BUILDING SMARTER: THE BENEFITS OF INVESTING IN RESILIENCE AND MITIGATION

(117–8)

REMOTE HEARING

BEFORE THE

SUBCOMMITTEE ON
ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND
EMERGENCY MANAGEMENT

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

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CONTENTS

Page

APPENDIX

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Washington, DC 20515

Peter A. DeFazio
Chairman

Katherine W. Dedrick, Staff Director

Sam Graves
Ranking Member

Paul J. Sass, Republican Staff Director

MARCH 15, 2021

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Economic Development, Public Buildings, and Emergency Management
FROM: Staff, Subcommittee on Economic Development, Public Buildings, and Emergency Management
RE: Subcommittee Hearing on "Building Smarter: The Benefits of Investing in Resilience and Mitigation"

PURPOSE

The Subcommittee on Economic Development, Public Buildings, and Emergency Management will meet on Thursday, March 18, 2021, at 2:00 p.m. in 2167 Rayburn House Office Building and via Cisco Webex, to receive testimony on "Building Smarter: The Benefits of Investing in Resilience and Mitigation." At the hearing, Members will receive testimony from witnesses with expertise in emergency management, mitigation and resilience, insurance, and construction. The Subcommittee will hear from the National Emergency Management Association, the Insurance Institute for Business and Home Safety, the Pew Charitable Trusts' Flood Prepared Communities program, Zurich North America, and the National Association of Home Builders.

BACKGROUND

For the last several years, the United States has experienced an increasing and unprecedented number of significant hazard events—hurricanes, tornados, floods, derechos, wildfires, abnormal heatwaves, and freezes—that have impacted tens of millions of Americans and taken varying tolls on countless communities.[1]

Decades of regular federal data collection and scientific research and analysis, as well as private sector research indicates that these types of events are increasing.[2] A review of requests for Federal emergency assistance and/or disaster relief from the Federal Emergency Management Agency (FEMA) is accordingly on the rise as state, tribal, territorial, and local governments' capacity to respond to and recover from these events is quickly exceeded given the scale and associated losses.[3]

[1] See *Disaster Preparedness: DRRA Implementation and FEMA Readiness*. Hearing before the Subcommittee on Economic Development, Public Buildings, and Emergency Management. 116th Congress, May 22, 2019. See also *Building a 21st Century Infrastructure for America: Mitigating Damage and Recovering Quickly from Disasters*. 115th Congress, April 27, 2017.

[2] National Oceanic and Atmospheric Administration (NOAA), "Billion-Dollar Weather and Climate Disasters: Events". Available at: https://www.ncdc.noaa.gov/billions/events.

[3] Congressional Research Service. *Stafford Act Declarations 1953–2016: Trends, Analyses, and Implications for Congress (R42702)*. August 28, 2017. See also FEMA, *Declared Disasters*. Available at https://www.fema.gov/disasters/disaster-declarations

In 2012, Munich Re, the world's largest reinsurance company, reported that between 1980 and 2011, North America suffered $1.06 trillion in total losses, including $510 billion in insured losses, and an increase in weather-related events five-fold over the previous three decades.[4] In 2005, it was reported that since 1952, the cost of natural disasters to the federal government more than tripled, as a function of gross domestic product.[5] These statistics have only grown in the intervening years.

For several congresses, this Subcommittee has examined increasing costs of emergency assistance and disaster relief, and has worked to enact reforms and enhancements to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act, P.L. 93–288 as amended) to bolster federal assistance via FEMA to state, local, tribal, and territorial governments to invest in mitigation and resilience, including investments in natural infrastructure.[6] Most recently, in 2018 the Disaster Recovery Reform Act (DRRA, P.L. 115–254, Division D) provided additional assistance and eligibility for both pre- and post-disaster mitigation from all hazards.

There are numerous causes that may be driving these rising disaster costs, including population growth and increased density in disaster-prone areas, changes in weather and fire events, and changes in disaster relief programs. In a 2013 report to Congress—responding to a provision of the Sandy Recovery Improvement Act (P.L. 113–2, Sec. 1111)—FEMA acknowledged the increase in the number of extreme disaster events and increased vulnerabilities throughout the United States due to shifting demographics, aging infrastructure, land use, and construction practices.[7] Further, the Congressional Research Service (CRS) analyzed data from over 1,300 major disasters since 1989, and adjusting for inflation, found that FEMA obligated more than $178 billion for these disasters.[8]

In November 2020, FEMA released the "Building Codes Save: A Nationwide Study," a nearly decade-long assessment of losses avoided through the adoption of hazard-resistant consensus-based building codes and standards.[9] The study found that 65 percent of U.S. counties, cities, and towns had not yet adopted modern building codes—defined as codes developed since 2000.[10] Analysis of the data shows savings in multiple hundreds of millions of dollars for disaster response and recovery costs across disaster-impacted areas with modern codes.[11]

DISASTER RECOVERY REFORM ACT OF 2018 (DRRA)

The DRRA was initially crafted to address the rising costs of disasters in the United States and was intended to reform federal disaster programs to ensure communities are better prepared for future hurricanes, flooding, earthquakes, wildfires, and other disasters.[12] It incentivizes states to invest in stronger mitigation measures and resilient rebuilding—which will reduce the future loss of life and the rising costs of disasters—to ensure that communities are well-equipped to better prepare for and withstand disasters of all kinds.[13] The DRRA strengthened and established a consistent funding stream for pre-disaster mitigation. A section of the DRRA as originally reported by the Committee (later enacted as Section 20606 of the Bipartisan Budget Act of 2018, P.L. 115–123) also directed FEMA to incentivize mitigation by increasing the federal cost share. That section has not been implemented.

The National Institute for Building Sciences (NIBS) has found significant cost savings in mitigation projects and the adoption of consensus-based building codes and standards. In examining code aspects related to riverine flood, wind, and earthquake, the NIBS concluded:

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[4] Munich Re (2012). *Severe weather in North America—Perils Risk Insurance*. Munich, Germany: Muchener Ruckversicherungs-Gesellschaft.

[5] The Princeton University Geoscience 499 Class, *The Increasing Costs of U.S. Natural Disasters*. Geotimes, November 2005.

[6] Federal Emergency Management Agency (FEMA), *Building Community Resilience with Nature-Based Solutions: A Guide for Local Communities*. August 2020. Available at https://www.fema.gov/sites/default/files/2020-08/fema__riskmap__nature-based-solutions-guide__2020.pdf.

[7] FEMA, *National Strategy Recommendations: Future Disaster Preparedness*. September 6, 2013. Available at http://www.fema.gov/media-library-data/bd125e67fb2bd37f8d609cbd71b835ae/FEMA+National+Strategy+Recommendations+(V4).pdf.

[8] CRS Memo *Data Analysis for House Transportation and Infrastructure Committee*, January 14, 2015.

[9] FEMA, *Building Codes Save: A Nationwide Study*. November 2020. Available at https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes-save-study.

[10] Id.

[11] Id.

[12] H. Rept. 115–1098. Available at https://www.congress.gov/115/crpt/hrpt1098/CRPT-115hrpt1098.pdf

[13] Id.

- There is a benefit of $11 for every $1 spent by designing buildings to meet modern consensus-based codes and standards such as those developed by the International Code Council (ICC), versus the prior generation of codes represented by 1990-era design and National Flood Insurance Program (NFIP) requirements.[14]
- Hazard mitigation projects funded with federal grants provided by FEMA, the U.S. Economic Development Administration (EDA), and the U.S. Department of Housing and Urban Development (HUD) can save the country $6 in future disaster response and recovery costs for every $1 spent, according to more than two decades worth of data on these grants.[15]
- Generally, investing in certain mitigation measures above and beyond select requirements of the 2015 International Codes (I-Codes)—the model building codes developed by the ICC—can save an additional $4 for every $1 spent for certain hazards.[16]

MITIGATION ASSISTANCE AVAILABLE FROM FEMA

FEMA administers mitigation assistance via three main Hazard Mitigation Assistance (HMA) programs: Stafford Act Sec. 203 Predisaster Mitigation Assistance (PDM, 42 U.S.C. 5133); Stafford Act Sec. 404 Hazard Mitigation (HMGP, 42 U.S.C. 5170c); and the National Flood Insurance Act, as amended, Sec. 1366 Flood Mitigation Assistance (FMA, 42 U.S.C. 4104c).

Additionally, Public Assistance (PA) provided for infrastructure repair or replacement and Individual Assistance (IA) provided to individuals and households for residential repair or temporary forms of housing is subject to statutory, regulatory, and policy requirements to bring facilities up to the most recent consensus-based codes and standards. The goal of these various forms of assistance is to ensure that our nation's citizens and communities are resilient to various hazards.[17]

PDM (BRIC)

DRRA Sec. 1234 established of a steady stream of funding for a nationally competitive predisaster mitigation program. FEMA undertook a complete redesign of its previous iteration of Stafford Sec. 203 assistance and developed the *Building Resilient Infrastructure and Communities* (BRIC) program. As amended, the Stafford Act now allows the President to set aside from the Disaster Relief Fund (DRF) an amount equal to six percent of the estimated aggregate amount of assistance provided pursuant to Sections 403, 406, 407, 408, 410, 416, and 428 for major disasters.

The application window for the first grant cycle of BRIC closed at the end of January 2021. Grants are provided at 100 percent federal cost share and are capped at a maximum of $50 million.[18] Of the states, 49 of 50 submitted applications totaling $3.6 billion for the $500 million available for the cycle; application review is currently underway, with awards expected in summer 2021.[19] Under BRIC "mitigation projects must, at a minimum, be in conformance with the latest published editions (meaning either of the two most recently published editions) of relevant consensus-based codes, specifications, and standards that incorporate the latest hazard-resistant designs."[20] Additionally, FEMA may fund the development, adoption, evaluation, and enhancement of building codes and standards with BRIC awards.[21] In October 2020, the Trump administration set aside $500 million of the eligible $3.7 billion from the COVID–19 disaster declarations for the PDM/BRIC set-aside in the DRF.[22] Chairs DeFazio and Titus and Ranking Members Graves and Katko sent a letter urging then FEMA Administrator Peter Gaynor and then OMB Director Rus-

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[14] National Institute of Building Sciences "Natural Hazard Mitigation Saves Study." Available at https://www.nibs.org/page/mitigationsaves.

[15] Id.

[16] Id.

[17] FEMA. *Hazard Mitigation Assistance Guidance*. Available at https://www.fema.gov/grants/mitigation/hazard-mitigation-assistance-guidance

[18] FEMA. *Fiscal Year 2020 Notices of Funding Opportunities for Hazard Mitigation Assistance Grants*. Available at https://www.fema.gov/grants/mitigation/fy2020-nofo

[19] FEMA BRIC program staff briefing call with Committee staff. February 24, 2021.

[20] FY 2020 Building Resilient Infrastructure and Communities, Notice of Funding Opportunity (NOFO). Available at https://www.fema.gov/sites/default/files/2020-08/fema__fy20-bric-notice-of-funding-opportunity__federal-register__August-2020.pdf

[21] Stafford Sec. 203(g)(10).

[22] CRS. FEMA Pre-Disaster Mitigation: The Building Resilient Infrastructure and Communities (BRIC) Program (IN11515). December 28, 2020. Available at https://www.crs.gov/Reports/IN11515

sell Vought to reconsider the decision, and fully fund the set-aside to ensure a robust BRIC program in the coming years.[23]

HMGP

Stafford Sec. 404 provides a regular stream of post-disaster mitigation funding to states, tribes, and territories. For disasters under $2 billion in overall Stafford assistance, the HMGP grant is 15 percent of the aggregate assistance. This percentage decreases as disaster costs grow; 10 percent for disasters more than $2 billion and less than $10 billion, and 7.5 percent for disasters more than $10 billion and less than $35.333 billion. The federal cost share for HMGP grants is 75 percent.[24]

HMGP grants are managed by states, tribes, and territories, and are available for use broadly, beyond declared disaster areas for multiple types of hazards. Additionally, HMGP funds may fund the development, adoption, evaluation, and enhancement of building codes and standards.[25] The period of performance for these grants is exhausted seven years from the date of declaration and following an opportunity for extension.[26]

HMGP encourages the use of building codes and standards—such as the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) 24–14, Flood Resistant Design and Construction—wherever possible, and sub-applicants to states, tribes, and territories must document that their project is feasible and effective at mitigating risks of hazards.[27]

FMA

Flood Mitigation Assistance is not under the jurisdiction of the Committee on Transportation and Infrastructure, as it is authorized by the Committee on Financial Services as part of the National Flood Insurance Program (NFIP). FMA is a competitive grant program that provides funding to state, tribal, territorial and local governments for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the NFIP.

In the fiscal year 2020 grant cycle, which closed in January 2021, $200 million was available for FMA. Up to $4 million is available for project scoping (max grant award per applicant is $600,000), up to $70 million is available for community flood mitigation projects (max amount of assistance available to any NFIP-participating community is $30 million), and $126 million will be awarded for technical assistance, flood hazard mitigation planning, and individual flood mitigation projects.[28] The federal cost share for FMA grants is typically 75 percent, although mitigation projects for repetitive loss properties can adjust to 90 percent, and severe repetitive loss properties up to 100 percent federal cost share.[29]

Public Assistance (PA)

FEMA provides PA to restore facilities based on pre-disaster design and function. However, conformity with the latest published editions of relevant consensus-based codes and standards, incorporating the latest hazard-resistant designs is required. Additionally, establishing minimum acceptable criteria for the design, construction, and maintenance of residential structures and facilities may be eligible for assistance for the purposes of protecting the health, safety, and general welfare of the facility's users against disasters.[30]

Individual Assistance (IA)

In providing IA, FEMA adheres to all applicable codes and standards for the multiple types of assistance that may be available for disaster survivors, pursuant to Stafford Sec. 408(c)(2)(i) and 44 C.F.R. Part 206, Subpart D (*Federal Assistance to Individuals and Households*). When applicable, forms of IA also comply with the National Environmental Policy Act (NEPA); accessibility-related standards found in

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[23] Letter from Ch. DeFazio, RM Graves, Chair Titus, and Chair Katko to FEMA Admin. Gaynor and OMB Dir. Vought. October 15, 2020.

[24] *Stafford Act*, Sec. 404(a).

[25] *Stafford Act*, Sec. 404(f) and (g).

[26] FEMA. *Hazard Mitigation Grant Program*. Available at: https://www.fema.gov/grants/mitigation/hazard-mitigation

[27] 44 CFR §206.434(c). See also, FEMA *2015 Hazard Mitigation Assistance Guidance* and *Addendum*, available at https://www.fema.gov/grants/mitigation/hazard-mitigation-assistance-guidance.

[28] FEMA. *Fiscal Year 2020 Notices of Funding Opportunities for Hazard Mitigation Assistance Grants*. Available at: https://www.fema.gov/grants/mitigation/fy2020-nofo.

[29] Id.

[30] 44 CFR § 206.226(d)(1)–(5). See also 44 CFR § 206.226(f)(2), Public Assistance Program and Policy Guide (PAPPG) (2020), and FEMA Recovery Interim Policy FP 104–009–11.

the Architectural Barriers Act of 1968 and the Americans with Disabilities Act and associated ADA Accessibility Guidelines and HUD's Design Details for Accessible Disaster Relief Housing; 24 C.F.R. 3280, Subpart A (*Manufactured Home Construction and Safety Standards*); 44 C.F.R. Part 9, Subpart A (*Floodplain Management and Protection of Wetlands*); 24 C.F.R. 982.401 (*Housing Quality Standards (HQS), Subpart 1 Dwelling Unit: Housing Quality Standards, Subsidy Standards, Inspection and Maintenance*); 44 C.F.R. 206.117(b)(4) (*Permanent and Semi-permanent Housing Construction*); Recreation Vehicle Industry Association and California Air Resources Board (CARB) standards and/or the Toxic Substances Control Act Title VI requirements for formaldehyde emissions from composite wood products found in recreational vehicles; and Uniform Federal Accessibility Standards (UFAS).[31]

MITIGATION FRAMEWORK LEADERSHIP GROUP (MITFLG)

In the wake of the federal response to Hurricane Katrina, several reform efforts were authorized by the Post-Katrina Emergency Management Reform Act (P.L. 109–295, Title VI), including the establishment of the National Mitigation Framework, which included the creation of the Mitigation Framework Leadership Group (MitFLG). FEMA chairs the MitFLG, which is responsible for organizing mitigation efforts across the federal government, in cooperation and coordination with state, local, tribal, and territorial public-sector representatives. Additionally, the MitFLG assesses the effectiveness of these capabilities across the United States.[32]

The second edition of the National Mitigation Framework was released in June 2016. It focuses on a whole of community approach to mitigation and resilience, with a penultimate goal of nurturing a national culture of preparedness and reducing the impacts of disaster and the resultant loss of life and property.[33] In August 2019, the MitFLG released the National Investment Mitigation Strategy report (NIMS), which seeks to identify and measure the effectiveness of mitigation investments, and inform decisions on when and where to make investments using the whole of community approach that has been leveraged in other phases of emergency management. The NIMS encourages investment in both pre- and post-disaster mitigation—across the whole of community—with three shared goals: 1) showing how mitigation investments reduce risk, 2) coordination of mitigation investments to reduce risk, and 3) making mitigation investment standard practice.[34]

CONCLUSION

The Government Accountability Office (GAO) has long acknowledged that "limiting the Federal Government's Fiscal Exposure by Better Managing Climate Change Risks" is a high risk area.[35] FEMA, and the federal disaster relief and mitigation assistance it provides, combined with the efforts of the MitFLG, can and should play a significant role in reducing this exposure—ultimately ensuring that taxpayer resources are being invested in projects that are buying down future risk.

The hearing will highlight best practices across FEMA's efforts in encouraging and growing resilience and mitigation across the nation, as well as identify additional opportunities for continued enhancement, whether expanding eligible activities to mitigate against additional vulnerabilities to growing hazards, or better alignment between FEMA's pre- and post-disaster assistance programs.

WITNESS LIST

- Russell Strickland, Executive Director, Maryland Emergency Management Agency, *on behalf of the* National Emergency Management Association
- Roy Wright, President & CEO, Insurance Institute for Business and Home Safety
- Velma Smith, Senior Government Relations Officer, The Pew Charitable Trusts
- Ben Harper, Head of Corporate Sustainability, Zurich North America
- John "Chuck" Fowke, Chairman, National Association of Home Builders

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[31] FEMA. Response to Committee RFI on applicable codes and standards for IA. Provided March 10, 2021.

[32] FEMA. *Mitigation Framework Leadership Group (MitFLG)*. Available at: https://www.fema.gov/emergency-managers/national-preparedness/frameworks/mitigation/mitflg

[33] FEMA. *National Mitigation Framework (June 2016)*. Available at: https://www.fema.gov/sites/default/files/2020-04/National_Mitigation_Framework2nd_june2016.pdf

[34] FEMA/MitFLG. *National Mitigation Investment Strategy*. Available at: https://www.fema.gov/sites/default/files/2020-10/fema_national-mitigation-investment-strategy.pdf.

[35] Government Accountability Office. *Limiting the Federal Government's Fiscal Exposure by Better Managing Climate Change Risks*. Available at: https://www.gao.gov/highrisk/limiting-federal-governments-fiscal-exposure-better-managing-climate-change-risks.

BUILDING SMARTER: THE BENEFITS OF INVESTING IN RESILIENCE AND MITIGATION

THURSDAY, MARCH 18, 2021

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND EMERGENCY MANAGEMENT,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to call, at 2:03 p.m., in room 2167 Rayburn House Office Building and via Cisco Webex, Hon. Dina Titus (Chair of the subcommittee) presiding.

Present in person: Ms. Titus, Mr. DeFazio, Ms. Norton, Mr. Garamendi, Mr. Webster, Mr. Massie, Miss González-Colón, Mr. Guest, and Mr. Graves of Louisiana.

Present remotely: Ms. Davids, Mr. Pappas, Mrs. Napolitano, and Ms. Van Duyne.

Ms. TITUS. The hearing will come to order.

The chair is authorized to declare a recess at any time during today's hearing. Without objection, so ordered.

For Members participating remotely, if a Member is experiencing any connectivity issues, or any other technical problems, please inform the committee staff as soon as possible so you can receive assistance. I will make a good-faith effort to provide every Member experiencing any kind of connectivity issue an opportunity to participate fully in the proceedings.

It is the responsibility of each Member seeking recognition to unmute their microphone prior to speaking, and to keep your microphone muted when not speaking to avoid inadvertent background noise.

Should I hear any inadvertent background noise—dogs barking, cats meowing, children playing—I will request that the Member please mute their microphone.

And, finally, to insert a document into the record, please have your staff email it to DocumentsT&I@mail.house.gov.

We want to say good afternoon to everybody who is watching or participating and to thank our witnesses for being here today.

This is the subcommittee's first hearing of the 117th Congress. Before we get started, though, I would like to take a minute to recognize and welcome Mr. Daniel Webster of Florida, who is the new ranking member of the subcommittee. Our subcommittee has the distinction of being the most productive of any of the subcommittees under the Transportation and Infrastructure Committee, and I look forward to working together with Mr. Webster to keep that

record going as we advance policies and programs that safeguard the lives and livelihoods of the communities we serve.

Today's hearing is entitled "Building Smarter: The Benefits of Investing in Resilience and Mitigation." These are two intertwined topics that have enjoyed bipartisan attention and cooperation in the past.

The Federal Emergency Management Agency is, perhaps, responsible for the most significant amount of dedicated funding for pre- and post-disaster mitigation, and it leads the whole-of-Federal Government strategy to build a more resilient Nation. Ranking Member Webster is no stranger to these issues. As he noted to me, he previously worked in the Florida Legislature to enact the State's updated building codes in 1996, following the devastating impacts of Hurricane Andrew. Those updated building codes are one example of a cost-effective mitigation strategy, and they have led to more resilient communities all across Florida.

In insurance and emergency management circles, Florida's 2004 hurricane season is infamous for four major storms, Charley, Frances, Ivan, and Jeanne, that crisscrossed the State during a 6-week span, leaving virtually no square inch untouched.

In the wake of those storms, the Insurance Institute for Business and Home Safety conducted a study of residential construction comparing homes built before and after the 1996 adoption of the bolstered codes to examine the impacts on insurance claims. The IBHS study found that homes constructed after the new codes saw 60 percent fewer claims, and those claims were 42 percent less costly than the homes constructed before the strengthened codes.

Now, that is just one example, but we know that when homes, businesses, and other infrastructure are built stronger from the get-go, or are built back stronger following disasters, they are less likely to be seriously damaged in future events. That ability to bounce back faster is a measure of their resilience. Unfortunately, as more American communities grapple with ever increasingly severe natural hazards, we don't have to look hard to find examples of communities that we all represent that have been knocked down by recent disasters.

Last month, for example, Texas electric utilities suffered a multiday catastrophic failure resulting from an unusual deep freeze. Something similar happened in 2011 and also in 1989, and one of the recommendations of the multiple after-action reviews in 2011 was for generating companies to invest in insulation for equipment and heaters or other technologies that are commonly employed by their counterparts in areas more prone to cold weather.

While the power generators are typically investor-owned utilities and ineligible for mitigation assistance from FEMA, their failure to invest in this type of mitigation led Governor Abbott to request a major disaster declaration for all 254 Texas counties, to provide relief to the 4½ million households that lost power, and to the public buildings and other infrastructure damaged by the deep freeze.

In a briefing from Members of Congress and their staffs last month, the State's emergency manager, Chief Nim Kidd, estimated that the resulting damages experienced by public buildings, private businesses, and residents from last month's rolling blackouts from

days' long power outages would likely result in a need for more Federal disaster assistance, more than was allocated to respond and recover from 2018's Hurricane Harvey, and that was the State's costliest natural disaster up until that point.

And it was reported on Tuesday that at least 57 Texans lost their lives as a result of severe winter weather—from hypothermia, carbon monoxide poisoning, medical equipment failures, falls, and car crashes. We haven't even touched upon the ever-increasing threat of wildfires across the West and the expansive risks to low-lying communities from rising tides or storm surges.

The majority of the assistance FEMA provides in response to Presidential disaster declarations funds the repair or replacement of infrastructure. In addition to this Public Assistance funding, the Stafford Act provides for 15 percent of eligible disaster costs to be sent to disaster-impacted States to be used in post-disaster mitigation projects. This is referred to as the Hazard Mitigation Grant Program.

These projects have provided a significant return on investment to the taxpayer. Depending on the type of project, the National Institute of Building Sciences has demonstrated between $4 and $11 in reduced disaster recovery costs resulting from federally funded mitigation projects. Let me repeat that: A return between $4 and $11 depending on the project, and that is a key point for us to remember.

In 2018, following significant analysis work by this subcommittee, Congress amended the Stafford Act with the passage of the Disaster Recovery Reform Act. For the first time, taking lessons learned from the successful Post-disaster Mitigation Program, we decided that FEMA should have a similarly funded Pre-disaster Mitigation Program. This program existed prior to the reform bill, but was inconsistently funded by our colleagues on the Appropriations Committee. We thought we needed to take a closer look at this and found that the programs should differ from the Hazard Mitigation Grant Program, because it would be nationally competitive.

