and data now to provide graduated risk information at a property level across the country for today's risk, as well as the risk in the future under different climate scenarios. Before a community permits development or a family decides where to live, they should have an understanding of how the frequency of flooding might change, of the magnitude of those floods and their financial implications, and of the full cost of insurance today, including how it may change in the future. Right now, none of that information is easily available, creating information failures that can lead to poor decisions and information distortions in housing and mortgage markets.

Of course, there is concern that for current homeowners in very risky areas, this important information transparency could cause economic harm by lowering the value of their home. Instead of sacrificing transparency about risks, we need to make it easier for current occupants of very high-risk properties to either mitigate their risk to preserve property values or to accept a floodplain buyout and maintain their financial position as risks escalate. This is true across income levels, but financially- and climate-vulnerable communities will need additional help.

Conclusion

Flood insurance has a critical role to play in promoting resilience by protecting households and businesses against negative financial shocks, speeding disaster recovery, and lowering risks before a disaster through financial incentives and after a disaster through greater resources for resilient rebuilding. All households need access to these benefits of insurance. This can be guaranteed by adoption of a means-tested assistance program to help lower-income

households with the cost of flood insurance. In addition, as flood risk grows in the coming years, risk reduction is going to become more important as a key complement to insurance.