For a State like Nevada, that can make a huge difference. We have 86 percent of our land owned by the Federal Government, so we don't get much disaster relief, so pre-disaster mitigation would be a game changer.

FEMA's program is called BRIC, Building Resilient Infrastructure and Communities. It is too soon to tell how effective BRIC is, but just to look at the figures, the first application cycle had $500 million available; applications totaled more than $3.6 billion. So, obviously, there is a great demand.

So we want to examine what works and what is flawed in FEMA's approach to mitigation and resilience, how the Agency can further empower States, Tribes, Territories and localities to better leverage this type of program.

I look forward to all of our witnesses' and our Members' perspectives, and working with Ranking Member Webster and our colleagues to advance future legislative efforts out of this subcommittee to provide FEMA the resources and tools that it needs to make American communities more resilient, more resistant to predictable hazards.

[Ms. Titus' prepared statement follows:]

Prepared Statement of Hon. Dina Titus, a Representative in Congress from the State of Nevada, and Chair, Subcommittee on Economic Development, Public Buildings, and Emergency Management

Good afternoon, and thank you to our witnesses.

This is the Subcommittee's first hearing of the 117th Congress, but before we get started I just want to take a moment to recognize Mr. Daniel Webster of Florida, the new Ranking Member of the Subcommittee.

Our Subcommittee has the distinction of being the most productive of any under Transportation and Infrastructure and I look forward to working together to keep that record going as we advance policies and programs that safeguard the lives and livelihoods of the communities we represent.

Today's hearing is titled, "Building Smarter: The Benefits of Investing in Resilience and Mitigation"—two intertwined topics that have enjoyed bipartisan attention and cooperation.

The Federal Emergency Management Agency is perhaps responsible for the most significant amount of dedicated funding for pre- and post-disaster mitigation, and leads the whole of the federal government's strategy to build a more resilient nation.

Ranking Member Webster is no stranger to these issues. As he noted to me, he previously worked in the Florida Legislature to enact the state's updated building codes in 1996 following the devastating impacts of Hurricane Andrew.

Those updated building codes are one example of a cost-effective mitigation strategy. And they have led to more resilient communities all across Florida.

In insurance and emergency management circles, Florida's 2004 hurricane season is infamous for the four storms—Charley, Frances, Ivan, and Jeanne—that crisscrossed the state during a six-week span, leaving virtually no square inch of the state untouched.

In the wake of those storms, the Insurance Institute for Business and Home Safety conducted a study of residential construction, comparing homes built before and after the 1996 adoption of the bolstered codes to examine the impacts on insurance claims.

The IBHS study found that homes constructed after the new codes saw 60 percent fewer claims, and those claims were 42 percent less costly than the homes constructed before the strengthened codes.

That's just one example, but we know that when homes, businesses, and other infrastructure are built stronger from the get-go, or are built back stronger following disaster, they're less likely to be seriously damaged during future events. That ability to bounce back faster is a measure of their resilience.

Unfortunately, as more American communities grapple with ever increasingly severe natural hazards, we don't have to look hard to find examples of communities that we all represent that have been knocked down by recent disasters.

Last month Texas electric utilities suffered a multi-day catastrophic failure resulting from an unusual deep freeze.

Something similar happened in 2011 and also in 1989, and one of the recommendations of the multiple after action reviews in 2011 was for generating companies to invest in insulation for equipment and heaters or other technologies that are commonly employed by their counterparts in areas more prone to cold weather.

While the power generators are typically investor-owned utilities and ineligible for mitigation assistance from FEMA, their failure to invest in this type of mitigation led Governor Abbott to request a major disaster declaration for all 254 Texas counties to provide relief to the four and a half million households that lost power and to the public buildings and other infrastructure damaged by the deep freeze.

In a briefing for Members of Congress and their staffs last month, the state's emergency manager, Chief Nim Kidd, estimated that the resulting damages experienced by public buildings, private businesses, and residences from last month's rolling blackouts from days-long power outages would likely result in the need for more federal disaster assistance than was allocated to respond and recover from 2018's Hurricane Harvey, the state's costliest natural disaster to that point. And it was reported on Tuesday that at least 57 Texans lost their lives as a result of the severe winter weather—from hypothermia, carbon monoxide poisoning, medical equipment failure, falls, and car crashes.

We haven't even touched upon the ever-increasing threat of wildfires across the West, or the expansive risk to low-lying communities from rising tides or storm surges.

The majority of the assistance FEMA provides in response to Presidential disaster declaration funds the repair or replacement of infrastructure. In addition to this Public Assistance funding, the Stafford Act provides for 15 percent of eligible disaster costs to be sent to disaster-impacted states to be used in post-disaster mitigation projects—this is referred to as the Hazard Mitigation Grant Program (HMGP).

These projects have provided a significant return on investment to the taxpayer: depending on the type of project, the National Institute of Building Sciences (NIBS) has demonstrated between $4 and $11 in reduced disaster recovery costs resulting from federally-funded mitigation projects—ranging from the adoption of stronger building codes to physical infrastructure projects.

In 2018, following significant analysis and work by this Subcommittee, Congress amended the Stafford Act with the passage of the Disaster Recovery Reform Act. For the first time, taking the lessons learned from the successful post-disaster mitigation program, we decided that FEMA should similarly fund a Pre-disaster Mitigation (PDM) program.

This program existed prior to the reform bill, but was inconsistently funded by our colleagues on the Appropriations Committee. This program would differ from the Hazard Mitigation Grant Program in that it would be nationally competitive, with a goal of making investments in mitigation and resilience before disaster could strike.

For a state like Nevada, which rarely receives Hazard Mitigation assistance due to more than 84 percent of the state being federal lands and our few and far between Presidential disaster declarations, the new Pre-Disaster Mitigation program could be a game changer for communities I represent in Clark County, where an investment in a transformative mitigation project has the potential to benefit a significant number of people and businesses.

FEMA is calling the new Pre-Disaster Mitigation program "BRIC", for Building Resilient Infrastructure and Communities.

It's too soon to tell how effective BRIC is, but the first application cycle closed at end of January for a pot of $500 million dollars. FEMA received nearly a thousand applications for projects totaling more than $3.6 billion dollars.

The demand clearly exists across the nation for this kind of smart investment. FEMA funding—as well as smaller pots of federal funding for mitigation and resilience-focused projects—reduce future exposure to the federal government on the disaster relief side of the ledger.

We'll examine what works and what's flawed in FEMA's approach to mitigation and resilience, and how the Agency can further empower states, tribes, territories, and localities to better leverage the various types of available assistance to protect their communities.

I look forward to all of our witnesses' and Members' perspectives, and working with Ranking Member Webster and our colleagues to advance future legislative efforts out of this subcommittee to provide FEMA the resources and tools needed to help make American communities more resilient to predictable hazards.

Before I recognize Ranking Member Webster for his opening remarks, I ask unanimous consent to insert two items for the record.

First, a statement from the BuildStrong Coalition, which has been such a leader on these issues. And I believe a few of our witnesses today are also proud members of BuildStrong.

Additionally, the Committee has received a letter from the SmarterSafer Coalition outlining its priorities in this space, as well.

Without objection, so ordered.

Ms. TITUS. I thank you for your attention. And I now recognize Ranking Member Webster for his opening remarks.

I ask unanimous consent—before you begin, Mr. Webster, if you will indulge me—unanimous consent to insert two items into the record. One is a statement from the BuildStrong Coalition, which has been a leader on these issues. I believe a few of our witnesses today are actually members of BuildStrong. Also, the committee has received a letter from the SmarterSafer Coalition outlining its priorities in this space.

Without objection, so ordered.

[The information follows:]

Statement of the BuildStrong Coalition, Submitted for the Record by Hon. Dina Titus

On March 18, the Subcommittee will hold its first legislative hearing, "Building Smarter: The Benefits of Investing in Resilience and Mitigation." Chairwoman Titus and Ranking Member Webster are to be commended for leading the committee in prioritizing this initial hearing on mitigation and resilience investments to address the rising costs and losses associated with disasters, including how mitigating disaster impacts intersect with climate adaptation and serves as a core component of the national conversation on resilient infrastructure and communities. As the Committee considers the next chapter of disaster policy and legislation, the BuildStrong Coalition is honored to continue our role to drive the focus on laws, policies, and programs that aid in the creation of a disaster resilient nation. We remain ready to continue this work and are prepared to serve as a resource to advance your commitment to enhancing our country's resilience profile.

The BuildStrong Coalition, formed in 2011 to respond to an increasing number of severe disasters, is made up of a diverse group of members representing firefighters, emergency responders, emergency managers, insurers, engineers, architects, contractors, and manufacturers, as well as consumer organizations, code specialists, and many others committed to building a more disaster resilient nation. The BuildStrong Coalition has been a partner with this Committee in its work to investigate causes of, and devise the solutions to, the rising cost of disasters in the U.S. since you initiated this conversation in 2013. We have been honored to present witnesses and participants in hearings, roundtables, and briefings to identify opportunities for policy changes that promote mitigation and the smart investment of federal resources to address our country's increasing number of severe and costly weather events, including informing several provisions of the Disaster Recovery Reform Act of 2018 (P.L. 115–254).

In the face of growing climate risk, we have been focused on what legislative changes and policy initiatives are needed to appropriately incentivize smart mitigation and resilience activities and practices, while also removing the challenges and obstacles that may stand in the way or hinder the progress of disaster resilience. We implore the Committee to use this hearing as a launching pad for the next bipartisan legislative package to shape the resilience conversation across this country—to create a Resilient America.

This Committee stands poised to increase disaster resilience in the U.S. and ensure that disaster resilience remains at the forefront on the infrastructure, COVID–19 recovery, and disaster assistance reform conversation. This is the Committee's opportunity to influence the overall national resilience strategy and establish the framework for the next chapter in increasing disaster resilience in the U.S., including how resilience intersects with adaptation and responds to climate impacts, and is a core component of the national resilience conversation. This Committee must fill the leadership role in addressing climate impacts by acting on legislation that incentivizes and provides resources to facilitate smart, climate-conscious behaviors and mitigation and removes the moral hazards and policy impediments inhibiting decision makers from creating resilient systems and communities. The BuildStrong Coalition has developed the following policy recommendations and principles that are critical, supported by data and science, and should be included in the Committee's next legislative package on community resilience.

I. Secure More Resources for Mitigation

Congress should increase the funding for retrofits and investments in resilience before the next disaster, climate impact, or catastrophic failure.

Mitigation saves lives, property, and taxpayer money. Mitigation also saves the environment. But the federal resources to help build state and local capacity and fund risk-reducing, cost-effective mitigation projects that harden critical lifeline infrastructure and help individuals invest in residential resilience are woefully inadequate. FEMA and other Federal Agencies need more tools to help impacted communities recover smarter and stronger and end the cycle of build, damage, rebuild.

Legislation is needed to:

- Direct expired, unspent FEMA mitigation assistance to FEMA's new pre-disaster mitigation grant program, the Building Resilient Infrastructure and Communities (BRIC) Program.
- Increase the set aside for pre-disaster mitigation (BRIC program) from 6% to 15%.
- Authorize Hazard Mitigation Grant Program funding statewide for all states that requested hazard mitigation assistance under their major disaster declaration requests for COVID–19.

And we know that this is a smart use of Federal resources that will save taxpayer dollars. Federal funding that promotes better land use, modern science applied to home construction, and increased mitigation measures can dramatically reduce the devastation brought by these disasters. Based on the findings of the National Institute of Building Sciences (NIBS):

- Adopting Model Building Codes Saves $11 per $1 Invested
- Federal Mitigation Grants Save $6 per $1 Invested
- Exceeding Codes Save $4 per $1 Invested
- Mitigating Infrastructure Saves $4 per $1 Invested

II. Drive Resilient Homes and Communities through Strong Building Codes

Congress should create incentives for building stronger and tie existing federal funding streams to the adoption and enforcement of strong, modern building codes, in order to better protect homes, families, and communities.

Individuals and communities are kept safe in times of disasters through the strength of their homes and the infrastructure that provides critical resources and services in affected areas. This is particularly prevalent as we learn lessons from COVID–19 and begin to understand how to increase resilience to wildfires. Disaster-resilient and sustainable construction and the use of stronger building codes have been proven to save lives, reduce the damage of natural disasters, and protect the environment. Unfortunately, only a handful of states have adopted the most modern building codes, and many lack the resources to adequately implement codes. To help correct this paradigm at the federal level involves creating incentives that encourage state and local governments to adopt modern building codes, while simultaneously equipping communities with the tools and resources needed to carry out meaningful enforcement regimes.

III. Resilient Lifeline Infrastructure

Congress should require investments in lifeline infrastructure and those resources should be directed at risk-reducing, cost effective investments to promote the hardening of lifeline infrastructure and disaster-resilient construction and the adoption and implementation of risk-reducing standards.

Lifeline infrastructure refers to electric power, water and wastewater systems, natural gas and liquid fuel, telecommunication, and transportation. Disruptions in these systems due to disasters threaten lives and impede community recovery. By investing in the resilience of these systems, we can reduce, if not eliminate, the impact of disasters, allowing key infrastructure to be restored and reducing the duration and cost of recovery. Through the application of the highest building codes, standards, and technologies to these systems and ensuring access to resources to invest in mitigation by non-profit owners of infrastructure, we can ensure system-wide increases in resilience in key lifeline infrastructure.

Disaster-resilient and sustainable construction and infrastructure is important to reduce the damage of natural disasters and protect the environment. This involves applying the highest codes and standards and leveraging resources to support and incentivize the adoption and enforcement of building codes and professional standards. This includes standards that strengthen materials against all hazards including wind, flood, seismic, and ice. Most importantly, all disaster recovery and mitigation projects should incorporate smart technologies to improve monitoring and distribution for lifeline infrastructure and require the use of resilient and non-combustible materials standards for lifeline infrastructure.

IV. Incentivize Individual Investments in Resilience

Congress should incentivize investments in resilience through tax benefits, grant conditions, and easing administrative burdens.

In addition to more resources for mitigation and communities, both public and private entities need incentives to drive their investments in mitigation. Whether by supporting the creation of federal tax incentives that reward resilient behavior, the development of mitigation tax breaks, or other incentives, individuals and businesses will find it easier to invest in resiliency, including undertaking activities like retrofitting homes, if these resources are available. This would also foster private sector investment in mitigation through new financing opportunities. Targeted tax incentives and removing tax penalties will encourage resilient construction techniques to withstand damage from strong winds or flooding and prevent losses from wildfires and seismic events.

Through these investments, homeowners and communities ultimately save money through tax savings and avoided recovery costs and losses in the next disaster.

V. Use Resilient American Products

Congress should ensure the use of resilient, American-made products in the construction and retrofit of lifeline infrastructure.

Now more than ever, we need to support American jobs and American products. An investment in resilience across American communities must include long-term, non-emergency construction projects that maximize the use of American-made goods, products, and materials. These efforts create jobs and fuel the economic engines in our communities.

VI. Build Capacity

Congress should ensure that state, local, tribal, and regional entities are given the tools and resources to increase capacity and capability to identify risks and hazards and mitigate those risks before the crisis occurs.

It is clear that for this country to be successful in enhancing our resiliency, we must focus on capacity building for state and local governments and turn to considerations of sustainability, adaptability, and creative financial instruments that can be leveraged to drive socially responsible investments in resilience. State, local, and tribal governments must increase their ability to mitigate against all hazards. Accordingly, they must increase their ability to identify hazards and successfully implement these funds to accomplish selected risk-reducing projects. Increased engagement and education efforts on mitigation planning, program requirements, and opportunity awareness will enhance community resilience across all levels of government.

Further, regulatory controls must be loosened to facilitate and encourage public-private partnerships. Governments must work with the private sector to increase community and national resilience. The private sector is currently conducting high-level work throughout the resilience and mitigation arena and there is tremendous opportunity to utilize expertise and industry knowledge, take advantage of existing programs, identify best practices, and incorporate lessons learned from the private sector. By leveraging the private sector and encouraging and facilitating public-private partnerships, we can maximize available resources for the benefit of the entire country.

Conclusion

The BuildStrong Coalition calls on the House Committee on Transportation and Infrastructure Subcommittee on Economic Development, Public Buildings and Emergency Management to take the next critical step to drive disaster resilience across the nation through the introduction of legislation that would effectuate these policy ideals, changes in authority, development of incentives, and streamlining of assistance to serve our communities in an equitable and transformational way.

The BuildStrong Coalition and its members stand ready to partner with the Committee as it moves toward the introduction of the next piece of transformational disaster policy and legislation driving mitigation and resilience against disaster and climate impacts. The compelling arguments for these policy changes are grounded in overwhelming science and evidence. We would be honored to present subject matter experts, data, and best practices, as well as participants in hearings, roundtables, and briefings—a role we have filled many times in the past. We are excited to join congressional leaders like you as we identify opportunities for policy changes that promote disaster resilience and the smart investment of federal resources to address our country's vulnerable homes and communities, aging infrastructure, and the increasing number of severe and costly weather events. Together, we can help save the lives and property of our citizens.

Letter of March 17, 2021, from the SmarterSafer Coalition, Submitted for the Record by Hon. Dina Titus

MARCH 17, 2021.

Hon. PETER DEFAZIO,
Chairman,
Committee on Transportation and Infrastructure, U.S. House of Representatives, Washington, DC.

Hon. SAM GRAVES,
Ranking Member,
Committee on Transportation and Infrastructure, U.S. House of Representatives, Washington, DC.

Hon. DINA TITUS,
Chairman,
Subcommittee on Economic Development, Public Buildings, and Emergency Management, Committee on Transportation and Infrastructure.

Hon. DANIEL WEBSTER,
Ranking Member,
Subcommittee on Economic Development, Public Buildings, and Emergency Management, Committee on Transportation and Infrastructure.

DEAR CHAIRMAN DEFAZIO, RANKING MEMBER GRAVES, CHAIRMAN TITUS, AND RANKING MEMBER WEBSTER:

The SmarterSafer Coalition (SmarterSafer) is a diverse coalition of conservation and environmental groups, taxpayer-focused organizations, insurance and reinsurance interests, and housing advocates. As Congress turns its attention to comprehensive infrastructure legislation, SmarterSafer writes to express our priorities on the matter. We appreciate the opportunity to submit this letter into the record for tomorrow's hearing in the Subcommittee on Economic Development, Public Buildings, and Emergency Management entitled "Building Smarter: The Benefits of Investing in Resilience and Mitigation."

There is an important nexus between infrastructure funding, disaster preparedness, and "Building Smarter." American infrastructure, including roads, bridges, and stormwater systems, was not designed to account for a changing climate and is ill-equipped to withstand natural catastrophic risks. Roads and bridges are buckling under higher temperatures, increased snowfall, wildfires, and disastrous flooding. Stormwater management systems are overwhelmed by natural catastrophes.

SmarterSafer members remain united in our support for fiscally sound, environmentally responsible approaches to natural catastrophe and infrastructure policy. As such, we encourage you and your colleagues to address the nation's failing infrastructure in a manner that balances environmental protection and better stewardship of taxpayer dollars.

Pre-Disaster Mitigation

The federal government currently spends more on post-disaster cleanup and reconstruction than on pre-disaster mitigation. That equation must change if we want to better protect our communities from future natural catastrophes. Pre-disaster mitigation efforts protect individuals and protect taxpayer dollars. Every $1 invested in mitigation is estimated to save $6 on post-disaster spending. These investments are particularly appropriate as many communities across the country anticipate another year of devastating natural disasters, which will increase their vulnerability at the same time they continue to grapple with the COVID–19 crisis. SmarterSafer supports many elements of H.R. 2, the Moving Forward Act, that were not enacted in the 116th Congress including greater funding for pre-disaster flood mitigation efforts and investments in natural infrastructure and deployment of climate-resilient technologies, the importance of which are outlined below.

Natural Infrastructure

Natural infrastructure—including healthy wetlands, functional floodplains, forests, mangroves, and dunes—provides effective solutions to guard against flooding and erosion. NOAA estimates that U.S. coastal wetlands alone provide $23.2 billion in storm protection each year. During Hurricane Sandy, for example, wetlands reduced damages by more than 22 percent in more than half of the areas directly affected by the storm. Increased funding and incentives to protect and restore wetlands, watersheds, floodplains, and forests will strengthen our communities and eco-

systems. These natural features also provide important wildlife habitat and will assist in creating outdoor recreation opportunities and restoring tourism activity.

As we look to invest in climate-resilient and cost-effective infrastructure, greater emphasis should be placed on natural infrastructure that can absorb floodwaters and buffer and protect communities from increased catastrophic risk. Nature-based approaches should be used in combination with or as an alternative to gray infrastructure where feasible.

Climate-Resilient Infrastructure

From devastating wildfires in the Western United States to flooding in Houston to dam failures in Michigan, it's clear that our approach to infrastructure is failing. Climate resilient infrastructure is necessary to ensure that our families and communities are protected, as well as our future investments. Federal funds—whether provided through disaster assistance, Community Development Block Grants, or other programs—should be directed to outcome-driven projects that strengthen communities and reduce long-term risk. Federal infrastructure investments should require stronger minimum design standards and incorporate forecasts of future conditions for the lifespan of a structure.

In addition, high-quality information and data is necessary to inform strategic infrastructure investments and development decisions. SmarterSafer supports increased scientific climate data sharing within the government and between the public and private sectors. Bipartisan legislation like the Built to Last Act, introduced in the 116th Congress by Sens. Tammy Baldwin (D–WI) and Marco Rubio (R–FL) and Rep. Matt Cartwright (D–PA), would ensure that standards-developing organizations that issue building codes have access to forward-looking meteorological information, including data on wildfires and other environmental trends.

Infrastructure in America's Floodplains

America's public infrastructure remains threatened by more frequent and severe flooding. SmarterSafer members are very supportive of President Biden's recent executive order restoring the federal flood protection standard as an important step in protecting lives, communities, properties, and taxpayer investments. SmarterSafer has long championed House efforts to reinstate such a standard, including through the Flood Resiliency and Taxpayer Savings Act of 2020, introduced in the 116th Congress by Reps. David Price (D–NC) and Lee Zeldin (R–NY), which would promote resiliency standards and taxpayer protection with respect to infrastructure investments and flood risk. While recent progress has been made, Congress should act to require government-funded agencies involved in floodplain construction to follow certain mitigation strategies to ensure that funds are used for projects that can withstand disasters. Along those lines, SmarterSafer also supports the Build for Future Disasters Act of 2020, legislation introduced in the 116th Congress by Reps. Scott Peters (D–CA) and Andy Barr (R–KY) that would limit new construction inside federally designated floodplains.

We have consistently supported and will continue to ask Congress to consider preservation of green space and the elevation of structures above base-flood levels. Finally, Congress should also consider the racial inequities inherent in federal buyout programs that reflect and perpetuate discriminatory practices and historic redlining. According to numerous studies, buyouts disproportionately benefit white and wealthy communities. Low-income and minority homeowners and communities should be given priority and additional assistance to address and balance the history of placing low-income and minority housing in areas of higher risk.

Risk Transfer

The United States has an infrastructure funding gap of more than $2 trillion and the public sector alone cannot close it. Policymakers at all levels of government must find ways to make every dollar go further, and should consider enhanced public-private partnerships and risk-transfer opportunities. The private sector, particularly the insurance industry, has both the willingness and capacity to take on additional risk associated with natural disasters. By leveraging private financing and insurance and reinsurance availability, policymakers can shift some financial burdens associated with climate change from the government's balance sheet to willing private sector participants.

We also encourage the House to consider targeted data-driven measures that help Congress and the administration to identify communities most in need of climate adaptation. Opportunities for public-private partnerships and cost-sharing agreements should be given serious consideration in an effort to bolster private sector investments in climate resilient infrastructure.

The Role of Climate Research in Infrastructure Investment

We encourage you to consider our nation's research infrastructure especially as it pertains to climate risk, ocean science, disaster resilient engineering, and green infrastructure. COVID–19 further demonstrates the need for more resilient, comprehensive, and efficient research infrastructure, and is revealing unmet needs that are hampering the fight against the coronavirus pandemic. Congress should consider new investments in research infrastructure that are important to enhancing our nation's overall capabilities and competitiveness for years to come, including American-organized or staffed not-for-profits conducting vital research abroad, whether at sea, in biodiverse habitats or other in situ locations important to furthering U.S. research objectives. Additionally, we would encourage the Senate to advance any forthcoming measure that aims to improve the sharing of climate information.

Thoughtful infrastructure spending can and should simultaneously provide economic growth, security for communities, and long-term savings for taxpayers. We greatly appreciate your efforts and consideration of the aforementioned suggestions to promote fiscally and environmentally responsible infrastructure. Our coalition stands ready to be a resource to you and your colleagues as legislation to forward your infrastructure platform takes shape.

Respectfully,

SmarterSafer Coalition.

MEMBERS

ENVIRONMENTAL ORGANIZATIONS

American Rivers
Center for Climate and Energy Solutions (C2ES)
ConservAmerica
Defenders of Wildlife
National Wildlife Federation
Natural Resources Defense Council (NRDC)
Surfrider Foundation

CONSUMER AND TAXPAYER ADVOCATES

Coalition to Reduce Spending
National Taxpayers Union
R Street Institute
Taxpayers for Common Sense
Taxpayers Protection Alliance

INSURER AND REINSURER INTERESTS

Association of Bermuda Insurers and Reinsurers (ABIR)
The Chubb Corporation
Liberty Mutual Group
National Association of Mutual Insurance Companies (NAMIC)
National Flood Association
Reinsurance Association of America
Swiss Re
USAA

MITIGATION INTERESTS

Natural Hazard Mitigation Association

HOUSING

Habitat for Humanity
National Housing Conference
National Leased Housing Association

ALLIED ORGANIZATIONS

Allianz of America
American Consumer Institute
American Property Casualty Insurance Association (APCIA)
Center for Clean Air Policy
Friends of the Earth
Institute for Liberty
Zurich Insurance

Ms. TITUS. Mr. Webster.

Mr. WEBSTER. Thank you, Chair Titus, for holding this hearing today. I really appreciate it. I am thankful for the witnesses, including Mr. Fowke, who is from Florida, representing the National Association of Home Builders.

I am pleased to serve as ranking member of this subcommittee, look forward to working closely with the chair on issues critical to this subcommittee, including resiliency and mitigation, which are very important to Florida.

So, in 2015, work was done in this committee, and we learned that just 25 percent of the disasters accounted for more than 92 percent of the disaster costs. While disaster declarations have increased, these numbers show it is a small number of large disasters that are driving the disaster costs.

Ultimately, the real solution to lowering disaster costs is upfront investment in mitigation, which the chair talked about, hardening of existing structures, which is sometimes very economical, and yet, brings about much savings, not only the savings, but also strength to the building.

We know mitigation saves lives, and reduces property damages and disaster costs. Study after study shows, as the chairman said, that for every $1 invested in mitigation, $4 to $11 are saved.

We have seen the benefits of mitigation firsthand in Florida. After a devastating 2004–2005 hurricane season, Florida made specific policies and behavior changes to improve on our disaster preparedness, including an overhaul, which began quite a few years ago before that, to rewrite the building code and implement it.

The cornerstone of these changes was mitigation through resilient construction techniques and improved communication and coordination between the State and local agencies. Florida worked with industry leaders, homebuilders, the insurance industry, and other stakeholders on a regional-based approach, recognizing that a one-size-fits-all approach does not really work, but that leveraging incentive programs and other avenues to help manage costs to consumers would work.

These investments in mitigation help to protect Florida communities against hurricanes, flooding, and other hazards. Whether it is hurricanes, floods, or wildfires, ensuring the investments make sense and are cost-efficient is important to ensuring effectiveness.

I look forward to hearing from the witnesses today, and this is an important topic.

Thank you, Chair Titus, for holding this hearing. And I yield back.

[Mr. Webster's prepared statement follows:]

Prepared Statement of Hon. Daniel Webster, a Representative in Congress from the State of Florida, and Ranking Member, Subcommittee on Economic Development, Public Buildings, and Emergency Management

Thank you, Chair Titus, for holding this hearing today. I want to thank the witnesses, including Mr. Fowke from Florida representing the National Association of Home Builders.

I am pleased to serve as the Ranking Member of this subcommittee, and I hope to work closely with Chair Titus on issues critical to this subcommittee, including resiliency and mitigation.

Disaster costs have increased significantly over the years. In 2015, through work done by this committee, we learned that just 25 percent of all disasters accounted for more than 92 percent of disaster costs. While disaster declarations have increased, these numbers show it is a small number of large disasters that are driving disaster costs.

Ultimately, the real solution to lowering disaster costs is upfront investment in mitigation. We know mitigation saves lives and reduces property damage and disaster costs. Study after study demonstrates that for every $1 invested in mitigation $4 to $11 are saved.

We have seen the benefits of mitigation firsthand in Florida. After the devastating 2004 and 2005 hurricane seasons, Florida made specific policy and behavior changes to improve our disaster preparedness. The cornerstone of these changes was mitigation through resilient construction techniques and improved communication and coordination between state and local agencies.

Florida worked with the insurance industry, homebuilders, and other stakeholders on a regional-based approach, recognizing that a one-size-fits-all approach wouldn't work, but that leveraging incentive programs and other avenues to help manage cost to consumers would. These investments in mitigation help to protect Florida communities against hurricanes, flooding, and other hazards.

In 2018, we enacted significant reforms, including the Disaster Recovery Reform Act, that modernized FEMA's predisaster mitigation program and provided an ongoing funding mechanism. But just as critical as funding is the investment in proven mitigation measures appropriate for the specific hazards in a given area. Whether it's hurricanes, floods, or wildfires, ensuring the investments make sense and are cost-beneficial is important to ensuring effectiveness.

Ms. TITUS. Thank you, Mr. Webster.

Before recognizing our witnesses, I would ask for Mr. DeFazio, the chairman of the Committee on Transportation and Infrastructure, for his opening remarks.

Mr. DEFAZIO. Thank you, Madam Chair.

FEMA has been busy. It was quite a year—the pandemic, above average tornadoes, floods, hurricanes, and wildfires in the United States. And I have got to thank the people at FEMA. There were a lot of parts of the last administration that became pretty dysfunctional. FEMA did not, and they were able to deliver, and I appreciate all of the people who engaged in that hard work.

The Building Resilient Infrastructure and Communities program, the BRIC program as we call it, is totally oversubscribed. The demand is phenomenal. The savings are even more extraordinary and phenomenal, in addition to ongoing savings for the individuals, communities, businesses, in terms of reduced insurance costs when they undertake these activities.

In October, I led a bipartisan letter with Ranking Member Graves, Chair Titus, and then-Ranking Member Katko to FEMA Administrator Gaynor and OMB Director Vought, urging them to set aside the full $3.7 billion for BRIC from the COVID declarations. Unfortunately, they ignored that, and they set aside only $500 million. I am hopeful that that can soon be corrected by this administration.

And also, when we did the DRRA, the Disaster Recovery Reform Act, I think that was the last Congress, the Congress before—I can't remember anymore—we established a Post-disaster Hazard Mitigation Grant Program for FEMA for fire management assistance. And I think there are activities that need to be expanded and considered under that program.

For example, you probably can't move an entire community out of the wildland-urban interface when it comes to fire, but in the case of Blue River in my district, the fire was started by a fire that

fell from a pole with a severe and absolutely unprecedented unusual wind out of the northeast, which doesn't happen, but, hey, a lot of weird things happen these days.

So, considering to put the utilities underground, yeah, it is an additional cost, but it is a one-time cost. You are not going to have to put back the poles again or maybe put back the poles and start another fire again, and then go back and put the poles back up, et cetera.

So I think that we need to expand our view of what kinds of activities will be acceptable. And I don't believe all of this investment has to be borne directly by the Federal Government.

Going all the way back to the 113th Congress, I worked with Representatives Reed, Pascrell, and Diaz-Balart to introduce the Disaster Savings and Resilient Construction Act, which we will reintroduce. It provides tax incentives to encourage individuals and companies to basically prepare their homes and businesses to whatever is the predicted natural disaster and known risks in their areas, lessening costs of insurance claims and certainly future disaster relief. And I plan on working with our colleagues on the Ways and Means Committee, and, hopefully, they will advance the measure.

Just 3 years ago, the Republican-controlled Congress and White House decided that DoD had to establish a resilience standard for all its at-risk facilities, and everything critical had to be a minimum of 2 feet above base flood-level elevation. So, if it is good enough when the Federal Government invests money in the Pentagon and its bases, I think it should be for all federally funded infrastructure, and we will be looking in our surface bill to build back resilience.

Then during our February markup, my friend from Louisiana, Representative Garret Graves, offered an amendment to set aside $500 million of the $50 billion we gave to FEMA disaster relief to be used to establish a national flood standard. I am certainly open to working with him in pursuing one. My colleagues, Mr. Price of North Carolina and Mr. Zeldin of New York, have recently introduced legislation with a similar goal, which has been referred to the committee.

So we have got our work cut out for us to go forward in a bipartisan way, to work and help give FEMA the tools and the capability and the flexibility it needs to meet with new and evolving risks. BRIC is just one example of how quickly we could make these investments with the oversubscription of that program.

And with that, Madam Chair, I yield back the balance of my time.

[Mr. DeFazio's prepared statement follows:]

Prepared Statement of Hon. Peter A. DeFazio, a Representative in Congress from the State of Oregon, and Chair, Committee on Transportation and Infrastructure

Thank you, Chair Titus, and thank you to our witnesses for being with us today. The issues we'll be discussing have proven results as driving factors in reducing risk and future costs to the federal taxpayer for disaster relief.

As Chair Titus noted in her opening remarks, the return on investment is quite measurable and significant. And, this oversized return on investment reminds me

of the work done by the people at FEMA: whether they are administering disaster relief and assistance, funding mitigation projects, or undertaking efforts to bolster national resilience one individual or community at a time, they play an outsized role and punch well above their weight.

Representing a district recently impacted by catastrophic wildfires, I've seen FEMA work with partners at the state and local level, as well as with disaster survivors who have lost everything—it's worth taking a moment to recognize FEMA's seemingly tireless workforce.

In the last year alone, FEMA has been tapped to respond to the pandemic with a record-setting number of concurrent Stafford Act declarations; responded to above-average tornado, flood, hurricane, and wildfire seasons while operating under unprecedented COVID protocols; pushed tens of billions of dollars of assistance to state, tribal, territorial, and local partners in disaster relief and unemployment assistance; and now it is concurrently leading the effort to vaccinate the nation and squelch the pandemic while also assisting its sister federal agencies to provide more humane conditions for migrants seeking refuge in the U.S.

For all the work FEMA employees have done and will continue to do to help us recover from disasters—thank you.

Smart investments of Federal dollars in projects focused on mitigating risk and bolstering resilience is just basic good government, and will lessen the impacts of future disasters. When we help mitigate risk using the programs and efforts of FEMA, we make homes and the built environment of our communities more insurable—shifting the burden from the Stafford Act as being the de facto insurer of last resort for so much of the nation.

We know these programs are oversubscribed—just look at the volume of interest in the BRIC program for this cycle. It's imperative that BRIC is fully capitalized so it can fund an even greater number of projects in the out years.

Last October, I was proud to lead a bipartisan letter with Ranking Member Graves, Chair Titus, and then Ranking Member Katko to FEMA Administrator Gaynor and OMB Director Vought urging them to set aside the full $3.7 billion calculation for BRIC from the COVID declarations granted pursuant to the Stafford Act. Instead, the previous administration only set aside $500 million. This administration can correct for that mistake, but not at the expense of ongoing vaccination efforts.

In the DRRA, we successfully included the establishment of post-disaster HMGP funding for FEMA's Fire Management Assistance Grants, so that states that experienced wildfires of a magnitude warranting federal help could also benefit from post-disaster mitigation assistance. Additionally, we expanded eligible activities under the HMGP program to be inclusive of additional hazards, such as earthquake early warning technology.

Given the experiences of communities in Oregon, California, and other states running into roadblocks using the HMGP funding for certain activities in the wildland-urban interface (WUI), it appears that additional activities must be taken into consideration to ensure that the Hazard Mitigation Assistance programs address all hazards equitably.

For example, an entire community may not be able to be relocated out of the WUI, so it may be cost beneficial to underground utilities to prevent future disasters from taking them down, or it may make sense to rebuild a fire station in a lower-risk area of the WUI than to simply not build one back at all.

And, I don't believe that all of this investment must be borne directly by the Federal government. Going back to the 113th Congress, I have joined with Representatives Reed, Pascrell and Diaz-Balart to introduce the Disaster Savings and Resilient Construction Act, which is about to be re-introduced.

It would provide tax incentives to encourage individuals and companies to gird their homes and businesses from natural hazards and known risks, lessening costs of insurance claims and future disaster relief. I plan on working with our colleagues on the Ways and Means Committee and urge them to advance the measure this congress.

Nearly three years ago, a Republican-controlled Congress and President Trump agreed that the resilience of Department of Defense (DOD) facilities was worthy of establishing a resilience standard across the department. The FY19 John McCain Defense Authorization Act explicitly requires that DOD facilities constructed in a special flood hazard area must be built at a minimum of two feet above the base flood elevation. If the facility is deemed to be critical infrastructure—such as a power plant, hospital, school, or fire or police station—the minimum requirement is three feet above base flood elevation.

If it's good enough for the billions of dollars we invest in the DOD, then why not for other federally-funded infrastructure?

During our February markup, my friend from Louisiana, Representative Graves, offered an amendment to set aside $500 million of the $50 billion dollars we provided for FEMA disaster relief to be used to establish a national flood standard, and I'm open to working with him in pursuing one. Our colleagues—Mr. Price of North Carolina and Mr. Zeldin of New York—have recently introduced legislation with a similar goal, which has been referred to the Committee.

We have our work cut out for us. The T&I Committee has always taken on challenging tasks and tried to find a bipartisan path forward. I'd expect the same here. We'd all like to see our communities stronger and safer—more resilient from known risks.

The crush of applicants for BRIC is proof that there's no lack of shovel-ready projects that can get underway, put engineers and trades to work, and lessen the impacts of future disasters.

I look forward to working with Chair Titus as we move forward, and in finding areas of agreement with our colleagues across the aisle. Thank you.

Ms. TITUS. Thank you, Mr. Chairman.

Mr. Graves is not with us to make a statement, so we would now like to welcome the witnesses on our panel:

Mr. Roy Wright, who is president and CEO of Insurance Institute for Business and Home Safety; Ms. Velma Smith, senior government relations officer of the flood-prepared communities initiative for The Pew Charitable Trusts; Mr. Ben Harper, head of corporate sustainability, Zurich North America; Mr. John Fowke. Would you like to say something about Mr. Fowke, Mr. Webster? Didn't you say he was from Florida?

Mr. WEBSTER. Well, he is national chairman of the National Association of Home Builders, and he is also from Florida, a builder over in the Tampa area, Tampa Bay area.

Ms. TITUS. All right. We are glad to have him.

And Mr. Russell Strickland, I believe Ms. Norton would like to introduce him.

Ms. NORTON. Yes, Madam Chair. I would be pleased to introduce today as a witness, Mr. Russell J. Strickland from my neighboring State of Maryland. Mr. Strickland is an experienced emergency management professional who has more than 40 years of experience in the field of emergency services and first responder activities at the State and local levels of government, academia, and the private sector.

This includes expertise in fire and rescue services, emergency medical services, fire inspection and investigation, communications, and emergency management leadership.

Mr. Strickland currently serves as the executive director of the Maryland Emergency Management Agency. In his current role, Mr. Strickland leads the Agency that has primary responsibility and authority for disaster risk reduction and consequent management for the State of Maryland. This includes service as a direct advisor to the Governor during disasters and coordinating support for local government as requested.

With his extensive background, I am pleased that we have Mr. Strickland here to testify before us this afternoon. And I thank you, Mr. Strickland, and you, Madam Chair.

Ms. TITUS. Thank you, Ms. Norton.

We are delighted to have all of our witnesses. They certainly bring a level of professionalism and expertise to the panel, and we look forward to hearing from them.

Without objection, our witnesses' full statements will be included in the record. Since your written testimony has been made a part of the record, the subcommittee requests that you limit your oral testimony to 5 minutes.

We will now proceed with the witnesses and begin with Mr. Strickland.

TESTIMONY OF RUSSELL J. STRICKLAND, EXECUTIVE DIRECTOR, MARYLAND EMERGENCY MANAGEMENT AGENCY, ON BEHALF OF THE NATIONAL EMERGENCY MANAGEMENT ASSOCIATION; ROY E. WRIGHT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, INSURANCE INSTITUTE FOR BUSINESS AND HOME SAFETY; VELMA SMITH, SENIOR GOVERNMENT RELATIONS OFFICER, FLOOD-PREPARED COMMUNITIES INITIATIVE, THE PEW CHARITABLE TRUSTS; BEN HARPER, HEAD OF CORPORATE SUSTAINABILITY, ZURICH NORTH AMERICA; AND JOHN C. FOWKE, CHAIRMAN, NATIONAL ASSOCIATION OF HOME BUILDERS

Mr. STRICKLAND. Thank you for the kind introduction and for holding this hearing, and allowing me to testify on behalf of the National Emergency Management Association.

In the State of Maryland, we rely on investments in mitigation, and a whole-community approach to addressing our vulnerabilities. These investments ensure that when a disaster strikes, the communities affected will be able to effectively respond and build back stronger.

However, our journey to be a more resilient State and Nation faces some challenges that, with your permission, I would like to address.

First, your foresight in creating the Building Resilient Infrastructure and Communities program, BRIC, has allowed States to implement projects that will strengthen our collective resilience for the long term. However, State and local needs currently far exceed available funding. As such, we strongly encourage Congress to work with FEMA and OMB to allow the full 6-percent set-aside of eligible disaster spending every year for this program. BRIC is transformative in its capacity to support large infrastructure projects, particularly those related to stabilizing community lifelines, and that is why it is so important.

Further, building resilience for Maryland's energy and communications lifelines is central to supporting our communities as they try to return to normal operations after a disaster. Given that in many States, the private sector owns and operates most critical infrastructure, leveraging BRIC funding with public-private partnerships will strengthen our resilience. The Federal Government remains an active partner in supporting our mitigation projects and strengthening our resilience. Earlier this year, Maryland submitted an application to the BRIC program, and we are looking forward to getting started.

Second, FEMA's all-or-nothing approach to building code standards in this year's BRIC application scoring may unfairly place communities that are still working through that adoption process at a disadvantage, perpetuating a cycle that puts people and buildings at risk.

In my written statement, I go into detail about the benefits provided by using building codes that are appropriate to local hazards to avoid disaster losses and increase resilience. While these benefits are a worthwhile investment, States often must conduct a lengthy legislative process to adopt new building codes. FEMA should remain flexible in supporting States and locals as they work to adopt the building codes appropriate to their risk profiles.

Another challenge in our efforts to build back stronger is the complexity of many FEMA grant programs and the extensive requirements that the jurisdiction must satisfy to access FEMA funding. For example, one difficulty is assisting the many locals who do not have sufficient staffing and capacity to develop successful grant applications. This is particularly challenging for our low- and moderate-income communities that face repetitive hazard risk. We should work together to simplify the requirements or provide increased funding to hire staff to assist local jurisdictions in writing competitive grants.

With disasters increasing in size and frequency, our recovery and resilience efforts must be in line with building back stronger, rather than the previous capabilities and capacity. As you know, the State of Maryland is threatened by a host of hazards in a coastline vulnerable to sea level rise and erosion. In addition to our work with Federal partners, Maryland is working to establish cross-sector partnerships that reduce risk to our people, property, and critical infrastructure. Effective coordination is critical, and Maryland has seen successful partnerships with FEMA through hazard mitigation assistance, and our hosting of a FEMA integration team which places FEMA personnel in a State emergency operation center.

None of these challenges, however, cannot be overcome. A strong working relationship with this committee has brought us this far, and I am sure will bring more opportunities for success in the future.

On behalf of the State emergency managers, thank you, again, for holding this hearing and drawing attention to the needs of the emergency management community. Emergency management is a team sport, and we will surely be more successful in saving lives and property when we work together.

Thank you very much.

[Mr. Strickland's prepared statement follows:]

Prepared Statement of Russell J. Strickland, Executive Director, Maryland Emergency Management Agency, on behalf of the National Emergency Management Association

Thank you, Chairman Titus, Ranking Member Webster, and distinguished members of the Committee for allowing me to testify today.

I am proud to testify today representing the National Emergency Management Association (NEMA). NEMA represents the state emergency management directors of all 50 states, territories, and the District of Columbia. As Executive Director of the Maryland Emergency Management Agency and on behalf of my colleagues in state emergency management, we thank you for holding this discussion on the importance of investing in mitigation and resilience.

UNDERSTANDING THE LANDSCAPE OF MITIGATION AND RESILIENCE

As disasters become more frequent and larger in scale, scope, and complexity, we know we will never be able to respond our way out of the vulnerabilities our communities face. Instead we must invest in mitigation projects that work with our communities to build resilience where it is needed most. These investments are key to ensuring that when a disaster occurs the communit(ies) affected will be able to withstand its impacts and rapidly recover.

Communities need to be supported and provided resources to pursue a pathway to increase their resilience. This includes support for their mitigation projects from inception to implementation. We must also place comprehensive, transformational mitigation at the forefront of our national security strategy to reduce risk. We also have to be flexible with each community and recognize that each has its own set of unique risks and vulnerabilities. Then, we can identify obstacles and provide solutions to overcome them and continue to build upon our successes.

I am known among my colleagues for saying, "mitigation is the center of the universe," because these projects are imperative as we seek to avert the worst possible impacts of disasters and prepare our communities for when the next disaster strikes. As a coastal state Maryland is prone to a host of water-related hazards, including flooding, severe storms, and hurricanes, as well as tornadoes, earthquakes, and excessive heat. This is in addition to the risks faced across our nation by threats such as pandemics. Mitigation activities can be as individual as washing hands and wearing a mask to combat COVID–19 or purchasing flood insurance when living in a flood zone or as large as conducting coastal restoration to mitigate the impacts of climate change in the Chesapeake Bay.

Resilience must be made actionable to be effective. The NEMA Resilience Committee is focused on considering methods to ensure that resilience is incorporated into all stages of emergency management, from updating preparedness and mitigation plans to incorporating resiliency principles into exercises and rebuilding stronger post-disaster.

Maryland and other states across the nation are working to inculcate a culture of preparedness and promote resilience through increased public awareness of risk, enhancements to critical infrastructure, and mitigation projects that incorporate nature-based solutions and public-private partnerships.

THE MARYLAND EXPERIENCE

Success

As we collectively move beyond a traditional mitigation mindset to one that incorporates large infrastructure projects and partnerships we must go beyond tradition to think broadly about resilience. Building dynamic partnerships across the whole community to include non-profits and the private sector will expand our capacity to reduce risk across the landscape. Maryland, under the leadership of Governor Larry Hogan, is making great strides in establishing partnerships across sectors and across nations in order to bring innovative solutions to the challenges we are facing. During his 2019–2020 chairmanship of the National Governors Association, Governor Hogan made strengthening the resilience of America's critical infrastructure a top focus for states.

Challenges

Among the most significant challenges to increasing mitigation and resilience projects is the need for funding that is flexible and accessible to vulnerable low- and moderate-income communities. Many communities that are at elevated levels of hazard risk are those with limited resources to invest in disaster risk reduction.

Relatedly, grant applications involve all levels of government, ranging from local to state to federal. Many grants have cumbersome proposal and application requirements. This further exacerbates the challenges for jurisdictions without sufficient staff to shepherd an application to its fruition. Continuing to streamline processes at the federal level where possible will increase engagement from under resourced jurisdictions, and their strengthened resilience will enhance our local, state, and national resilience.

BRIC PROGRAM AND SET-ASIDE

Section 1234 of the Disaster Recovery Reform Act (DRRA) of 2018 (P.L. 115–254) authorizes the National Public Infrastructure Pre-Disaster Mitigation fund, which has been implemented as the Building Resilient Infrastructure and Communities (BRIC) program. The program provides opportunities for increased whole commu-

nity collaboration to pursue transformative mitigation projects. The first application period for this new program closed at the end of January 2021.

Maryland submitted a proposal to remainage the Middle Branch of Baltimore City. The area is home to the Nation's first Urban Wildlife Refuge but plagued by flooding and environmental degradation. The BRIC proposal will be the catalyst to address flooding and climate change risk and support a vulnerable community with valuable environmental resources. Additionally, this area supports critical infrastructure and facilities, such as Harbor Hospital and a main thoroughfare to support activity for the Port of Baltimore. Reducing the flooding risk will continue to ensure the protection of these vital community services.

BRIC provides opportunities to support capacity and capability building activities for communities to identify and develop resilience projects. However, there are opportunities for greater flexibility within this program in order to support the development of complex, innovative projects and also prioritize resources for vulnerable communities. The current State set-aside of $600,000 for each State, Territory, and District of Columbia is far too limited to support the development of the types of resilience projects needed to combat the risks on the horizon.

BRIC is funded by a set-aside of up to six percent of estimated disaster grant expenditures. For the initial offering, FEMA made $500 million available and the total applicant pool totaled $3.6 billion dollars. This clearly demonstrated the need and desire among state, local, tribal, and territorial governments to invest in mitigation if the opportunity is available. As such, we strongly urge Congress to work with FEMA and the Office of Management and Budget (OMB) to ensure that the full six percent set-aside is available each year.

Supporting the Implementation of Consensus-Based Building Codes

Strong building codes save lives and protect property. A commonly cited statistic (and appropriately so) from a series of ongoing National Institute of Building Sciences (NIBS) studies is that mitigation investments return $6 for every $1 invested, but even more impressively, the study's authors found that there is a national benefit of $11 in return for every $1 invested in designing buildings to model building codes.

We have seen this play out nationwide where newer building codes have been implemented. Notably, Alaska underwent a 7.0 earthquake in late 2018 that was very geographically similar to the famed 1964 earthquake which killed more than 100 people. In 2018, however, with the adoption of model building codes there were no reported deaths or serious injuries.

Last year FEMA released *Building Codes Save: A Nationwide Study* which concluded that the U.S. will avoid $132 billion in losses from hazard events by 2040 because of buildings built to international standards. While not all codes are appropriate in all instances, ensuring building codes meet the needs of a locality and its hazard profile has a demonstrated impact on community resilience in the event of a disaster.

This year a piece of the scoring rubric for BRIC worth 20 percent of the total score is whether the applicant has a mandatory building code adoption requirement (2015 or 2018 versions of the International Building Code and International Residential Code). These points are awarded in an all-or-nothing fashion, potentially disadvantaging those applicants who do not have the capability to change building code standards within their states unilaterally and must undergo a lengthy stakeholder and legislative process to do so. FEMA has stated that it wishes to support the adoption of appropriate building codes through BRIC but if applicants are disadvantaged because of their older building codes and unable to obtain funding for those projects it perpetuates a cycle that leaves buildings and people less safe. Especially in the initial years of the BRIC process, we encourage FEMA to be understanding of the different status of codes nationwide and work collaboratively and not punitively to support the states as they work to raise their building code standards.

Integrating Community Lifelines Into Mitigation and Resilience Efforts

BRIC is an opportunity to create transformative, community-based projects that work with the private sector, homeowners, locals, and other stakeholders that incentivizes large infrastructure projects for community lifelines. Governor Hogan recently testified before the U.S. Senate Committee on Environment and Public Works on the importance of investing in resilient transportation and infrastructure projects which bolster our collective resilience in the face of disasters and cyber

threats [1]. As a designated community lifeline, resilient infrastructure and transportation networks will enable areas affected by disaster to more rapidly return to normal function.

Ensuring community lifelines, particularly energy and communication, are resilient against hazard impacts is a priority for Maryland and many other states to ensure the safety and security of our residents post-disaster. Community lifelines are often owned and operated by the private sector, further underscoring the need to embrace partnerships and educate those outside of traditional emergency management on the role everyone can play in mitigation and resilience.

BUILDING BACK STRONGER

An immediate post-disaster priority is beginning the long process to rebuild a community. Increased resilience helps us to do that more quickly, as those in the community are more prepared and ready for the impacts. However, with the scale of disasters growing we must be prepared to build back stronger in anticipation of the future, rather than building back to previous capacity and capability which was insufficient.

As always when working with multiple organizations and levels of government, coordination can always be improved. Maryland has seen significant benefits in this space from the placement of a FEMA Integration Team (FIT) within the Hazard Mitigation and Public Assistance programs. These FEMA personnel have served to expedite processes and be a dedicated source to ensuring resources are made available to disaster survivors as soon as possible.

MEMA continues to see successes in FEMA's Public Assistance 406 Mitigation programs and Hazard Mitigation Assistance programs. In 2018, Frederick County, MD sustained intense damages due to flooding. Through the Public Assistance 406 Mitigation program we were able to go above an in-kind replacement to implement a larger scale resilience project that will reduce future losses to residential and commercial properties within the community. Through the Hazard Mitigation Assistance programs we are continuing to build upon these efforts by pursuing funding to increase the level of protection of the surrounding infrastructure.

A significant challenge when it comes to building back stronger is the length of time between when a disaster declaration is approved and when the funding associated with that declaration is available in the impacted areas. Streamlining federal requirements and processes while still ensuring judicious stewardship of taxpayer dollars is critical to helping communities when they need it most.

On August 4, 2020, Tropical Storm Isaias made landfall in Maryland resulting in widespread flooding and several tornadoes touching down in our rural communities. These impacts were additionally challenging as we were in the midst of COVID–19 response efforts. Due to COVID–19 restrictions on travel, the Joint Preliminary Damage Assessment was done remotely for the vast majority of the event. This then places a documentation burden on state and local personnel that is not typically seen at this phase of the process, making meeting the 30-day deadline for a declaration request impossible. Changes were also made to the PDA guide during the pandemic that were conflicting and prohibitive when considering how to mitigate damaged infrastructure during the Public Assistance project phase.

Maryland's request for federal assistance through a Presidential Major Disaster Declaration was initially denied and was finally awarded through the appeals process six months later on February 4, 2021. This six-month delay caused us to miss opportunities to build upon the State's resilience and implement mitigation projects. Citizens do not have the ability to wait months to receive assistance and return to their homes and businesses. Our local governments are not able to wait months to make repairs and improvements to critical infrastructure. We urge Congress to work with FEMA in order to continue to streamline federal assistance programs in order to expedite programs and capitalize on mitigation opportunities.

CONCLUSION

On behalf of the state emergency managers, thank you again for holding this hearing and drawing attention to the needs of the emergency management community. In Maryland, we are acutely aware of the need to build upon the momentum from the implementation of the BRIC program to further improve mitigation and resilience efforts to ensure we effectively support our communities in their time of

[1] Senate Committee on Environment and Public Works hearing on "Building Back Better: Investing in Transportation while Addressing Climate Change, Improving Equity, and Fostering Economic Growth and Innovation." February 24, 2021. https://www.epw.senate.gov/public/index.cfm/hearings?ID=A076F488-6A1E-41DB-9279-7C943023D8D9

need. As you consider the topics of this hearing, please remember that investing in mitigation and resilience makes real differences in the lives of those affected by disasters and allows us to build back smarter to lessen the impacts of future events.

Ms. TITUS. Thank you, Mr. Strickland.

Mr. Wright.

Mr. WRIGHT. Good afternoon, Chair Titus, Ranking Member Webster, and members of the committee. I appreciate the opportunity to be with you all today.

If 2020 has taught us anything, it is that the home is of paramount importance, and for too many, vulnerable to the forces of Mother Nature.

The dangers of COVID–19 led Americans to seek refuge in their homes, juggling remote work, childcare, and other necessities of life under a single roof. The year 2020 showed us that housing is infrastructure. Yeah, housing is infrastructure.

And yet, 2020 should also be remembered as the year that climate change barged through the front door of American families. The year 2020 delivered the most active Atlantic hurricane season on record, the most named storms in history, the outlandish number of acres that were burned by wildfire, and the Midwest derecho that was the costliest thunderstorm in our Nation's history. NOAA reported another 2020 record. There were 22 weather and climate disasters that broke through the $1 billion cost mark.

A look at 2020 in a broader context: while natural perils last year were particularly bad, it was not an anomaly. There is a pattern of major disasters that just won't let up. That is a factoid. So what do we do about it? We must adapt, and adapt now. In an era where severe weather continues to disrupt lives, displace families, and drive financial loss, our team at the Insurance Institute for Business and Home Safety developed the science and building practices so that the places where people live, learn, work, worship, and gather, are safe, stable, and strong.

The risk is on an escalating path. Our partners, the Reinsurance Association of America, have been leveraging private sector analytics and public data to visualize the interplay between natural hazards, housing stock, and socioeconomic vulnerabilities.

I want you to look at the specifics in my written testimony, but here is the central point: We must leverage public-private partnerships if we are going to focus limited resources on the places of greatest impact.

As IBHS studies wind, rain, hail, and wildfire, we see specific and actionable pathways that will bend down these risk curves. But we cannot allow resilience to be a luxury item. Home and community resilience cannot be the exclusive option of the top two quartiles of income in this country.

So, some congressional pathways for strengthening the resilience of American homes: First, encourage strong statewide building codes. As you contemplate legislation, target those investments at places where we can spur new and sustained commitments by States to using modernized codes. We need the total investment to grow, not just switch out local dollars and replace them with Federal grants.

For those Americans who have the means to take actions, we need to nudge them to do so with resiliency tax credits, like the bipartisan bill that Chairman DeFazio mentioned.

And where the pathway to home resilience is not readily affordable, we need to use national and State policy mechanisms to achieve our goal. The BRIC program could be better calibrated to fund residential resilience projects.

What would it look like if we had created community disaster resilience zones, a derivation of the Build America Bonds that drove private sector funding to address natural disaster risks of exposed communities, particularly focusing on underserved socioeconomic areas.

Next, we need to prioritize resilient infrastructure. The cascading disaster in Texas last month put a clear spotlight on something we have known, but have long ignored. The resilience of homes is intrinsically connected to the resilience of community infrastructure, especially water and energy.

As Congress works with the Biden administration to develop an ambitious infrastructure bill, we urge this subcommittee to champion resilience and climate change adaptation as central objectives of that legislation. Do not miss the opportunity to reduce the future costs of disaster relief by making resilience to severe weather and changing climate a central component of the infrastructure. We need to extend this to public buildings. You all know this quite well with category E under the Stafford Act. Stop incentivizing communities to skip insurance, because they know FEMA will simply pay the bill.

In closing, Americans are not powerless against severe weather. It is possible to reduce the damage inflicted today and into the future. Meeting this pressing need will require an all-of-the-above approach.

I look forward to your questions.

[Mr. Wright's prepared statement follows:]

Prepared Statement of Roy E. Wright, President and Chief Executive Officer, Insurance Institute for Business and Home Safety

Members of the Subcommittee, thank you for the opportunity to speak with you today about the importance of residential resilience as we think about strengthening families, communities, and adapting to the adverse effects of future climate conditions. My name is Roy Wright, and I am President & CEO of the Insurance Institute for Business & Home Safety (IBHS). IBHS is a 501(c)(3) organization, enabled by the property insurance industry's investment, to fund building safety research that leads to real-world solutions for home and business owners, helping to create more resilient communities.

Severe weather disrupts lives, displaces families, and drives financial loss. IBHS delivers top-tier science and translates it into action so we can prevent avoidable suffering, strengthen our homes and businesses, inform the insurance industry, and support thriving communities. The perils we study at IBHS are part of the natural world in which we live, but social and economic disasters occur when these perils meet human populations that live or work in harm's way. In order to break the cycle of destruction, it is essential to address all aspects of the building performance chain: where you build, how you design and construct, and how well you maintain and repair. As a building science institute, IBHS focuses on the ways that weather behaves, what makes homes and businesses vulnerable, and how our buildings can be more resilient. We exist to help ensure that the places where people live, learn, work, worship, and gather are safe, stable, and as strong as the best science can equip them to be.

Our research teaches that improving residential resilience can require an assortment of actions, incentives, and stakeholders. To make a home more resilient to wildfire, for example, takes individual, collective, and governmental action. The homeowner must take care of basic yard maintenance, create a zone of defensible space around the house, use non-combustible building materials, and take steps to prevent embers from entering the home. Even those property-specific actions may not be sufficient, as the other houses, structures, and vegetation in the surrounding area must also be maintained appropriately. Community and government action, like creating fuel breaks, maintaining common spaces, and managing wildland fuel sources are also important. To protect a single home, an "all of the above" approach is necessary.

The same is true at the national level. Resilience to the natural perils we face, particularly when one considers the effects climate change has on these perils, requires an assortment of initiatives designed to strengthen American homes. These programs should seek to leverage public and private financing, data, and analytics to maximize our national competencies in the resilience space, regardless of where those competencies sit. Today, I will make the case for investments in residential resilience; provide a set of pathways that Congress can take to help make resilience more available for all Americans, regardless of their financial means; and propose several ways that resilience can be incorporated into upcoming infrastructure bills. Strengthening our resilience to natural perils and climate change is among the most pressing challenges we face as a nation, but solutions are within our reach.

The Case for Residential Resilience

1. A Changing Climate Increases Natural Perils

If 2020 taught us anything, it is that the home is of paramount importance—and for too many, vulnerable to the forces of Mother Nature. The dangers of COVID–19 led Americans from all fifty states to seek refuge in their homes, juggling remote work, child-rearing, and all the other necessities of life under a single roof. And yet, 2020 should also be remembered as a year of natural fury—the year that climate change affected families across the country. Last year delivered the most active Atlantic hurricane season on record, with the most named storms in history, the worst wildfire season ever, with a record-shattering 18 infernos of 100,000 acres or more across the West, and a Midwest derecho that was the most costly thunder storm in national history. According to reporting from the NOAA's National Centers for Environmental Information, 2020 set a record of 22 billion-dollar weather and climate disasters in the United States. However, we must look at 2020 in the broader context: while natural perils last year were particularly bad, they were not anomalous. 2020 was the sixth consecutive year in which ten or more billion-dollar weather and climate disaster events have occurred in the United States. Considering this trend, we must adapt by making our families, businesses, and communities more resilient to a changing climate and associated severe weather.

The Reinsurance Association of America (RAA) has developed a tool that leverages publicly available data to visualize the interplay between natural hazards, housing stock, and socio-economic vulnerabilities. Using the data pulled from, among other sources, the Federal Emergency Management Agency's National Risk Index and the U.S. Census Bureau, the RAA tool provides us with the ability to pinpoint—at the census tract, county, or Congressional district level—where natural perils, older housing stock, and disadvantaged populations converge to create zones of heightened vulnerability and risk. Exhibit A to this testimony demonstrates how this tool can be used by analyzing data for two Congressional Districts: Nevada-01 and Florida-11.

In the Chairwoman's district, Nevada's 1st District, the tool demonstrates that the most significant natural peril is earthquake, with the earthquake-related Expected Annual Loss scores ranging from relatively moderate to very high. Clark County has a low community resilience score assigned by FEMA, meaning that the county has minimal ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. At a census tract level, FEMA's social vulnerability scores for the Chairwoman's district range considerably, but many are in the top two quartiles as compared to the rest of the nation. This means that many of the people in Nevada-01 are, using FEMA's definition in its National Risk Index Primer (December 2020), susceptible "to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood" when considering "the social, economic, demographic, and housing characteristics of a community that influence its ability to prepare for, respond to, cope with, recover from, and adapt to environmental hazards." Moreover, many of the housing units in the district were built prior to 2000 and over half were

built prior to 1990, demonstrating an aging housing stock that was not built to modern building codes. Put together, Nevada's 1st District is a good candidate for expanded federal mitigation aid, as it has unmet needs, a vulnerable population, an aging housing stock, and areas of heightened risk of earthquake loss.

In the Ranking Member's district—Florida's 11th District—the tool demonstrates that hurricane, high wind, and wildfire are the natural perils most contributing to Expected Annual Loss. Hurricane, the most significant peril in the district, could cause the most damage to people and property in the eastern part of the district—particularly in Lake County. In addition, the FEMA scores for community resilience are in or near the bottom quartile of the nation in each of the counties in the district, meaning that the counties lack the resources to respond and recover from a natural disaster. Further, the FEMA social vulnerability data suggests that much of the population in this district has relatively high vulnerability as compared to the rest of the country. The age of the housing stock in Florida-11 is mixed, with more than fifty percent of housing units in the district built before 2000. This district, too, would benefit from increased investments in residential and community resilience.

These areas highlight where resilience investments are most needed. The work that RAA has done demonstrates the analytic role that the private sector—and particularly the insurance industry—can play to help policymakers at all levels of government develop resilience-strengthening policies that will respond to the deepest needs.

2. Solve with Research

The core perils studied at the IBHS Research Center are wind, wind-driven rain, hail, and wildfire, all relevant to today's hearing because they could become more frequent and destructive with a changing climate. The design of our Research Center—with 105 fans capable of generating wind speeds approximating the gusts of a Category 3 Hurricane—provides unique capabilities to replicate real world weather conditions that arise during high wind and convective storms. We have developed a unique capability to replicate the density, hardness, and kinetic energy of natural hailstones to assess the durability and damageability of asphalt shingles and other products. We also have made significant, long-term investments wildfire research. Wildfire is one of the most important perils we study at the IBHS Research Center. This is the only place beside real-world wildfire events that can expose full-size buildings and building components to realistic thermal exposure of flames and embers. Creating a realistic scenario to study building vulnerabilities to wildfire has made IBHS the epicenter of wildfire research over the past decade and has attracted other research organizations to collaborate with IBHS. In addition to work at our facility, our scientists and partners have conducted post-disaster investigations to examine the factors that contributed to the losses from these destructive fires. IBHS' best-in-class science fills knowledge gaps to achieve significant social and economic benefits across all regions and demographics of America.

In choosing specific research projects, we are driven by our mission of translating our research into action. That means that we choose science that can shape building codes and standards, evolve our FORTIFIED program of beyond code resilience standards, influence building professionals and products, improve consumer choices, and advance sound public policy solutions. At a fundamental level, consumers deserve to have confidence that the time and financial investments they make in resilience will live up to their reasonable expectations. Our research demonstrates that home and business resilience is available at a range of price points, and that poor choices or inaction can result in damage or destruction when severe weather strikes.

3. Build and Retrofit for a Resilient Today and Tomorrow

Due to the research conducted at IBHS, actions to strengthen the resilience of residential structures are not just knowable but known. For instance, when we think about the perils of wind and wind-driven rain, we start with the roof. When roofs fail, they can kick-start a cascade of failures such as water infiltration, projectile damage, and destruction of rooftop equipment, resulting in as much as 70–90 percent of insured residential losses from some disasters and deeply disrupting those who relied on their roofs for protection. It is critical to educate home and business owners to pay more attention to their roof and to understand how to extend its life and reduce the likelihood of storm-related damage. IBHS research shows one easy way to achieve this is by applying tape over the roof deck's joints before the underlayment is applied (this is called a "sealed roof deck"). The process costs only several hundred dollars for a typical roofing installation but can save tens of thousands of dollars in the event the roof cover is blown off during a high or prolonged

wind event. Small investments today can prevent large losses in the future—but we must find ways to get people to pay attention and act.

Strengthening resilience to wildfire poses a significant challenge. Our field observations following the worst 2017/2018 California fires indicate that understanding survivability is complex, with many different factors combining to determine whether a structure was destroyed, damaged, or relatively unscathed. Notwithstanding these complexities, research has shown there are steps that give a home a much better chance of surviving an encounter with wildfire. As with wind perils, homeowners should start with their roof, using only Class A roofing materials that provide the most fire resistance. Homeowners should also pay close attention to the five foot "ignition zone" around their home, maintaining a buffer zone free of vegetation, yard debris, structures like sheds, and other combustible materials. Similar maintenance should be maintained under existing decks, which should be constructed with non-combustible materials if possible. Additionally, using ⅛ inch or finer metal screens in openings to attics, vents, gables, and crawlspaces can prevent flying embers from entering the home. Guidance on these actions can be found in IBHS's "Suburban Wildfire Adaptation Roadmap," which fills a critical gap in wildfire science by identifying effective and actionable ways to drive down the growing losses that occur when wildfire spreads beyond the wildland-urban interface (WUI) into dense suburban communities, as well as our *WILDFIRE READY* guide, both of which were released last year.

While some of the actions that can mitigate the risk of wildfire are low-cost or are based primarily on sweat equity, other retrofit options—such as replacing siding and windows with non-combustible alternatives—can be costly and, for some, unaffordable. Addressing the cost barrier for resilience is one place where government programs can help make resilience to natural perils a reality for more families and communities.

Congressional Pathways for Strengthening the Resilience of American Homes

Federal legislation is an essential part of the "all of the above" approach needed to strengthen residential resilience. Through targeted policies, programs, and funding, Congress can encourage responsible decision-making at the state, local, Tribal and territorial (SLTT) level, incentivize resilience investments by homeowners, financially support resilience for disadvantaged populations, and improve existing federal pipelines for resilience funding. Collectively, these actions can help narrow the resilience gap in the United States and better prepare families and communities for severe weather and a changing climate.

1. Encourage Strong, Statewide Building Codes

Strong, and strong enforced, building codes are an important tool to improve resilience. Building codes are sets of regulations, standards, and guidelines adopted by states and local communities to promote the construction of safe and durable structures. Historically, codes focus on life safety, but through proper application, they also can reduce the disruption natural hazards have on our lives. FEMA's 2020 "Building Codes Save" study found that existing codes will result in $132 billion in losses avoided between 2000 and 2040. If all new buildings in the United States were built to modern editions of model building codes, the losses avoided would be more than $600 billion. However, adoption and enforcement of building codes are not uniform across the country, or even within some of our most hazard-prone states. In fact, the FEMA study reported that 30 percent of new construction occurs in communities with either no codes at all or codes that are more than twenty years outdated. This must change, and federal action can encourage the adoption and enforcement of strong, state-wide building codes based on the most current model codes.

- A mitigation provision in the Bipartisan Budget Act of 2018 included new Public Assistance cost-share incentives for states to invest in resilience, including an increased federal share (up to 10 percent more) for Stafford Act funding to states and territories that undertake eligible mitigation actions like adopting current building codes. Congress can amend the Stafford Act to give FEMA the flexibility to use a portion of the cost-share for all disaster relief and mitigation programs as a tool to encourage strong building codes and other pro-resilience actions by SLTTs.
- Congress can amend the Stafford Act to direct FEMA's Building Resilient Infrastructures and Communities (BRIC) program and Hazard Mitigation Grant Program (HMGP) to create set-asides to incentivize new state-level building code enactment, modernization, and enforcement. These funds should target the *cre-*

ation and expansion of building code activities, not simply fund what is ongoing in given jurisdiction.

2. Promote Resilient Retrofits with Financial Incentivizes

While building codes are a fundamental tool for shaping the resilience of tomorrow's homes, they do not strengthen resilience where Americans live today. Only retrofits can improve the resilience of existing houses.

Social science suggests that effectively evaluating risk—particularly high impact, low likelihood risk like natural disasters—is challenging. When it comes to natural perils, people usually feel more protected than they are. For those with the financial means to invest in resilient retrofits, government incentives can provide the additional nudge they need to act. The tax code is a place where Congress can create financial incentives that encourage homeowners to invest in their own resilience.

- Congress can revisit resilient tax credit bills from the last Congress such as H.R. 3462 (the "SHELTER Act") or H.R. 7979 (the "Disaster Savings and Resilient Construction Act of 2020"), which would have provided tax credits for eligible expenses paid by individuals and businesses for purchases that help reduce potential damage from hurricanes, flooding, and other forms of natural disaster. Tax credits for resilience investments are most effective when they are available for sunny day resilience actions as well as those taken in the post-disaster context.
- Congress can end the federal taxation of the benefits individuals and businesses receive from state-based catastrophe-loss mitigation programs, such as the California Bolt + Brace program for strengthening buildings located in earthquake prone areas, and the Strengthen Alabama Homes program, which provides grants funds to upgrade to a FORTIFIED Roof. In the 116th Congress, H.R. 5494—the "Catastrophe-Loss-Mitigation Incentive and Tax Parity Act of 2019"—would have eliminated tax lability for amounts received as part of certain state-funded grant programs. Passage of such legislation would allow homeowners to take maximum advantage of state resilience grants.

3. Make Resilience Available for All

Residential resilience should not be a luxury only available for those with financial means. According to sociological research, disabled, elderly, low income, and other disadvantaged people are less likely to prepare for disasters, evacuate safely, avoid physical or psychological trauma, or recover quickly and fully. Low-income residents account for a meaningful percentage of the population in many coastal communities and other areas that face climate risk, often in the most vulnerable housing. This reality places an even higher priority on resilience programs that prevent avoidable damage to the places these populations live.

Providing a higher degree of financial support for the residential resilience of disadvantaged populations is not just a matter of equity and public health—although it is both—it is a responsible investment of tax dollars. Improving resilience reduces the costs of future natural disasters and the economic disruption associated with related dislocations. In addition, providing federal funding for resilience projects spurs economic development in needy communities, as many residential resilience projects are dependent on skilled roofers, contractors, and other technicians. Congress can consider the following measures to improve the resilience of our most vulnerable populations.

- Housing for disadvantaged populations should be based on three-prong foundation of affordability, resilience, and energy-efficiency. By doing so, it is possible to create sustainable and affordable homes that reduce costs in the short term through reduced water and energy bills and avoid future loss, disruption, and displacement through resilient construction or retrofits. The convergence of affordability, resilience and energy-efficiency is already occurring in Louisiana, where an affordable housing project from the New Orleans Redevelopment Authority mandated that affordable housing be built to IBHS's FORTIFIED standard and the Energy Star Homes Version 3.0 standard.
  - Congress can support this type of sustainable housing by mandating resilience investment set-asides in all appropriations for affordable housing. In the last Congress, H.R. 5187—the "Housing is Infrastructure Act of 2020" would have provided additional funding for public housing, rural housing, Tribal housing, supportive housing for the elderly and differently abled, and affordable housing. In each instance the bill would have reserved 10 percent of funding for activities related to energy and water efficiency. This Congress can take up a revised version of this bill so that it includes a 20 percent set-aside for activities related to energy and water efficiency and resilience.

- In addition, Congress can reauthorize the Weatherization Assistance Program and expand it to provide technical support and financial assistance for resilience projects as well as energy efficiency.
- Although tax credits such as those contemplated by proposals like the SHELTER ACT can incentivize homeowners of financial means, they do not help low- and moderate-income populations who have neither adequate taxable income for the credits to be meaningful nor the resources to make resilience investments without more significant aid. Congress can explore making resilience tax credits transferable to expand their applicability for all Americans. Transferable tax credits for resilience investments could allow private and non-profit organizations to use the credits as a funding stream for residential resilience projects in the affordable housing space.
- Congress can create a Community Disaster Resilience Zones (CDRZ) and related bond program to direct public and private sector resources to address significant natural disaster risk of exposed communities with an emphasis on underserved socio-economic areas. By providing preferential treatment for investments in these zones, such a program would catalyze private sector investments in projects that strengthen residential and community resilience in at-need communities.

4. Optimize Existing Federal Pipelines for Resilience Funding

Congress already devotes significant resources to resilience, in both the pre-disaster and post-disaster contexts. In 2018, Congress made significant strides towards supporting resilience to natural perils by passing the Disaster Recovery Reform Act of 2018, which led to the creation of the BRIC program. By authorizing the President to set aside six percent of the total amount of disaster recovery grants awarded from the Disaster Relief Fund for pre-disaster resilience investments, Congress steered a powerful shift in the way the federal government prepares communities for future natural disasters. Now that the BRIC program has been implemented, we have greater insight into how Congress could further optimize this important resilience tool.

- The 25% state cost-share for BRIC funding may create a significant barrier for underserved communities with small tax bases and fewer resources in taking advantage of the program. This inherently inequitable outcome runs contrary to the purpose of the program. Congress can address this issue by allowing greater flexibility for the state cost-share of BRIC funds (i) by allowing states to buy down their share through resilience-advancing actions like smart land use and modern building codes and (ii) by allowing SLTT entities to partner with private and philanthropic sources to pay for some of the cost share. While SLTTs should always have some skin in the game, greater flexibility in putting together the state cost-share will make BRIC more meaningful for underserved communities and, thus, more equitable.
- The BRIC program could be better calibrated to fund *residential* resilience projects in two ways. First, Congress can direct FEMA to create a pilot program to help establish residential resilience grant programs. Grants are more effective tools than reimbursements, especially for disadvantaged populations, because funding is provided up front. Second, the BRIC application process can be streamlined to make it easier for projects involving multiple structures to qualify for funding by instituting a benefit cost analysis (BCA) waiver for SLTT initiatives that fund certain kinds of residential resilience projects, such as grant programs supporting Fortified retrofits. FEMA has previously taken steps like this for other programs, such as in the Wind Retrofit Guide for Residential Buildings (P–804).
- Congress can amend the Stafford Act to make BRIC and HMGP funds interchangeable in two key respects. Successful BRIC applicants should be awarded applicable HMGP funds before BRIC funds—a change that will spend down unused HMGP funds and prevent BRIC oversubscription. Additionally, expired HMGP funds should be swept into the BRIC program to avoid wasting government funding earmarked for resilience projects. By making BRIC and HMGP funds more interchangeable, FEMA can maximize its ability to fund resilience projects.

In addition to BRIC, Congress has an opportunity to strengthen other government programs intended to build residential and community resilience both before and after natural disasters. The following opportunities could strengthen, expand, or otherwise optimize existing programs in ways that will aid residential resilience.

- The time after a natural disaster, particularly one which displaces a family, is the worst time to contend with government bureaucracy. The process by which homeowners apply for post-disaster relief from FEMA, HUD, and SBA should

be simplified and streamlined. Congress can direct these agencies and departments to develop a single application and tracking process to support Americans seeking government aid when they are most vulnerable.

- The Small Business Administration (SBA) provides post-disaster low-interest loans to business owners and homeowners, one of the primary sources of financial assistance for long-term disaster recovery. These resilience-supporting loans are only available in the disaster recovery context. Congress can direct SBA to expand its physical damage loan and mitigation assistance programs to apply in the pre-disaster context as well, helping homeowners to finance sunny-day resilience projects.
- The Department of Housing and Urban Development's Community Development Block Grants-Disaster Recovery Program (CDBG–DR) is designed to provide funds to address needs not met by other federal disaster recovery programs. Consistent with the recommendation by the House Select Committee on the Climate Crisis, Congress should permanently authorize the HUD CDBG–DR program.

PRIORITIZING RESILIENT INFRASTRUCTURE

Last month, we witnessed the devastating, cascading impacts that vulnerable infrastructure can have on the resilience of homes. When a cold snap caused power outages throughout the state of Texas, unheated pipes froze and burst—resulting in the unfamiliar sight of residents boiling melted snow for drinking water and causing the dislocation of families and billions of dollars in losses.

As this cascading chain of damage in Texas demonstrates, the resilience of homes is intrinsically connected to the resilience of community infrastructure, especially water and energy infrastructure. As Congress works with the Biden Administration to develop an ambitious infrastructure bill, we urge this Subcommittee to champion resilience and climate change adaptation as central objectives of that legislation. The failure to make resilience to severe weather and a changing climate a central component of new infrastructure is a missed opportunity that will result in higher disaster relief costs for generations to come.

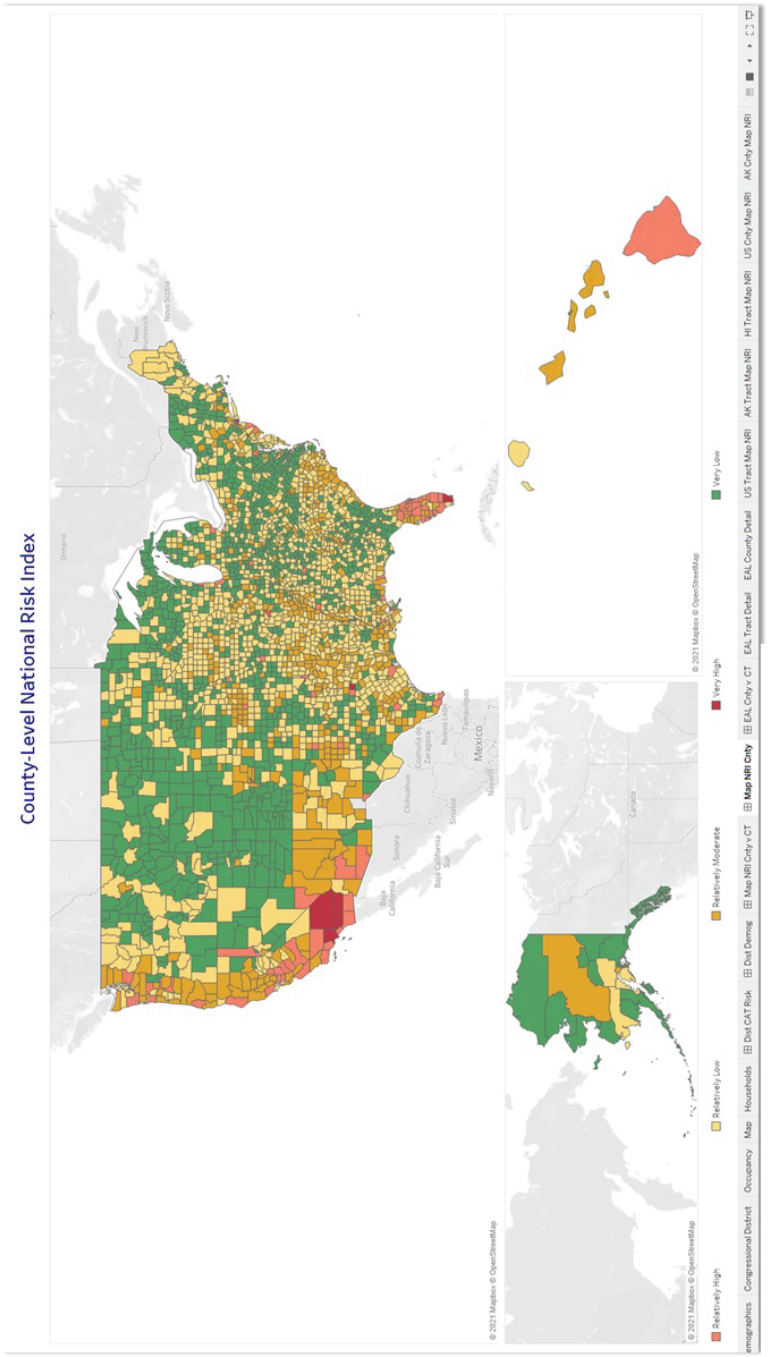
In this context, we suggest three additional policies and programs that Congress could consider that would advance the resilience of families, communities, and our Nation.

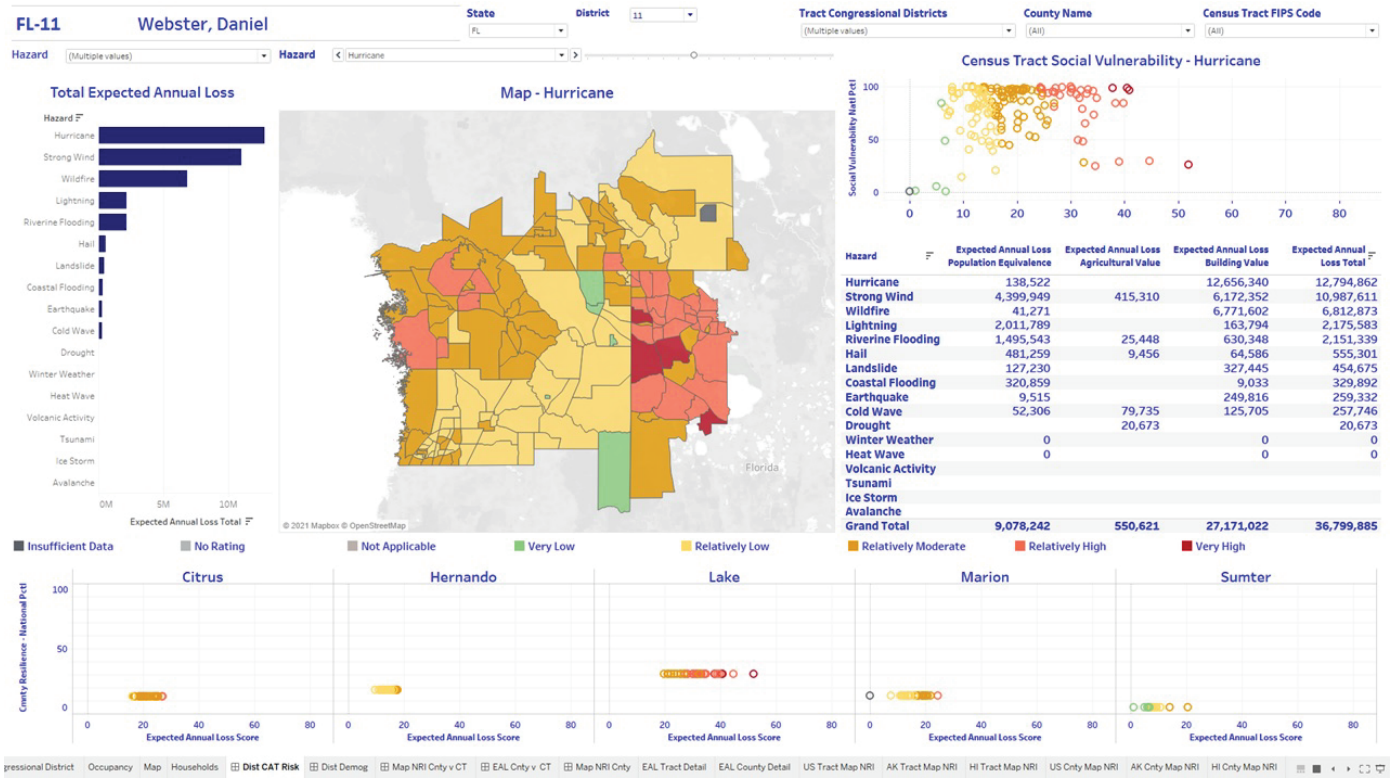
- On his first day in office, President Biden reinstated the Federal Flood Risk Management Standard (FFRMS), which requires that federally funded projects be resilient to flood hazard. The common-sense purpose of the FFRMS is to provide reasonable assurance that the American taxpayer need not pay twice for the same project. Congress should enshrine the FFRMS in statute and expand it to require that federally funded projects be designed and built for resilience to other significant natural perils, including high winds and wildfire. Above all, ensure that this Flood Standard applies to *all funds expended under any new infrastructure bill* being considered by the full Committee.
- Public buildings and facilities that are built to withstand natural perils can provide a refuge during natural disasters, contribute to the continuity of government services following the disaster, and can be affordably insured. Too often, however, they are not built with resilience in mind and are not insured, instead contributing to both the resilience gap and the insurance coverage gap. Congress should encourage and help fund the resilience of public buildings and facilities. Additionally, and as proposed by the House Select Committee on the Climate Crisis, Congress can allow SLTTs to use Stafford Act funds for the payment of insurance premiums and deductibles. Together, this can result in public buildings and facilities that are physically and financially more resilient.
- Congress can also consider putting limits on Stafford Act funding for SLTTs without appropriate insurance coverage for public buildings, so that Public Assistance is not treated as a de facto public insurance program.

In closing, I would like to thank you for the recognizing the importance of resilience and the critical role IBHS research plays to help strengthen the built environment. Americans are not powerless against severe weather—it *is* possible to reduce the damage inflicted today and in the future. Meeting this pressing need will take an "all of the above" approach for which Congress plays an essential role. I appreciate the opportunity to share some of our ideas with you today.

APPENDIX A

Data provided by the Reinsurance Association of America (RAA)




FL-11
Webster, Daniel
State
FL
District
11
Tract Congressional Districts
(Multiple values)
County Name
(All)
Census Tract FIPS Code
(All)
Hazard
(Multiple values)
Hazard
Hurricane
Total Expected Annual Loss
Hazard
Hurricane
Strong Wind
Wildfire
Lightning
Riverine Flooding
Hail
Landslide
Coastal Flooding
Earthquake
Cold Wave
Drought
Winter Weather
Heat Wave
Volcanic Activity
Tsunami
Ice Storm
Avalanche
0M
5M
10M
Expected Annual Loss Total
Map - Hurricane
Florida
© 2021 Mapbox © OpenStreetMap
Census Tract Social Vulnerability - Hurricane
Social Vulnerability Natl Pctl
100
50
0
0
10
20
30
40
50
60
70
80
Hazard
Expected Annual Loss Population Equivalence
Expected Annual Loss Agricultural Value
Expected Annual Loss Building Value
Expected Annual Loss Total
Hurricane 138,522 12,656,340 12,794,862
Strong Wind 4,399,949 415,310 6,172,352 10,987,611
Wildfire 41,271 6,771,602 6,812,873
Lightning 2,011,789 163,794 2,175,583
Riverine Flooding 1,495,543 25,448 630,348 2,151,339
Hail 481,259 9,456 64,586 555,301
Landslide 127,230 327,445 454,675
Coastal Flooding 320,859 9,033 329,892
Earthquake 9,515 249,816 259,332
Cold Wave 52,306 79,735 125,705 257,746
Drought 20,673 20,673
Winter Weather 0 0 0
Heat Wave 0 0 0
Volcanic Activity
Tsunami
Ice Storm
Avalanche
Grand Total 9,078,242 550,621 27,171,022 36,799,885
Insufficient Data
No Rating
Not Applicable
Very Low
Relatively Low
Relatively Moderate
Relatively High
Very High
Citrus
Hernando
Lake
Marion
Sumter
Cmnty Resilience - National Pctl
100
50
0
0
20
40
60
80
Expected Annual Loss Score
pressional District
Occupancy
Map
Households
Dist CAT Risk
Dist Demog
Map NRI Cnty v CT
EAL Cnty v CT
Map NRI Cnty
EAL Tract Detail
EAL County Detail
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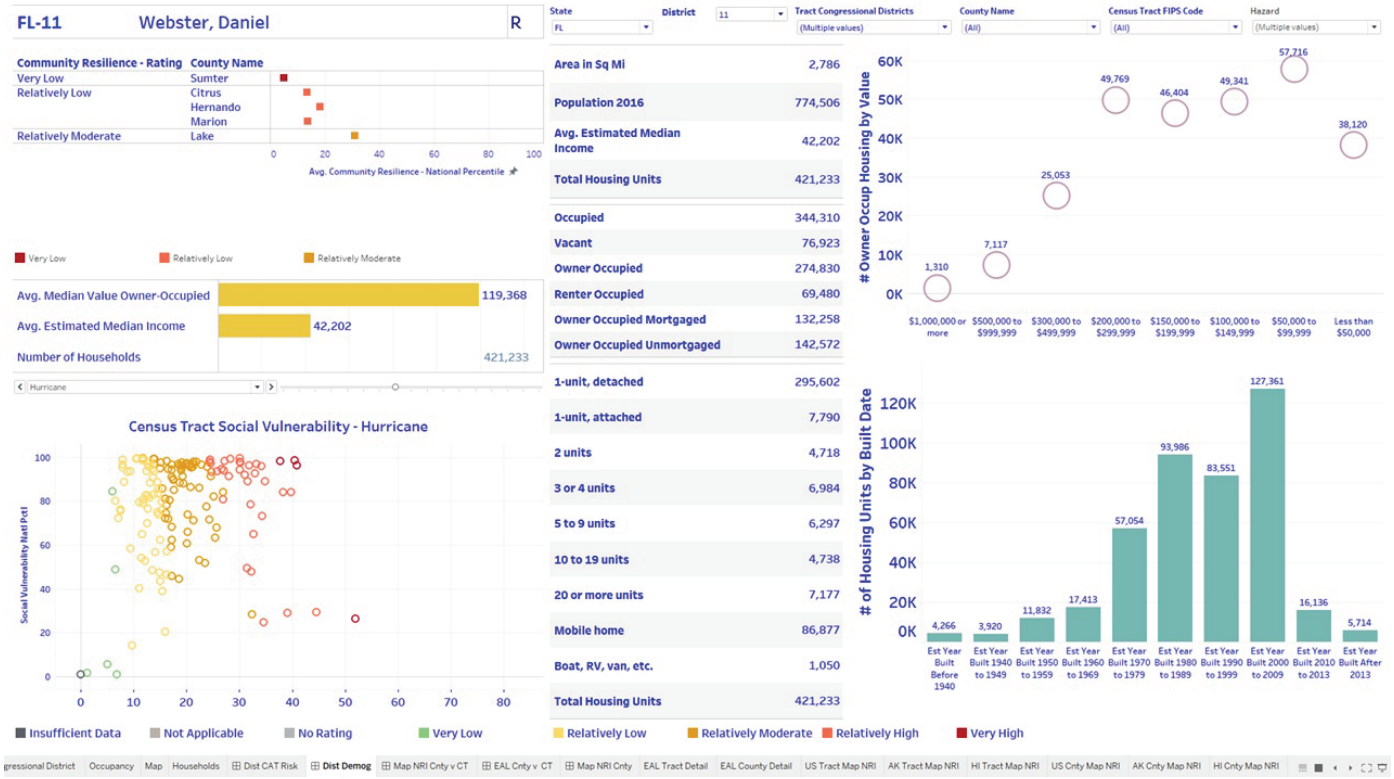
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Tract Congressional Districts
(Multiple values)
County Name
(All)
Census Tract FIPS Code
(All)
Hazard
(Multiple values)
Community Resilience - Rating
County Name
Very Low
Sumter
Relatively Low
Citrus
Hernando
Marion
Relatively Moderate
Lake
0
20
40
60
80
100
Avg. Community Resilience - National Percentile
Very Low
Relatively Low
Relatively Moderate
Avg. Median Value Owner-Occupied
119,368
Avg. Estimated Median Income
42,202
Number of Households
421,233
Hurricane
Census Tract Social Vulnerability - Hurricane
Social Vulnerability Natl Pctl
0
10
20
30
40
50
60
70
80
Insufficient Data
Not Applicable
No Rating
Very Low
Relatively Low
Relatively Moderate
Relatively High
Very High
Area in Sq Mi
2,786
Population 2016
774,506
Avg. Estimated Median Income
42,202
Total Housing Units
421,233
Occupied
344,310
Vacant
76,923
Owner Occupied
274,830
Renter Occupied
69,480
Owner Occupied Mortgaged
132,258
Owner Occupied Unmortgaged
142,572
1-unit, detached
295,602
1-unit, attached
7,790
2 units
4,718
3 or 4 units
6,984
5 to 9 units
6,297
10 to 19 units
4,738
20 or more units
7,177
Mobile home
86,877
Boat, RV, van, etc.
1,050
Total Housing Units
421,233
Owner Occup Housing by Value
60K
50K
40K
30K
20K
10K
0K
1,310
7,117
25,053
49,769
46,404
49,341
57,716
38,120
$1,000,000 or more
$500,000 to $999,999
$300,000 to $499,999
$200,000 to $299,999
$150,000 to $199,999
$100,000 to $149,999
$50,000 to $99,999
Less than $50,000
# of Housing Units by Built Date
120K
100K
80K
60K
40K
20K
0K
4,266
3,920
11,832
17,413
57,054
93,986
83,551
127,361
16,136
5,714
Est Year Built Before 1940
Est Year Built 1940 to 1949
Est Year Built 1950 to 1959
Est Year Built 1960 to 1969
Est Year Built 1970 to 1979
Est Year Built 1980 to 1989
Est Year Built 1990 to 1999
Est Year Built 2000 to 2009
Est Year Built 2010 to 2013
Est Year Built After 2013
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Occupancy
Map
Households
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Dist Demog
Map NRI Cnty v CT
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EAL Tract Detail
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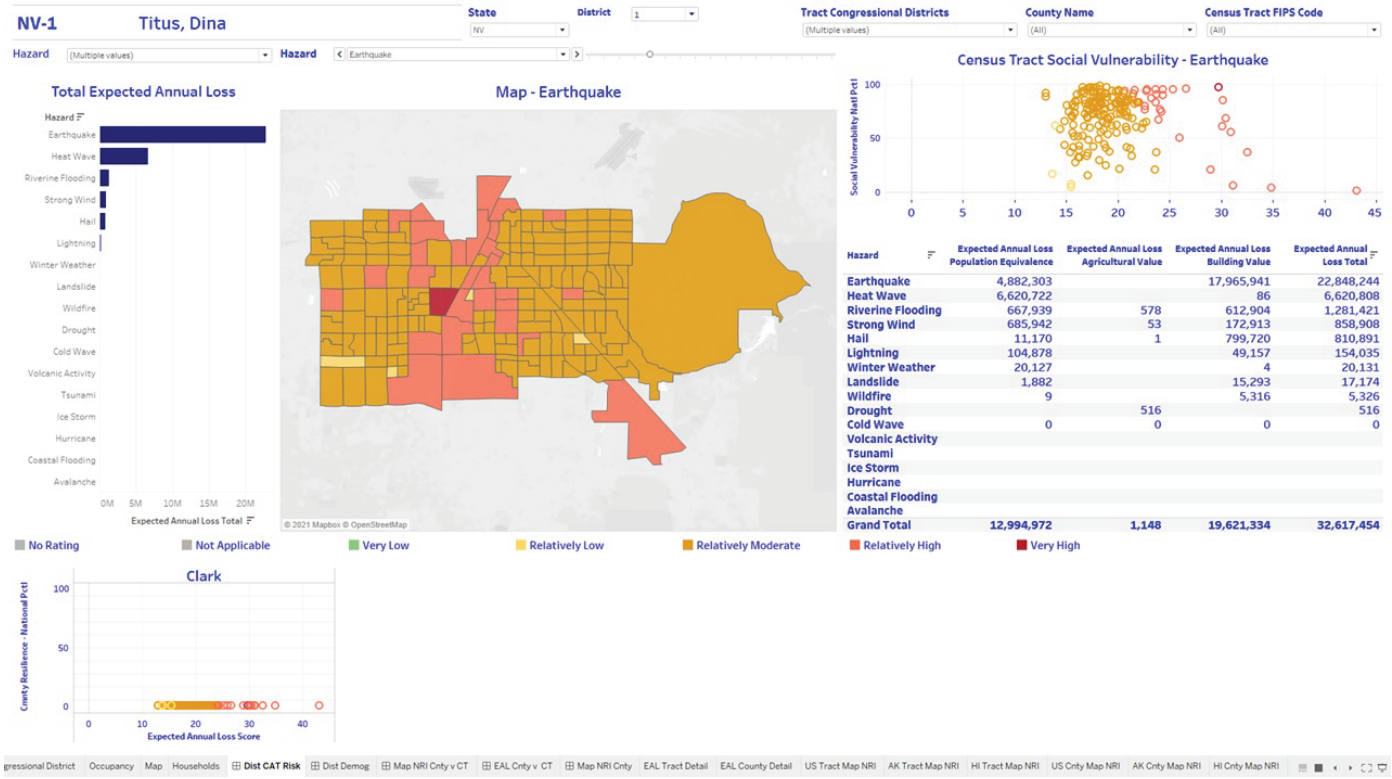
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Tract Congressional Districts
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County Name
(All)
Census Tract FIPS Code
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Hazard
(Multiple values)
Hazard
Earthquake
Total Expected Annual Loss
Hazard
Earthquake
Heat Wave
Riverine Flooding
Strong Wind
Hail
Lightning
Winter Weather
Landslide
Wildfire
Drought
Cold Wave
Volcanic Activity
Tsunami
Ice Storm
Hurricane
Coastal Flooding
Avalanche
0M 5M 10M 15M 20M
Expected Annual Loss Total
Map - Earthquake
© 2021 Mapbox © OpenStreetMap
Census Tract Social Vulnerability - Earthquake
Social Vulnerability Natl Pctl
100
50
0
0 5 10 15 20 25 30 35 40 45
Hazard
Expected Annual Loss Population Equivalence
Expected Annual Loss Agricultural Value
Expected Annual Loss Building Value
Expected Annual Loss Total
Earthquake 4,882,303 17,965,941 22,848,244
Heat Wave 6,620,722 86 6,620,808
Riverine Flooding 667,939 578 612,904 1,281,421
Strong Wind 685,942 53 172,913 858,908
Hail 11,170 1 799,720 810,891
Lightning 104,878 49,157 154,035
Winter Weather 20,127 4 20,131
Landslide 1,882 15,293 17,174
Wildfire 9 5,316 5,326
Drought 516 516
Cold Wave 0 0 0 0
Volcanic Activity
Tsunami
Ice Storm
Hurricane
Coastal Flooding
Avalanche
Grand Total 12,994,972 1,148 19,621,334 32,617,454
No Rating
Not Applicable
Very Low
Relatively Low
Relatively Moderate
Relatively High
Very High
Clark
County Resilience - National Pctl
100
50
0
0 10 20 30 40
Expected Annual Loss Score
gressional District
Occupancy
Map
Households
Dist CAT Risk
Dist Demog
Map NRI Cnty v CT
EAL Cnty v CT
Map NRI Cnty
EAL Tract Detail
EAL County Detail
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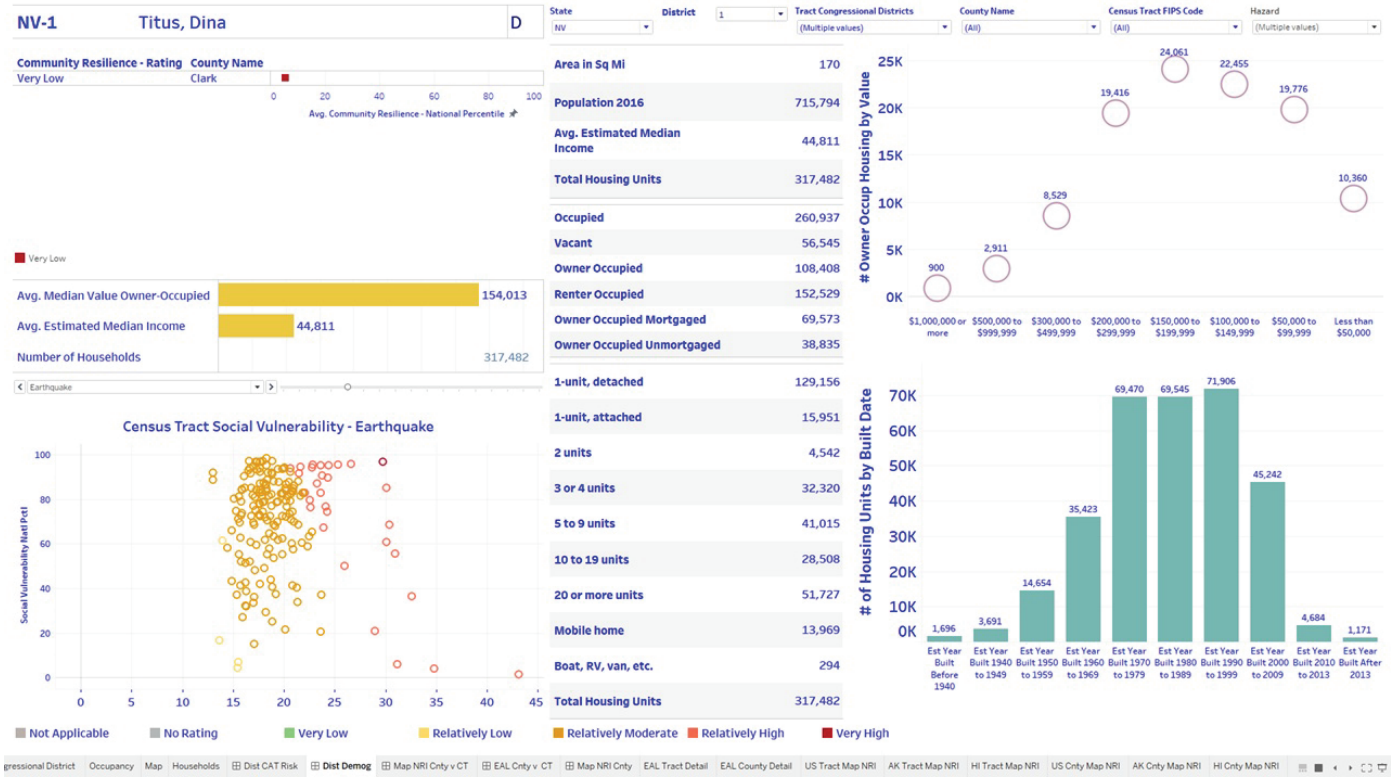
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County Name
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Census Tract FIPS Code
(All)
Hazard
(Multiple values)
Community Resilience - Rating
County Name
Very Low
Clark
0
20
40
60
80
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Avg. Community Resilience - National Percentile
Very Low
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Avg. Estimated Median Income
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Earthquake
Census Tract Social Vulnerability - Earthquake
Social Vulnerability Rwtl Pctl
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5
10
15
20
25
30
35
40
45
Not Applicable
No Rating
Very Low
Relatively Low
Relatively Moderate
Relatively High
Very High
Area in Sq Mi 170
Population 2016 715,794
Avg. Estimated Median Income 44,811
Total Housing Units 317,482
Occupied 260,937
Vacant 56,545
Owner Occupied 108,408
Renter Occupied 152,529
Owner Occupied Mortgaged 69,573
Owner Occupied Unmortgaged 38,835
1-unit, detached 129,156
1-unit, attached 15,951
2 units 4,542
3 or 4 units 32,320
5 to 9 units 41,015
10 to 19 units 28,508
20 or more units 51,727
Mobile home 13,969
Boat, RV, van, etc. 294
Total Housing Units 317,482
Owner Occup Housing by Value
25K
20K
15K
10K
5K
0K
900
2,911
8,529
19,416
24,061
22,455
19,776
10,360
$1,000,000 or more
$500,000 to $999,999
$300,000 to $499,999
$200,000 to $299,999
$150,000 to $199,999
$100,000 to $149,999
$50,000 to $99,999
Less than $50,000
# of Housing Units by Built Date
70K
60K
50K
40K
30K
20K
10K
0K
1,696
3,691
14,654
35,423
69,470
69,545
71,906
45,242
4,684
1,171
Est Year Built Before 1940
Est Year Built 1940 to 1949
Est Year Built 1950 to 1959
Est Year Built 1960 to 1969
Est Year Built 1970 to 1979
Est Year Built 1980 to 1989
Est Year Built 1990 to 1999
Est Year Built 2000 to 2009
Est Year Built 2010 to 2013
Est Year Built After 2013
gressional District
Occupancy
Map
Households
Dist CAT Risk
Dist Demog
Map NRI Cnty v CT
EAL Cnty v CT
Map NRI Cnty
EAL Tract Detail
EAL County Detail
US Tract Map NRI
AK Tract Map NRI
HI Tract Map NRI
US Cnty Map NRI
AK Cnty Map NRI
HI Cnty Map NRI

Ms. TITUS. Thank you very much, Mr. Wright. I like your comment, "Climate change barged through the front door of American families."

Mr. WRIGHT. It did.

Ms. TITUS. I may have to use that, but I promise I will footnote you if I do.

Mr. WRIGHT. It is all yours.

Ms. TITUS. Thank you.

We will go to Ms. Smith.

Ms. SMITH. Thank you, Chairwoman Titus, members of the subcommittee. Thank you on behalf of The Pew Charitable Trusts.

This afternoon, I would like to just underscore a few of the points from my written testimony, and as others have noted, the bottom line is we are losing the battle with extreme weather.

A couple of points to note: The Congressional Budget Office has warned of an estimated average cost to the Federal Government of at least $17 billion every year; that cost is only for losses associated with hurricane winds and storm-related flooding.

Presidential disaster declarations since 2000, we totaled up the obligated amounts for repairing or rebuilding utilities, public buildings, water and wastewater facilities, and other assets. Excluding emergency work, we are talking $67 billion. But as others have said, we can do better because pre-disaster mitigation pays.

The National Institute of Building Sciences, as the chair and the ranking member have noted, give us the figures of how much we could be saving for every dollar spent. But even as we slowly work our way to correct the problems with buildings and infrastructure at risk today, we fear that we add to the problem with new investments that don't have ample protection. This sort of shortsighted spending should stop and it can.

There are already important instances of resilience investment that show us what can be gained and what is possible. Take the case of the Texas Medical Center devastated by Hurricane Allison, but restored with resilient features to be strong enough to withstand the ravages of Harvey, or the Spaulding Rehab Hospital built to serve a waterfront community in Boston, but built to continue functioning as sea levels rise.

Consider the innovation and the no-regrets adaptation solutions that architects, planners, and engineers are designing; restored rather than filled wetlands that keep homes from flooding and stop sewage overflows; oyster reefs protecting roadways; rail line piers that can be elevated as needed rising along with the sea; levees set back from rivers that redirect flood waters and restore habitat.

Many resiliency solutions will bring multiple benefits, keep businesses open and supply lines functioning, offer employment, bring open space to harsh environments, and address those painful social inequities. Some use nature itself to bring down the cost.

It is perplexing then that such approaches have not been deployed more widely, that more communities, more developers, and more public and private investors have not completed thorough, forward-looking vulnerability assessments, made sensible siting choices, and embraced modern building codes.

That is why we believe that you must act swiftly in your infrastructure work to address this growing resilience gap. We are hope-

ful that you will require new investments in transportation to incorporate resilience, new investment authorizations for water infrastructure to require assessment of vulnerabilities and getting ready for weather extremes, and assuring that new Federal funding for housing projects with Federal funds choose not the low-lying risky land because it is cheap, but incorporate proven means of keeping people high and dry and safe.

As Chairman DeFazio has noted, this has been done before in the NDAA, and you can do it again. We certainly call your attention to H.R. 481, the Flood Resiliency and Taxpayer Savings Act, introduced by Congressmen Price and Zeldin. We think that is worth your swift action.

In closing, I thank the chair for taking up this important issue, and for inviting Pew to engage in this discussion. I look forward to your questions.

[Ms. Smith's prepared statement follows:]

Prepared Statement of Velma Smith, Senior Government Relations Officer, Flood-Prepared Communities Initiative, The Pew Charitable Trusts

Chairwoman Titus, members of the subcommittee, on behalf of The Pew Charitable Trusts (Pew), I thank you for the opportunity to testify today. My name is Velma Smith. I am a senior officer working with Pew's flood-prepared communities initiative.

Pew's flood-prepared communities initiative has been focused on the increasingly costly and common problems 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 is working to prioritize investments in flood-ready infrastructure, mitigate against the impact of disasters, modernize flood insurance, and promote nature-based solutions to flooding. Given that work and the fact that flooding and coastal storms have accounted for roughly 70 percent of all Presidential Disaster Declarations over the past decade [1], my comments this afternoon will focus largely on how flooding has and can impact communities and how Congress might address these problems in the context of infrastructure investment.

COSTLY DISASTERS ARE ON THE RISE

First, the overall disaster numbers and the trendline. Flooding and other weather-related disasters are on the rise. The National Oceanic and Atmospheric Administration (NOAA) tells us that 2020 set numerous records [2]: 22 extreme weather and climate events caused $1 billion or more in losses, jumping from a previous high of 16 that occurred in both 2011 and 2017. Western wildfires reached historic proportions in 2020, and the Atlantic hurricane season produced 30 named storms, 12 of those making landfall in the contiguous U.S. Last year's record events came on the heels of the third consecutive decade in which the mounting number and costs experienced by the country reached levels never before seen. Totals have now exceeded $1.8 trillion in aggregate since 1980.[3]

COSTS ARE FELT BY COMMUNITIES AND THE AMERICAN TAXPAYER

Those disasters and many others whose impacts did not hit the billion dollar mark have proven costly to U.S. families and businesses, localities and states, and to federal taxpayers who pay a significant portion toward disaster losses—over and above emergency assistance—through programs such as the Federal Emergency

[1] Federal Emergency Management Agency, OpenFEMA Data Sets, Disaster Declaration Summaries, https://www.fema.gov/about/openfema/data-sets

[2] National Centers for Environmental Information, National Oceanic and Atmospheric Administration, "Billion-Dollar Weather and Climate Disasters: Overview," https://www.ncdc.noaa.gov/billions/overview

[3] National Centers for Environmental Information, National Oceanic and Atmospheric Administration, "Billion-Dollar Weather and Climate Disasters: Summary Stats," https://www.ncdc.noaa.gov/billions/summary-stats

Management Agency's (FEMA) Public Assistance and Individual Assistance programs, the U.S. Department of Transportation's (DOT) Federal Highway Administration (FHWA) Emergency Relief Program, the Small Business Administration's disaster loan programs, the Department of Housing and Urban Development's Community Development Block Grant-Disaster Recovery (CDBG–DR) and more.

Without consistent accounting of costs across federal agencies and states[4], it is hard to know precisely how much is being spent, but a snapshot of just one program suggests the scale of the threat. Pew looked specifically at the monies spent under FEMA's Public Assistance Program (PA) to help communities build back and repair damaged public buildings, utilities, water systems, roads, and other public assets.[5] Overall, for disasters declared from 2000 to the present, the amount obligated for PA, excluding emergency protective management, debris removal, and state management assistance, tops $67 billion. Expenditures on public utilities and buildings account for the lion's share: more than $26 billion for utilities and more than $23 billion for buildings. In looking at this number, the Committee should keep in mind that obligations for the more recent disasters will grow. This data counts only the projects for which plans have been made and obligations approved.

Another tally comes from a study released in 2017. That analysis by the Congressional Budget Office (CBO)[6] looked at risk and loss associated specifically with hurricane winds and storm-related flooding across three sectors: residential, commercial, and public. It estimated expected average annual costs to the federal government—assuming the status quo in terms of public policy and excluding some federal costs as well as costs borne by state and local governments—an average cost of $17 billion per year. One of the options to alter this outlook, CBO noted, was to "increase funding for mitigation."

Earlier this month, the Government Accountability Office (GAO) repeated its own warnings about the risks of climate change.[7] Since 2019, GAO's High-Risk Report has called on the government to improve its preparation for future disaster, and its accounting of disaster spending. According to GAO, the federal government must address the long-term financial exposure of disaster assistance programs and "fully implement measures that promote resilience."

IT PAYS TO PREPARE

On the mitigation side of the disaster balance sheet, there are compelling numbers as well, because—as others on this panel have underscored—mitigation pays. Many studies of mitigation efforts have shown what can be gained.

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 taken a rigorous look at mitigation projects of multiple types, including adoption and enforcement of building codes and mitigation for different types of community infrastructure. In some categories, NIBS researchers have been able to revisit their own work and refine it over multiple years. Their conclusions, over and over again, tell us that mitigation saves and that the sooner the mitigation actions are taken, the more the associated benefits will multiply. The amount of savings varies by type and by project, but overall, the numbers run in ranges from $2 in savings per mitigation dollar invested to as high as $11 saved per dollar invested.[8]

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[4] The Pew Charitable Trusts, "How States Pay for Natural Disasters in an Era of Rising Costs: A nationwide assessment of budgeting strategies and practices," https://www.pewtrusts.org/-/media/assets/2020/05/how-states-pay-for-natural-disasters-in-an-era-of-rising-costs.pdf ; and Government Accountability Office, "High-Risk Series: Dedicated Leadership Needed to Address Limited Progress in Most High-Risk Areas," GAO–21–119SP, March 2, 2021, https://files.gao.gov/reports/GAO-21-119SP/index.html

[5] Federal Emergency Management Agency, OpenFEMA Dataset: Public Assistance Funded Projects Details, updated March 3, 2021, https://www.fema.gov/openfema-data-page/public-assistance-funded-projects-details-v1

[6] Congressional Budget Office, "Expected Costs of Damage From Hurricane Winds and Storm-Related Flooding," April 2019, https://www.cbo.gov/system/files/2019-04/55019-ExpectedCostsFromWindStorm.pdf

[7] Government Accountability Office, "High-Risk Series: Dedicated Leadership Needed to Address Limited Progress in Most High-Risk Areas," GAO–21–119SP, March 2, 2021, https://files.gao.gov/reports/GAO-21-119SP/index.html

[8] National Institute of Building Sciences Multihazard Mitigation Council, "Natural Hazard Mitigation Saves: 2019 Report," December 2019, https://www.nibs.org/page/mitigationsaves; and National Institute of Building Sciences Multihazard Mitigation Council, "Natural Hazard Mitigation Saves: Utilities and Transportation Infrastructure," October 2018, https://www.nibs.org/resource/resmgr/docs/NHMS-UtilitiesFactSheet.pdf

Numerous studies echo those findings. For example, researchers found great value in homes built in compliance with strong, wind-resistant codes; they reported damage reductions of greater than 70 percent, compared with other structures.[9]

Other work in Florida, where loss avoidance from past mitigation projects is analyzed by the State after major storm events,[10] shows large benefits from activities such as buyouts of flood-prone structures, elevation of buildings, and improvements to storm drainage. The State of Florida studies conclude that "mitigating the risk of natural hazards in Florida is a sound investment" with a positive economic benefit in terms of employment and economic stabilization following a disaster.[11]

Following the devastating 2013 floods in Colorado, analysts also determined that stronger building requirements, setbacks and restrictions on the siting of critical facilities kept storm damages from running even higher than encountered, but they also found that earlier and more widespread adoption of mitigation requirements could have reduced the costs even further. This investigation concluded that if older critical facilities, including police stations, emergency operations centers, hospital emergency rooms, fire stations, and schools, had been removed from flood zones, damages might have been cut substantially. One of the recommendations in this FEMA report is for more widespread adoption of critical facility siting restrictions.[12]

Mitigation Lags as Costs and Threats Mount

Despite the proven value of mitigation and disturbing predictions of more frequent severe storms and rising sea levels, we too often fail to act. Localities hesitate to restrict new building in risky areas or adopt and enforce the most recent building codes. On this point, FEMA's National Advisory Council in 2019 has warned that nearly 70 percent of the more than 23,000 cities and towns facing floods, high wind, hurricane, seismic, or tornado hazards had not adopted or enforced the latest protection codes.[13] Without up-to-date codes and proper planning, low-lying, damaged structures are rebuilt with the same vulnerabilities; public buildings, including those that provide essential services or store important public records are too often repeatedly damaged and repaired without major improvements.

There is no publicly available database with information on those assets that have been damaged numerous times and repaired or replaced using federal funding, though a Department of Transportation rule now requires states to begin gathering and reporting this information to the Department.[14] We do know, however that some assets that may be in harm's way, in fact, belong to the federal government. After reviewing just a portion of the federal property inventory, the Office of Management and Budget identified more than $80 billion in federal assets located in designated flood zones.[15]

Some disaster experts, like the researchers at the Wharton School, place at least part of the blame for inaction on disaster or flood amnesia[16]—perhaps a very

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[9] Simmons, Kevin M., et al., "Economic Effectiveness of Implementing a Statewide Building Code: The Case of Florida," Land Economics, May 2018, https://muse.jhu.edu/article/690441 ; and Kusisto, Laura and Arian Campo-Flores, "Homes Built to Stricter Standards Fared Better in Storm," Wall Street Journal, September 16, 2017, https://www.wsj.com/articles/one-early-lesson-from-irma-hurricane-building-codes-work-1505559600

[10] Florida Division of Emergency Management, "Loss Avoidance Assessment: Hurricane Matthew (DR–4283)," April 2017, https://www.floridadisaster.org/globalassets/importedpdfs/01_dr-4283-loss-avoidance-report.pdf; and "Loss Avoidance Assessment: Tropical Storm Debby: FEMA–4068–DR–FL, Flood Mitigation Projects, LA #2012–01," https://www.floridadisaster.org/globalassets/importedpdfs/report-tsdebby-la.pdf

[11] Koon, Bryan W., et. al., "Florida Division of Emergency Management's Bureau of Mitigation Economic Impact Analysis," August 2011, https://www.floridadisaster.org/globalassets/importedpdfs/fdem-economic-impact-analysis-final-3.14.12.pdf

[12] FEMA, "Reducing Losses through Higher Regulatory Standards: 2013 Colorado Floods Case Study, FEMA–DR–4145–CO," March 2015, prepared by Dewberry Consultants LLC for FEMA, https://www.fema.gov/media-library-data/1429759760513-f96124536d2c3ccc07b3db4a4f8c35b5/FEMA_CO_RegulatoryLAS.pdf ; and FEMA Region VIII, "Loss Avoidance Study: The water didn't stop." http://www.casfm.org/wp-content/uploads/2017/08/R8_Loss_Avoidance_Study.pdf

[13] Federal Emergency Management Agency, "National Advisory Council Report to the FEMA Administrator, November 2019," https://www.fema.gov/sites/default/files/2020-08/fema_nac-report_11-2019.pdf

[14] Federal Highway Administration, "Asset Management Plans and Periodic Evaluations of Facilities Repeatedly Requiring Repair and Reconstruction Due to Emergency Events," Final Rule, 81 FR 73196, October 24, 2016, https://www.govinfo.gov/app/details/FR-2016-10-24/2016-25117

[15] Office of Management and Budget, "Climate Change: The Fiscal Risks Facing the Federal Government, Preliminary Assessment," November 2016, https://obamawhitehouse.archives.gov/sites/default/files/omb/reports/omb_climate_change_fiscal_risk_report.pdf.

[16] Kunreuther, Howard, "Improving the National Flood Insurance Program," Behavioural Public Policy, Cambridge University Press, 2018, https://marketing.wharton.upenn.edu/wp-content/

human and understandable tendency to put aside the traumas of the big events. They also point out the very real need for better public education and hazard risk disclosure.[17] Pew agrees.

DISASTERS CREATE CASCADING CONSEQUENCES AND LONG-TERM COSTS

We might also suggest that, at some level, we may be allowing the large and growing numbers to deceive us. We total up the costs the best we can and as we should, but when we focus solely on the billions of dollars, perhaps we forget other important facets of disaster. The aggregate numbers can obscure the cascading impacts that follow a failure to invest in resiliency, the lasting consequences, the human-scale tragedies, and the true fragility of critical lifelines.

In looking only at the totals, we tend to forget what FEMA's Federal Advisory Council reminds us in their 2020 report[18] 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." We may not see the true gravity of a storm that damages a small hospital in a rural community where that hospital is not only a health care lifeline but also the major employer. We may put aside that image of wheel-chair-bound seniors sitting in waist-deep flood waters in Dickinson, Texas during Hurricane Harvey.[19] We may not readily consider the dangers to first responders driving on flooded roadways, the disruptions to important supply chains when interstates are closed for days or weeks, the sewage spills that threaten public health and close recreational facilities, or the water or power disruptions and their secondary impacts. Or we may miss the report that tells of more than 5,000 children separated from their families after Hurricane Katrina, some for months.[20]

But perhaps we should give more weight to these stories and statistics that show us how disaster—and the failure to anticipate disaster—can exacerbate existing inequities and frailties in our communities and how the vulnerability of one asset can reverberate across a town or an entire region.

Today, Pew is hopeful that the experiences of past disasters as well as the mounting costs will instill in the members of this Committee a sense of urgency to close the nation's resilience gap. We believe you can do so by making certain that new investments in infrastructure incorporate new requirements for resilience.

Some might counter that requirements for new infrastructure projects to assess hazards and incorporate protections will be too costly; that unneeded delays will occur. Clearly, a balance must be struck, but we ask the Committee to consider the wasted costs that accrue when a vulnerable facility must be repaired or rebuilt repeatedly. And to keep in mind the delays and disruptions to family and civic life when a community loses water or power, shutters a school, or finds itself isolated by destroyed bridges and impassable roads.

RESILIENCY INITIATIVES POINT THE WAY TO PROGRESS

As this Subcommittee considers how to support resilient infrastructure investment and what levels of assistance to offer, there is also good news. There are already successes: projects and programs that recognize risks and build in a capacity for durability and resilience. A few of these may be useful to your deliberations. They should give you assurance that resilience can grow, if you make it a priority for infrastructure spending.

Healthcare Facilities

Take a look at the University of Texas Medical Center. In 2001, one storm dumped as much as 80 percent of the rainfall that Houston and Harris County,

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uploads/2018/08/improving__the__national__flood__insurance__program.-Behavioral-Public-Policy-2018.pdf

[17] Kousky, Carolyn, "How Americans Fail at Communicating Flood Risk," Bloomberg CityLab, October 11, 2018, https://www.bloomberg.com/news/articles/2018-10-11/why-flood-risk-information-doesn-t-reach-the-american-public

[18] Federal Emergency Management Agency, "National Advisory Council Report to the FEMA Administrator, November 2019," https://www.fema.gov/sites/default/files/documents/fema__nac-report__11-2020.pdf

[19] Villafranca, Omar, CBS News, "Elderly are among the most vulnerable during Harvey," August 28, 2017, https://www.cbsnews.com/news/hurricane-harvey-senior-citizens-nursing-home-dickinson-texas-elderly-vulnerable/

[20] Broughton, D., et. al., "Getting 5000 Families Back Together: Reuniting Fractured Families After a Disaster: The Role of the National Center for Missing & Exploited Children," Pediatrics, 117, Supplement, May 2006, http://pediatrics.aappublications.org/content/117/Supplement__4/S442.short

Texas would normally experience over a full year.[21] Tropical Storm Allison was cited as a 1,000-year event and called by some the worst urban storm in the U.S. to that point.[22] At the largest aggregated medical campus in the country, water rose 22 feet and the force of flow through the sprawling operation and its underground tunnels was enough to blow doors off their hinges and cause cinderblock walls to collapse.[23]

The flood took out all essential services: electrical power, heating, ventilation, air conditioning, water, fire detection and suppression, and sewage. Medical personnel managed evacuation of patients, sometimes transferring equipment and staff with patients headed to facilities that would otherwise have been unable to care for them. Researchers at the Baylor College of Medicine lost one of the world's most extensive collections of breast cancer specimens—some 60,000 specimens collected over a period of 25 years.[24]

To avoid a repeat of the Allison disaster, the Center undertook an extensive review of vulnerabilities of the entire campus and developed a comprehensive plan to manage risks into the future. Improvements included a new, elevated combined heat and power utility plant, multiple flood doors and gates to close off areas susceptible to flooding, an elevated utility raceway that also serves as a pedestrian walkway, rooftop telecom cell towers, major improvements in drainage and stormwater management across the campus and in the larger watershed, a state-of-the-art flood warning system, various perimeter berms and barriers to protect facilities up to the 500-year flood level.[25] In addition, because the Houston area has experienced ground subsidence of more than three feet since 1976 and that subsidence can alter the flood-readiness of buildings, a solar-powered system for monitoring ground subsidence was installed.[26]

These improvements allowed the Center to continue functioning throughout Hurricane Harvey.[27] The storm presented challenges for receiving patients and rotating medical staff and security, and one hospital suffered a broken water pipe, but overall, the Center's preparation allowed it to function and to return to a normal schedule as the floodwaters cleared in the area. As former Congressman Ken Bentsen noted in an op-ed in the Houston Chronicle, "With the region knocked to its knees, the Medical Center stood tall on dry land."[28]

As compelling as this story is, there are even more good examples in this arena. Many public health and medical professionals and in the engineering and architectural services that support them are taking the risks of climate change and future disasters to heart. Other facilities, like the LEED-gold-certified Spaulding Rehabilitation Hospital in Charlestown, Massachusetts, are being built with resiliency as a priority.[29] Sited on the waterfront, the Spaulding facility was designed around sea level rise projections out to the year 2100. The facility's first floor was placed as high as possible; critical mechanical and electrical equipment are on the roof, and patient-critical functions have been kept off the ground floor. Building designers included a combined heat and power plant for backup power; elevated all vents; incor-

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[21] Harris County Flood Control District, "Tropical Storm Allison," undated, https://www.hcfcd.org/storm-center/tropical-storm-allison-2001/

[22] U.S. Climate Resilience Toolkit, "After Record-Breaking Rains, a Major Medical Center's Hazard Mitigation Plan Improves Resilience," https://toolkit.climate.gov/case-studies/after-record-breaking-rains-major-medical-centers-hazard-mitigation-plan-improves

[23] Tucker, Edgar L. and Angela N. Smith, "Planning for the Worst at the World's Largest Medical Complex," presented at the Texas Emergency Management Conference, March 26, 2013, https://www.preparingtexas.org/Resources/documents/2013%20Conference%20Presentations/Planning%20for%20the%20Worst.pdf

[24] Bankhead, Charles, "Tropical Storm Sets Back Research in Houston," Journal of the National Cancer Institute, Volume 93, Issue 18, http://jnci.oxfordjournals.org/content/93/18/1366.long

[25] Fang, Zheng , et.al., "Case Study of Flood Mitigation and Hazard Management at the Texas Medical Center in the Wake of Tropical Storm Allison in 2001," Natural Hazards Review, Vol 15, Issue 3, Aug 2014, https://www.buildinggreen.com/sites/default/files/Fang14TMC__Final.pdf

[26] U.S. Climate Resilience Toolkit, "After Record-Breaking Rains, a Major Medical Center's Hazard Mitigation Plan Improves Resilience," https://toolkit.climate.gov/case-studies/after-record-breaking-rains-major-medical-centers-hazard-mitigation-plan-improves

[27] Galehouse, Maggie, "Despite Hurricane Harvey, TMC Institutions Are Operational and Accessible," TMC News, Aug 28, 2017, http://www.tmc.edu/news/2017/08/despite-hurricane-harvey-tmc-institutions-operational-accessible/

[28] Bentsen, Ken, "Bentsen: The Texas Medical Center defeated Harvey," The Houston Chronicle, Sep 4, 2017, http://www.houstonchronicle.com/opinion/outlook/article/Bentsen-The-Texas-Medical-Center-defeated-Harvey-12172307.php

[29] Urban Land Institute, "Developing Urban Resilience: Spaulding Rehabilitation Hospital," 2018, https://developingresilience.uli.org/case/spaulding-rehabilitation-hospital/

porated operable windows; and designed the landscaping to offer reef-like barriers to mitigate against storm surge.

The Charlestown facility completed in 2013 is just one belonging to Massachusetts-based Partners HealthCare, which has since taken on the task of assessing the risks posed by climate change and weather disasters to all of its facilities and services.[30] For this effort, the company is using its own expertise developed during the planning for Spaulding as well as guidance on best practices developed by the U.S. Department of Health and Human Services.[31]

Clearly, not every medical facility could accomplish the massive re-engineering that occurred in Houston, and not every feature of the Spaulding facility will transfer elsewhere, but to the extent that Congress funds the infrastructure aspects of our health care facilities, it should assure that any new resources help to make these critical facilities safer and more reliable in the face of disaster.

Transportation

The transportation sector, as well, has positive news and developments and examples of innovation in preparedness. On that front, we again thank the Committee for the groundwork it laid last year for reauthorizing highway programs. We understand that resilience in surface transportation can be complex, perhaps the ultimate example of connectedness. That is why we wholeheartedly endorse the Committee's proposals to incorporate resiliency into the long-term planning and asset management programs that are the heart of the National Highway Performance Program (NHPP).[32] We also support the creation of a new pre-disaster mitigation program, efforts to use natural infrastructure for flood resilience, and, where possible, the relocation or construction of alternatives to repeatedly damaged facilities. We recommend that we incentivize action on those repeatedly flooded transportation assets with changes to the Federal Highway Administration's (FHWA) Emergency Relief (ER) program: requiring resiliency improvements and protective features for the non-emergency and permanent work undertaken with ER allocations.

In the transportation sector, we see indication that resilience advancements are both needed and feasible today: in Delaware, where oyster reefs are part of the solution to protecting a coastal highway;[33] in Arkansas, where the State Game and Fish Commission, the Nature Conservancy, the Arkansas Economic Development Commission, and other partners have set up a program to reduce flooding on rural roads and at the same time improve water quality and protect habitat;[34] in California, where designers address the threat of rising seas to a coastal rail line with a structural solution that is, itself, adaptable: precast piers and caps that allow insertion of additional pier segments, if needed.[35] In Virginia, the Hampton Roads Transportation Planning Organization (HRTPO) is working with military leadership in the region to address the impacts of sea level rise that threaten military readiness and the transportation needs of the region, collaborating to set priorities for protecting road segments, tunnels, and bridges vulnerable to future damage and destruction,[36]

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[30] Morgan, Jamie, "Partners HealthCare undergoes systemwide resiliency assessment," Health Facilities Managment, https://www.hfmmagazine.com/articles/3475-partners-healthcare-undergoes-systemwide-resiliency-assessment

[31] U.S. Department of Health and Human Services, "Primary Protection: Enhancing Health Care Resilience for a Changing Climate," Fall 2014, https://toolkit.climate.gov/sites/default/files/SCRHCFI%20Best%20Practices%20Report%20final2%202014%20Web.pdf

[32] Letter from Thomas Wathen, The Pew Charitable Trusts to The Honorable Nancy Pelosi, The Honorable Kevin McCarthy, The Honorable Peter DeFazio, The Honorable Sam Graves, June 29, 2020, https://www.pewtrusts.org/-/media/assets/2020/06/pew-letter-on-transportation-reauthorization-bill.pdf

[33] Hodges, Tina, Federal Highway Administration, "Nature-based Resilience for Coastal Highways," presentation to the International Conference on Coastal Engineering, July 29, 2018, https://ewn.el.erdc.dren.mil/workshops/2018__07-29-NNBF-short-course/ppt/1145-1205__Hodges-NNBFTransportationCaseStudy.pdf

[34] Federal Emergency Management Agency, "Better Unpaved Roads for Nature and People in Arkansas," 2021, https://www.fema.gov/case-study/better-unpaved-roads-nature-and-people-arkansas; Kloer, Phil, "The dirt road connection: Arkansas multi-partner project benefits residents, endangered and at-risk species," U.S. Fish & Wildlife Service, August 29, 2017, https://www.fws.gov/southeast/articles/the-dirt-road-connection/

[35] Wright, Richard N., "Adapting Infrastructure and Civil Engineering Practice to a Changing Climate," presentation to the National Academies' Roundtable on Science and Technology for Sustainability, June 5, 2015, https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga__165893.pdf

[36] Hampton Roads Transportation Planning Organization, "Hampton Roads Military Transportation Needs Study: Roadways Serving the Military and Sea Level Rise/Storm Surge," July 2013, https://www.hrtpo.org/uploads/docs/Roadways%20Serving%20the%20Military%20&%20Sea%20Level%20Rise-Storm%20Surge%20Report.pdf

and the Department of Transportation itself is advancing resilience with trainings and outreach for highway planners and engineers based on their implementation guide "Nature-Based Solutions for Coastal Highway Resilience."[37] In this sector as well, there is ample evidence that new infrastructure should and can incorporate resilience. Resiliency is what we should demand of new roads and bridges built today and going forward.

Water and wastewater utilities

Water and wastewater utilities, as well, have and will be impacted by erratic and wild weather that can bring both drought and flood, and some in this industry are leading efforts to adapt, seeking to avoid problems with service shutdowns and sewage overflows. Just over a decade ago, a report produced by the National Association of Clean Water Agencies conducted what they called an early analysis of adaptation costs through the year 2050.[38] That assessment indicated that costs to utilities could range from just under $500 billion to more than $900 billion. Some of these utilities, have already undertaken some adaptations—including the Milwaukee Metropolitan Sewerage District which is solving flooding problems and greening the region with an ambitious nature-based stormwater management program.[39]

Housing

Others on this panel have provided ample information about the value of and the need for more resilience in the housing sector, but we would also mention a recent initiative there, one aimed at enhancing protections for multi-family housing and keeping those units affordable. The Keep Safe Miami initiative[40] is a new outgrowth of work by Enterprise Community Partners, a non-profit with a strong record of assistance for communities recovering from disasters. The Miami work builds on previous manuals and trainings on resiliency,[41] now offering owners and operators of affordable housing a set of tools that will help them assess the vulnerabilities of their properties, consider adaptation strategies for their specific portfolio of properties, set priorities, and guide them through the options for financing new resilience investments. At the same time, the program will train residents on disaster preparedness and steps they can take to save money with energy efficiency.

CONGRESS MUST ACT

These few examples—across multiple sectors—are encouraging and worth celebrating. These and more show us that there are multiple resilience strategies that can protect people and property in a changing climate. Unfortunately, they have yet to become the norm. They must, however, for as the Department of Transportation reminds us, "many of the structures being built today will still be in use fifty or, in some cases, one hundred years in the future."[42]

That is why Pew urges this Committee to be clear and specific as you work on a broad infrastructure package or other legislative vehicles that will use federal dollars for investment in infrastructure.

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[37] Federal Highway Administration, "Implementation Guide: Nature-based Solutions for Coastal Highway Resilience," September 2019, https://www.fhwa.dot.gov/environment/sustainability/resilience/ongoing__and__current__research/green__infrastructure/implementation__guide/fhwahep19042.pdf ; and FHWA, "Peer Exchange Report: Nature-based Solutions for Coastal Highways," August 2018, https://www.fhwa.dot.gov/environment/sustainability/resilience/ongoing__and__current__research/green__infrastructure/coastal__highways/fhwahep18070.pdf

[38] National Association of Clean Water Agencies, "Confronting Climate Change: An Early Analysis of Water and Wastewater Adaptation Costs," October 2009, https://www.amwa.net/publication/confronting-climate-change-early-analysis-water-and-wastewater-adaptation-costs-2009

[39] Milwaukee Metropolitan Sewerage District, Green Infrastructure, https://www.mmsd.com/what-we-do/green-infrastructure ; The Pew Charitable Trusts, "Milwaukee's Sustainability Leader Advances a Back-to-Nature Strategy to Lower Risk," July 20, 2020, https://www.pewtrusts.org/en/research-and-analysis/articles/2020/07/20/milwaukees-sustainability-leader-advances-a-back-to-nature-strategy-to-lower-flood-risk

[40] Enterprise Community Partners, "Keep Safe Miami," 2021, https://www.enterprisecommunity.org/solutions-and-innovation/emergency-management/keep-safe-miami

[41] Shoeman, Laurie, Enterprise Community Partners, Inc., "Ready to Respond: Stragegies for Multifamily Building Resilience," 2015, https://www.enterprisecommunity.org/resources/ready-respond-strategies-multifamily-building-resilience-13356

[42] U.S. Department of Transportation, "U.S. Department of Transportation Climate Adaptation Plan: Ensuring Transportation Infrastructure and System Resilience," undated, non-working link on dot.gov

If you stipulate that federal dollars may only be used on projects adopting appropriate safety approaches, then those investments will begin to fill the deep and growing resilience gap that researchers have identified. According to NIBS, the Nation's disaster losses are increasing by about 6 percent per year, 10 times faster than the population and costing America an average of $100 billion yearly, they conclude. The NIBS researchers tell us that the United States could cost-effectively spend $520 billion to reduce its disaster liability by $2.2 trillion.[43]

Require Consideration of Future Risk

Pew urges the Committee to tie infrastructure funding to requirements to look forward and consider future risks. For too long and in too many places, we have built or repaired as if the last large disaster were an isolated aberration, never to be repeated. This is particularly true in the case of flooding and coastal storms, where we foolishly assume that risk is stationary rather than dynamic. Relying solely on the 100-year floodplain as the metric of flood risk, we would suggest, is akin to driving the freeway looking only in the rearview mirror. It doesn't work. We must plan for the harsher hazards on the horizon.

In 2018, the National Defense Authorization Act for Fiscal Year 2019 (NDAA)[44] addressed this problem when it comes to the military. It expanded the military's authority to ensure readiness through energy and disaster resilience. On the flooding front, it called for looking at the design life of projects, assessing the risks that might be encountered over that time period, and then incorporating protections against those risks. It accepted the reality of uncertainty and the current lack of detailed, site-specific future risk data in some instances. That is why the statute allows for incorporation of a straight-forward margin of safety on flood volumes where detailed, as necessary. Other agencies can and should follow this path.

Leverage Nature-based Solutions

In addition, Pew urges the Committee to direct those who design a new generation of infrastructure to consider the role that nature can play—not only in enhancing protections, but also in lowering costs and providing other important benefits, such as cleaner water, protected or restored wildlife habitat, tourism, and recreational opportunities. Nature-based approaches, used in place of or alongside of more traditional "grey" defenses, will frequently be more adaptable, easier to scale up, and can become stronger and offer more resilience over time. In many instances, the nature-based solutions are also those most readily embraced by local communities.

Allow Silos to be Broken

Whether they serve in a large city or a rural village, community leaders must always look to solve multiple problems. They want to do more than guard against hazards and can with resilient infrastructure projects that provide multiple benefits. We are hopeful that infrastructure legislation will allow for many types of resilience projects that break down silos and deliver multiple benefits: projects such as the previously mentioned Arkansas roads program, Atlanta's green solution to storm sewer pollution in Historic Fourth Ward Park;[45] the ouR-HOME project in North Richmond, California,[46] and a major river corridor project in Iowa.[47]

We urge you to allow for and encourage such multi-benefit projects and to consider targeting funds to communities that have high risks and high poverty and social vulnerabilities. Many communities need the types of projects highlighted in this testimony, but not all have the resources to achieve them. Infrastructure legislation could follow the model of the new FEMA Building Resilient Infrastructure and Communities (BRIC) program that offers technical assistance and additional help to localities with significant resource constraints. Another approach that the subcommittee may wish to consider is one being explored by disaster experts at the Re-

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[43] National Institute of Building Sciences, MultiHazard Mitigation Council, "A Roadmap to Resilience Incentivization," 2020, Porter, K.A. and Yuan, J.Q., eds., https://cdn.ymaws.com/www.nibs.org/resource/resmgr/reports/mmc__nibs__resilience__incentiv.pdf

[44] P.L. 115–232

[45] The Trust for Public Land, "City parks, clean water: Making great places using green infrastructure," 2016, https://www.tpl.org/city-parks-clean-water

[46] Bay Area Resilient by Design, ouR-HOME, undated, http://www.resilientbayarea.org/our-home

[47] U.S. Fish & Wildlife Service, "Iowa River Corridor Project: Port Louisa National Wildlife Refuge," 2013, https://www.fws.gov/midwest/planning/PlansByState/IRCP__CMP__final-July10-2013.pdf

insurance Association of America (RAA).[48] With data-driven analysis of socio-economic as well as physical vulnerabilities, RAA believes those communities most in need of adaptation assistance can be identified. Their proposal is for a new program using Community Disaster Resilience Zones bonds, which could leverage private sector funds for investments in resilience, adding to the commitments made by state and federal agencies.

ACT NOW

We also urge this Subcommittee and the full committee to act swiftly on bipartisan legislation that has been introduced to specifically address future flood hazards. The Flood Resiliency and Taxpayer Savings Act, H.R. 481, would make these sorts of important protections permanent for all federal spending going forward. It is supported by a wide range of taxpayer and environmental organizations, housing advocacy groups, insurers, and engineers. We look forward to timely action on that important proposal as well.

In closing, I'd like to draw your attention to two commission reports written a decade apart. Mississippi Governor Haley Barbour, who saw his state suffer enormously from Hurricane Katrina, commissioned a post-disaster report[49] that was blunt in its assessment of what had gone on prior to the storm: "[W]e're facing some of the same challenges of recovery, rebuilding, and renewal in 2006 because we failed to engage them fully after 1969." Katrina drove Mississippi to try to do better, to build back better than they had in recovering from Hurricane Camille. And after Harvey hit Texas, a state that we all know has faced a long line of hurricanes, tropical storms, and floods, Governor Greg Abbott's Commission report,[50] "Eye of the Storm" was also clear in its urgent call to "future proof" Texas and frank about shortcomings in the State's flood preparedness. Harvey's lessons have prompted a serious and ambitious effort to bring enhanced flood resiliency to the Lone Star state as well.

Congress is now poised to address the pressing infrastructure needs described in the most recent report card issued by the American Society of Civil Engineers.[51] As you take on this challenge, we urge you to seize the opportunity. The time for hesitation has passed. Congress must require better building practices and more durable infrastructure protected against future flooding, fire, tornados, and other hazards. Accelerate the "future-proofing" our nation so sorely needs.

Again, we appreciate the Subcommittee's interest in this important topic and the opportunity to participate today. I look forward to your questions and working together.

Ms. TITUS. Thank you very much, Ms. Smith.

Mr. Harper.

Mr. HARPER. Yes, good afternoon. I would like to thank Chairwoman Titus, Ranking Member Webster, and other members of the committee for the opportunity to testify today.

My name is Ben Harper, and I am the head of corporate sustainability at Zurich North America. I am a civil engineer by training and sit on the sustainability advisory committees for the American Society of Civil Engineers, the National Academy of Sciences Transportation Research Board, the Insurance Institute for Business and Home Safety, and others.

I appreciate the opportunity to discuss the critical importance of investing in resiliency and mitigation as we seek to reduce loss from disasters and speed individual and community recovery.

Zurich North America is part of Zurich Insurance Group, a leading multiline insurer that has been serving its customers in global

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[48] Conversation with Frank Nutter, President, Reinsurance Association of America, March 2021.

[49] Governor's Commission on Recovery, Rebuilding, and Renewal, "After Katrina: Building Back Better than Ever," December 31, 2005

[50] "Eye of the Storm: Report of the Governor's Commission to Rebuild Texas," November 2018, https://www.rebuildtexas.today/wp-content/uploads/sites/52/2018/12/12-11-18-EYE-OF-THE-STORM-digital.pdf

[51] American Society of Civil Engineers, "2021 Report Card for America's Infrastructure," https://infrastructurereportcard.org/

and local markets for over 150 years. Our role as a global insurer provides for a unique perspective as to the required response and our urgency of the need to respond.

My testimony is focused on the importance of physical resistance from natural hazards. But as risk managers, we fully recognize the interconnected nature of risk. Using our core risk assessment skills to respond to some of the most significant long-term societal and environmental trends, we have identified climate change as, perhaps, the most complex risk facing society today. It is intergenerational, it is international, and it is interdependent.

Our aim at Zurich is to leverage our sector's role of primary risk signaler for society to help raise awareness of the increasing frequency and intensity of natural hazard events and, ultimately, to incentivize the behaviors and best practices that will be required to both mitigate the worst impacts, and adapt to changing weather patterns. We do this because Zurich's mission is to protect individuals, businesses, and communities, and simply because it is the right thing to do.

Furthermore, from an industry perspective, we do this because the impact of extreme weather events is escalating, and without enhancing resiliency and mitigation measures, many assets may simply become uninsurable. The property casualty industry has a tradition of being at the forefront of disaster mitigation. For example, in the late 1800s, several historic fires consumed vast areas of our largest cities, including New York, Chicago, and San Francisco. Recognizing that the new normal of tightly packed, dense construction greatly elevated fire hazards, the insurance industry sounded the alarm for adding sprinklers, fire breaks in construction, and other mitigation techniques as a necessity to maintaining community continuity.

The industry was forced to send risk-based price signals, which is a technical way of saying insurance will be prohibitively expensive, or certainly unavailable in some cases if you do not adapt to these practices.

Given the trends that are occurring and the frequency and severity of weather events, we are, again, sounding this alarm. Investing in mitigation measures, including resilient infrastructure, nature-based solutions, and low-carbon technologies, is required if society is to continue to operate with the continuity and resiliency that is expected.

It is encouraging, however, that these changes require minimal investment in comparison to the benefits received. The 2019 analysis of the benefits of building resiliency into infrastructure systems in developing countries, suggests that the extra cost of building resilience into these systems is only 3 percent of overall investment needs.

However, when taken into account with the capital cost and operating costs of the asset, in most cases, the total life-cycle cost will be lower in a hardened, resilient structure.

In our own post-event studies conducted after significant flood, drought, and wildfire events,our analysis shows that every $1 spent on resiliency upfront resulted in a $5 savings in post-disaster. Like the integration of fire safety in modern construction, the necessity

of which is unquestioned today, so should the inclusion of resiliency in building and infrastructure.

Earlier in this testimony, I noted the concept of interconnected risk. This is a fundamental concept in risk management, which is directly applicable when managing physical risk as we have been discussing. For example, if we provide business interruption insurance for a casino operating on the Mississippi coast, which is built with hardened, resilient components, we need to also consider the supporting infrastructure that can have a direct impact to that insured.

In this example, the value of the resilient building is limited if the casino is fully capable of operating after a major weather impact, but the roadways leading to the facility are damaged and impassable. This is just one example of why it is fundamental to consider the supporting infrastructure when building a complete resilient environment.

I also note the urgency in addressing these issues. Just 2 weeks ago, the American Society of Civil Engineers published their 2021 America's Infrastructure Report Card, which gave the U.S. infrastructure an overall grade of C-minus, which, sadly, is an improvement from the previous score of a D-plus.

Simply put, we are at a crossroads with regards to aging structures, and combined with the significant increase in severe weather events, we can no longer afford to deploy temporary Band-Aid fixes. And without proper resiliency standards as an integral part of all vertical and horizontal construction, we will simply be in the same situation we are facing today, with increased perils without proper preparedness and all at a significant cost.

Thank you, and I look forward to some of the questions.

[Mr. Harper's prepared statement follows:]

Prepared Statement of Ben Harper, Head of Corporate Sustainability, Zurich North America

Good afternoon. I would like to thank Chairwoman Titus, Ranking Member Webster and other members of the committee for the opportunity to testify today. My name is Ben Harper and I am the Head of Corporate Sustainability for Zurich North America.

I am here today to provide testimony as to the critical importance of investing in resiliency and mitigation as we transition to a new, low-carbon society and seek to reduce losses from disasters. Our role as an insurer not only provides us with a unique perspective on the required response, but also on the urgency in which we need to respond.

Before I start, though, let me introduce the company for which I work. Zurich North America is part of Zurich Insurance Group, a leading multi-line insurer that has been serving its customers in global and local market for 150 years. With approximately 55,000 employees, Zurich provides a wide range of property and casualty, and life insurance products and services in more than 215 countries and territories. Zurich's customers include individuals, small businesses, and mid-sized to large companies, as well as multinational corporations.

For over a century, Zurich North America has called the greater Chicago area home. In 2016, Zurich moved its U.S. corporate campus a few blocks north from its previous location in suburban Schaumburg, Illinois to an award-winning headquarters that has earned LEED Platinum® certification, the highest rating from the U.S. Green Building Council. The distinctive design underscores our commitment to resilience, collaboration and innovation. Our headquarters became the largest LEED Platinum®-certified structure of its kind in the United States and the only one of its kind in Illinois. On the one-year anniversary of Zurich's headquarters, we reported a 30% reduction in water and electricity consumption compared with our pre-

vious location. We have since improved on these metrics, and in North America operationally have reduced paper consumption by 80% and have eliminated single-use plastics. Globally, Zurich became carbon neutral in 2014 and we are committed to using 100 percent renewable energy across our global operations by 2022. In addition, we recently signed on to the EV100 pledge, committing to switch our entire global automobile fleet to electric vehicles by 2030. These are a few examples of adhering to our commitment to a more sustainable world, which enhances our customers trust in us as we encourage them to pursue their own transitions to a more sustainable tomorrow.

As has become particularly evident in the last 12 months, no person or place is immune from disasters or disaster-related losses. As an insurer tasked with helping communities, individuals, and businesses recover from a catastrophe we are at the forefront of realizing and quantifying the large-scale consequences for the nation and its communities. We have direct insight into the difficulties in quickly returning to "normal" and are continually looking for solutions to reduce impacts and shorten recovery times. Infectious disease outbreaks, terrorism, social unrest, or financial disasters in addition to natural hazards can all create difficult fiscal, social, cultural, and environmental choices to ensure basic security and protection against hazards and disasters. My testimony today will be focused on the importance of physical resilience from natural hazards but, as risk managers, we fully recognize the interconnected nature of risk.

Using our core risk assessment skills to respond to some of the most significant long-term societal and environmental trends, we have identified climate change as perhaps the most complex risk facing society today. It is intergenerational; it is international; and it is interdependent. Representing the consensus of the international scientific community, the Intergovernmental Panel on Climate Change (IPCC) finds strong evidence that climate change is occurring, that it is influenced by human action, and that it is leading to changes in extreme weather and climate events.

For context, global losses from natural disasters in 2020 are estimated at $210 billion, of which some $82 billion was insured[1]. Both overall losses and insured losses were significantly higher than in the previous year (2019: $166bn and $57bn respectively)[2]. The US share of losses was exceptionally high: natural disasters in the US accounted for $95 billion (2019: $51bn) of overall losses and $67 billion of insured losses (2019: $26bn)[3]. Globally, of the ten costliest natural disasters in 2020, six occurred within the United States[4]. However, the most disturbing statistic is that this year's natural disasters claimed an estimated 8,200 lives[5].

It is Zurich's aim to leverage our sector's role as a primary risk signaler for society to help raise awareness of the increasing frequency and intensity of natural hazard events, and ultimately to incentivize the behaviors and best practices that will be required to both mitigate the worst impacts and adapt to changing weather patterns. We do this because Zurich's mission is to protect individuals, businesses and communities, and because we believe it's the right thing to do. Furthermore, from an industry perspective, we do this because the impact of extreme weather events is escalating, and without enhancing resiliency and mitigation measures many assets will simply become uninsurable.

As an insurer of physical property and business continuity, we are tasked with providing economic resilience in the form of an insurance policy. Economic resilience is inclusive of three primary attributes: the ability to recover quickly from a shock, the ability to withstand a shock, and the ability to avoid the shock altogether. When an event does occur—such as a flood, fire or wind damage—it is best for both the owner and the insurer to minimize the time it takes to recover. And we know the recovery time will be less if the insured asset is able to better withstand the detrimental effects of the event or, simply put, is more resilient. This scenario is easier shown in the graph to the right:

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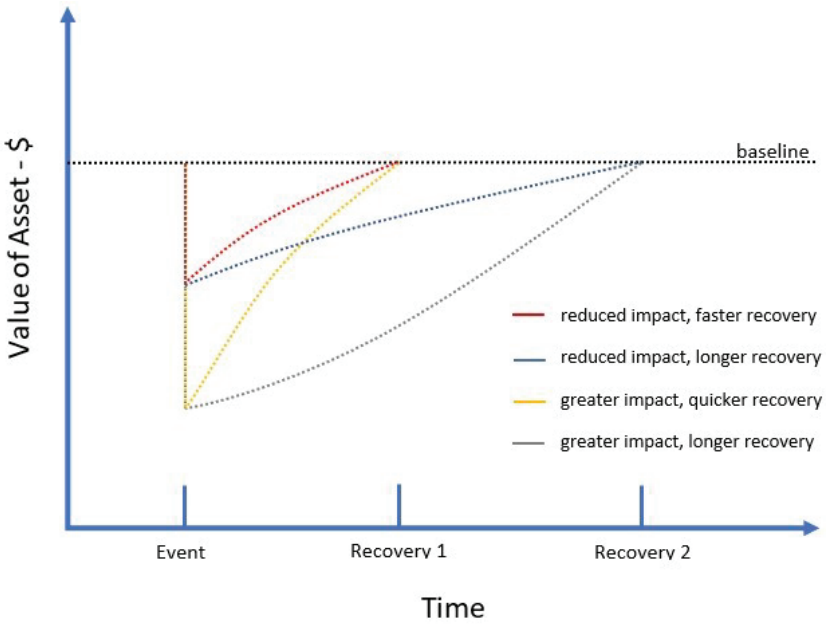
[1] https://www.munichre.com/en/company/media-relations/media-information-and-corporate-news/media-information/2021/2020-natural-disasters-balance.html
[2] Ibid.
[3] Ibid.
[4] Ibid
[5] Ibid.



As indicated in the graph, the value of a physical asset—perhaps a home, factory or office building—loses some value as an impact of the event. Bringing the value of that asset back to its base worth is the role of insurance. While the loss of the physical asset is clearly a significant cost, the time it takes for recovery can be just as costly, especially to the asset owner. Where we aim to be as an industry is in the smallest triangle above and bounded by the red lines, which means an insured can get back to their normal operations as quickly and efficiently as possible. This means the impact was minimalized and the speed to recovery maximized. And this will only occur when a structure or asset is built to a correct and current resiliency standard.

The property & casualty industry has a tradition of being at the forefront of disaster mitigation, which is why we are in a unique position to provide comment on resiliency and mitigation. A useful analogy is the development of fire codes in the late 1800's. During this period, several historic fires consumed vast areas of our largest cities, including New York, Chicago, and San Francisco. Recognizing that the "new normal" of tightly packed, dense construction greatly elevated fire hazard, the insurance industry sounded the alarm for adding sprinklers, fire breaks in construction, and other mitigation techniques as a necessity to maintaining community continuity. Further, the industry was forced to send risk-based price signals, which is a technical way of saying insurance will be prohibitively expensive or simply unavailable in some cases if you do not adapt to these practices. Given the trends that are occurring in the frequency and severity of weather events, we are again sounding the alarm. Investing in mitigation measures, including resilient infrastructure, nature-based solutions, and low-carbon technologies, is required if society is to continue to operate with the continuity and resiliency that is expected.

What is encouraging is that these changes require minimal investment in comparison to the benefits received. Current data suggests that the extra cost of building resilience into infrastructure systems is only " . . . 3 percent of overall investment needs."[6] However, when taking into account both the capital costs and operating costs of the asset, in most cases the Total Lifecycle Cost will be lower in a hardened, resilient structure. And the savings are even more significant if the structure is impacted by weather. In our own post-event studies conducted after significant flood, drought and wildfire events, our analysis shows that for every $1 spent

[6] Hallegatte, Stéphane, Jun Rentschler, and Julie Rozenberg. 2019. Lifelines: The Resilient Infrastructure Opportunity. Sustainable Infrastructure Series. Washington, DC: World Bank pg.xiii.

on resiliency up front resulted in $5 savings post-disaster. Like the integration of fire safety in modern construction—the necessity of which is unquestioned today—so should be inclusion of resiliency in building and infrastructure.

As I noted previously, insurers play a critical role in assisting communities, individuals, and businesses recover when catastrophe strikes. Importantly, the industry also plays a vital role in improving community preparedness and risk management *before* the disaster hits. In furtherance of this mission, Zurich has undertaken a series of initiatives to apply the analytics of insurance to a much broader set of stakeholders. Our goal with is to demonstrate the effectiveness of investing in pre-event resilience and shift funding from recovery to resilience.

In 2013 Zurich launched its Global Flood Resilience Alliance, a multi-sector partnership focusing on finding practical ways to help communities strengthen their resilience to floods. In 2018, we extended and expanded the program with the goal to increase third-party investments dedicated to pre-event resilience by $1 billion. We seek to do this by rolling out best-practice community programs that demonstrate the value of resilience-building and advocating for more investment in resilience with authorities and public and private funders.

Another approach we take is to share our knowledge about resilience through the publication of our Post-Event Review Capabilities, or PERCs. To date, we have completed 16 PERCS globally. In the United States, we have conducted four (4) such reports covering flooding events in North Carolina,[7] South Carolina,[8] and Houston,[9] and wildfires in California [10].

Zurich's PERC analyses of global disasters demonstrates that:

- Disaster risk management is playing catch-up to an increasingly larger exposure to natural hazards.
- Globally, spending on climate-related response is far greater than investment in pre-emptive risk reduction strategies.
- Where money is invested on weather-related prevention, it typically goes to protecting physical structures rather than more cost-effective risk management such as environmental planning.
- Infrastructure protection already in place—levees, for example—can produce a false sense of security.
- Few incentives exist to encourage "building back better" and including resilience into the rebuilding process.
- The neediest in society are often neglected before and after disasters, and sometimes are still recovering from one event when the next one strikes.

From our perspective, prevention and resilience-building are not just about humanitarianism, they are about more effective use of scarce funds. As noted previously, our research on the cost-benefit analysis from dozens of specific flood resilience programs shows that investing in resilience not only reduces suffering, it also is responsible budgeting.

I would like to further explain the statement I made earlier in this testimony regarding interconnected risk. This is a fundamental concept in risk management, which is directly applicable when managing physical risks as we have been discussing. We know there are direct pathways that influence outcomes, so when considering resiliency, we need to consider the entire built environment. For example, if we provide business interruption insurance for a casino operating on the Mississippi coast built with hardened, resilient components, we need to also consider the supporting infrastructure that can have a direct impact to that insured. It does no good to have a resilient building that is fully capable of operating after a major weather impact, but the roadways leading to the facility are damaged and impassable. This is just one example of why it is fundamental to consider the supporting infrastructure when building a complete, resilient environment. Lastly, the urgency in addressing these issues should be considered immediate. Just two weeks ago, the American Society of Civil Engineers (ASCE) published their 2021 America's Infrastructure Scorecard that gave the U.S. infrastructure an overall grade of C–, which sadly is an improvement from the previous score of D+. Simply put, we are at a crossroads with regards to aging structures and, combined with the significant increase in severe weather events, we can no longer afford to deploy temporary or band-aid fixes. And without proper resiliency standards as an integral part of all vertical and horizontal construction, we will simply be in the same situation we are

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[7] hurricane-florence-building-resilience-for-the-new-normal.pdf (zurichna.com)

[8] https://www.zurichna.com/-/media/project/zwp/zna/docs/kh/climate-resilience/perc-sc-report.pdf?la=en&rev=08690b6e85b2401ea050ceddfc21c658

[9] https://www.zurichna.com/-/media/project/zwp/zna/docs/kh/weather/perc__harvey__final.pdf?la=en&rev=e653cf8b7970497eac14abb7b32633fa

[10] california-wildfire-report.pdf (zurichna.com)

today: facing increased perils without proper preparedness—and all at a significant cost.

In closing, let me reinforce that the insurance sector has a fundamental role to play in helping society prepare for and address the costs associated with severe weather events. We are proud of the leadership our sector is taking in driving awareness and action on this critical issue. Zurich is dedicated to continuing to play a leadership role in driving global sustainability, and we invite and encourage everyone to join us in this essential effort.

Thank you.

Ms. TITUS. Thank you, Mr. Harper.

Mr. Fowke.

Mr. FOWKE. Thank you.

Chairwoman Titus, Ranking Member Webster, members of the committee, I am pleased to appear before you today on behalf of the National Association of Home Builders.

I would like to discuss the importance of housing affordability, the role that modern building codes play in reducing damage from natural disasters, and the need for mitigation policies and programs to improve the resiliency of the existing housing stock. I also want to focus on suggested financing mechanisms and other incentives to spur investment of production of homes that are both resilient and affordable.

My name is Chuck Fowke. I am the National Association of Home Builders chairman of the board, and I am a custom homebuilder in the Tampa Bay area. I have served on the city of Tampa and the State of Florida Hurricane Codes Committees, which gave me a firsthand look at what catastrophic disasters can do to communities.

The unusual number of significant disasters over the past several years has been sobering, igniting a nationwide dialogue about risk, resiliency, and mitigation. NAHB has been actively engaged in these discussions, and we have been a long-time leader in the drive to make homes more resilient.

To do so, we have repeatedly demonstrated commitment to sound Federal disaster and flood plain management policies and cost-effective, market-driven resiliency solutions that maintain housing affordability, while balancing the needs of growing communities.

Housing affordability is a real concern for many consumers. It is at a 10-year low for single family market. Almost one-third of the Nation's households pay more than 30 percent of their income for housing. NAHB estimates that if the median U.S. new home price goes up by $1,000, more than 150,000 American households would be priced out, and no longer able to afford the American dream.

Recognizing this crisis, Congress must factor in housing affordability when looking at solutions to build more resilient communities. Numerous proposals from legislators and stakeholders have suggested that mandates and more stringent building codes, such as the use of the latest published codes, are the answers to improving residential resiliency. We strongly disagree. Many of the code provisions are too prescriptive, too costly, and would do very little to improve resilience. That is because homes built to modern post-2000 building codes are resilient and making significant updates are unnecessary.

Evidence from FEMA and others support the fact and demonstrate that modern building codes have been very effective in

preventing the destruction of homes due to various storms, fires, and earthquakes. For example, after the 2018 hurricane in Mexico Beach, Florida, studies showed that homes built post-2000 remained standing while older homes did not.

It is imperative that Congress recognize the importance of defining the latest published building code as one of the two most recently published editions of codes. This definition is essential, as it provides States with the flexibility they need to follow their own code adoption, implementation, and enforcement processes, while remaining eligible for Federal funds and other assistance.

It is also important for State and local governments to be able to tailor building codes and amend them as necessary to fit the needs of their communities and protect their citizens. Modern codes are intended to be flexible. What is best for Nevada is not best for Florida.

Another important factor in the resiliency discussion is the role of existing housing stock. Ninety-eight million homes out of the Nation's 124 million homes were built before 2000. This older housing stock was not subject to the modern building codes that are now in effect.

It is imperative that Congress focus on improving the older homes, structures, and infrastructures that are less resilient to natural disasters. Federal incentives, tax credits, grants, and other assisted programs, would go a long way to facilitate and help fund the upgrades needed to ensure our homes and communities are ready for the future. These practical solutions will also ensure that working families have access to safe, decent, and affordable housing.

In conclusion, we urge Congress to take a practical approach when seeking to mitigate the effects of future natural disasters. Relying on existing building codes, heeding the expertise of State and local governments, focusing on improving existing housing stock, and providing incentives is the best way to encourage greater resiliency in the Nation's housing stock. This will also preserve housing affordability for new and existing homes.

Thank you for the opportunity today to testify before you.

[Mr. Fowke's prepared statement follows:]

Prepared Statement of John C. Fowke, Chairman, National Association of Home Builders

Chairwoman Titus and Ranking Member Webster, I am pleased to appear before you today on behalf of the National Association of Home Builders (NAHB) to share our experience and views regarding building resilience and mitigation. My name is Chuck Fowke, and I am NAHB's Chairman of the Board. I am also the founder and president of Homes by John C. Fowke Inc., and have built hundreds of homes throughout the Tampa Bay area. In addition to being a custom home builder, I have served on the City of Tampa and State of Florida Hurricane Codes Committees. In my capacity on those committees, I have had a firsthand look at what catastrophic disasters can do to homes and communities and how investing in mitigation can alleviate some of the challenges.

NAHB represents more than 140,000 members who are involved in land development and building single-family and multifamily housing, remodeling and other aspects of residential and light commercial construction. NAHB's members construct approximately 80 percent of all new housing built in the United States each year. NAHB's mission is to enhance the climate for housing and the building industry,

including providing and expanding opportunities for all people to have access to safe, decent and affordable homes.

This testimony will focus on the following key points:

- Maintaining housing affordability must be the cornerstone to any efforts to create cleaner and stronger homes.
- Modern building codes (e.g., post-2000) are resilient.
- State and local governments must retain authority over their land use and code adoption processes.
- Modernizing the existing housing stock is crucial.
- Incentive programs and other funding mechanisms must be provided to offset the increased costs for above-code and mitigation activities.

The unusual number of significant natural disasters over the past several years has been sobering. At the same time, they have ignited a nationwide dialogue about risk, resiliency and mitigation. NAHB has been actively engaged in these discussions for many years and we have taken a leadership role in improving the resiliency and performance of new and existing homes. In fact, NAHB and its members have a long history of supporting, developing and participating in many state and local initiatives, as well as various federal activities aimed and reducing disaster losses and improving resiliency. We have repeatedly demonstrated our commitment to working with all levels of government to promote and implement sound disaster and floodplain management policies and improve the resiliency of the homes we build and the communities we serve. In doing so, we take pride in helping to develop cost-effective, market-driven solutions that maintain housing affordability while balancing the needs of growing communities with the need for reasonable protection of life and property.

Today, I would like to discuss the importance of housing affordability, the role modern building codes play in reducing damage from natural disasters, the need for mitigation policies and programs to improve the resiliency of the existing housing stock, and suggested financing mechanisms and other initiatives to spur investment in the production of homes that are both resilient *and* affordable.

HOUSING AFFORDABILITY

Housing affordability continues to be a concern for households across the nation. Many people cannot afford to purchase a new home or install energy efficient or resilient features in an existing home—and that's before Congress considers any new policies aimed at tackling climate change. These challenges are real and we are hopeful that this Subcommittee will refrain from enacting any policies that will exacerbate these existing realities.

According to NAHB research conducted earlier this year, housing affordability in the single-family market remains near a 10-year low. Only 58.3 percent of new and existing homes sold in the last quarter of 2020 were affordable to families earning the U.S. median income of $72,900, while these same families could only afford about 40 percent of the new homes.[1] [2] At lower income levels, the reality is even starker. Based on conventional assumptions and underwriting standards, the minimum income required to purchase a $100,000 home is $22,505. In 2021, about 21.1 million households in the U.S. are estimated to have incomes below that threshold and, therefore, cannot afford a $100,000 home. To make matters worse, in many areas of the country, homes priced below $100,000 simply don't exist.

Clearly, owning or renting a suitable home is increasingly out of financial reach for many households. In fact, almost a third of the nation's households are cost burdened and pay more than 30 percent of their income for housing. At the same time, net new households are being formed faster than new single-family and multifamily homes are coming online to accommodate them, so there is both a surge in need and not nearly enough supply.

The nation continues to experience a housing shortage and an affordability crisis. Despite these real challenges, many continue to suggest that home builders should build structures that are more resilient and/or efficient in an effort to respond to and stem the impacts of climate change, meet carbon emissions limits or further en-

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[1] Quint, Rose, *Housing Affordability Holds Steady; Challenges Loom*, National Association of Home Builders, February 8, 2021, accessed at https://eyeonhousing.org/2021/02/housing-affordability-holds-steady-challenges-loom/ on March 15, 2021.

[2] Zhao, Na, Ph.D., *NAHB Priced-Out Estimates for 2021*, National Association of Home Builders, February 2021, accessed at https://www.nahb.org/-/media/NAHB/news-and-economics/docs/housing-economics-plus/special-studies/2021/special-study-nahb-priced-out-estimates-for-2021-february-2021.pdf?__ga=2.166628414.1684294592.1615476404-1214384301.1615476404 on March 15, 2021.

vironmental goals. Oftentimes, such additional requirements are unnecessary because many new homes outperform existing ones and these new mandates will only serve to exacerbate the current housing affordability crisis.

For example, building costs are estimated to increase between $4,000 and $16,000 due to the changes from the 2009 to the 2015 Residential Building Code[3] and the additional cost of raising the height of the foundation for a new 2000-square-foot home was estimated in 2017 to range from $890–$4,470 per foot of elevation.[4] Obviously, those costs are passed along to the consumer and can have a significant impact on the pool of eligible buyers. Indeed, NAHB estimates that in 2021, a $1,000 increase in the median new home price would price 153,967 U.S. households out of the market.[5] But, as shown, complying with many code changes or undertaking building retrofit activities can be significantly more costly than $1,000.

Stricter construction standards and mitigation come with a price tag. Regardless of the level of benefit, some entity has to provide the upfront funding required to conduct the construction or mitigation activities or they will not occur. This is where the challenge lies for most consumers and homeowners. Just because more stringent codes or pre-disaster mitigation may provide a benefit doesn't mean it can or will be implemented. While the federal government has historically made funding available for these types of activities, most of the programs have been consistently oversubscribed and target the highest risk structures or the lowest income properties, which make it unlikely that they will be able to fully serve the array of mitigation needs associated with existing housing. New sources, avenues, and incentives must be found if we are to make meaningful progress on resiliency while maintaining housing affordability.

BUILDING CODES

It is clear that the unusual number of significant natural disasters occurring over the past few years, coupled with ongoing concerns over the effects of climate change, have increased awareness of and raised concerns about the resilience of buildings. Although most states and localities are governed by building regulations that are designed to protect homes and their occupants from severe weather events and hazards, some argue that more should be done. NAHB disagrees. Modern codes have proven to be resilient. More stringent codes can come at costs that not only curtail homeownership and significantly hinder housing affordability, but can severely impact state and local economies because they greatly influence how or if existing structures and cities are reengineered, rebuilt and/or remodeled and impact how and where or if new homes and communities are built. Instead of ratcheting up their stringency, the nation needs to embrace modern building codes and the positive role they play and focus on ensuring they are sufficiently flexible to address regional risks and associated considerations.

Modern Codes are Resilient

Building codes are designed to establish minimum requirements for public health and safety for commercial and residential structures. Although they have existed in various forms for decades, building codes in the United States achieved a milestone in 2000 when the three regional code organizations were consolidated into the International Code Council (ICC) and their codes were combined to create the first set of "I-Codes", which were published in 2000. Although there are other building codes available, the I-Codes are by far the most widely used model building codes, with some form of the International Building Code (IBC) adopted in all 50 states and versions of the International Residential Code (IRC) adopted in 49 states. Like most model building codes and referenced standards, the I-Codes are modified through a formal public consensus process every three years. This has resulted in the publication of a new edition in 2003, 2006, 2009, 2012, 2015, 2018 and 2021.

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[3] Home Innovation Research Labs. (2014, December). *Estimated Costs of 2015 IRC Codes*. NAHB. https://www.nahb.org/-/media/NAHB/advocacy/docs/top-priorities/codes/code-adoption/irc-2015-cost-study.pdf

[4] See Association of State Floodplain Managers, *The Costs & Benefits of Building Higher*, 2018, accessed at https://s3-us-west-2.amazonaws.com/asfpm-library/General/Benefits_Cost_Freeboard_ASFPM_2018.pdf on March 15, 2021. While it is not clear how these estimates were derived, many NAHB members have reported costs that are significantly greater than those indicated in this publication.

[5] Zhao, Na, Ph.D., *NAHB Priced-Out Estimates for 2021*, National Association of Home Builders, February 2021, accessed at (https://www.nahb.org/-/media/NAHB/news-and-economics/docs/housing-economics-plus/special-studies/2021/special-study-nahb-priced-out-estimates-for-2021-february-2021.pdf?_ga=2.166628414.1684294592.1615476404-1214384301.1615476404) on March 15, 2021.

When the I-Codes were created, a number of major improvements were immediately made to the traditional building code requirements within the residential building code to address issues observed after Hurricane Andrew in 1992 and the California earthquakes of 1989 and 1994. Although additional improvements have been made since the I-Codes' debut in 2000, the number of changes incorporated into the newer editions of the IRC that dramatically impact structural reliability and occupant life safety within residential structures have greatly diminished. In other words, the modern building codes (e.g., post-2000) have proven to be resilient and the need for triannual updates is not necessary for improved resilience. Homes designed and constructed to the national model building codes are built to withstand major damage from disasters and already provide substantial resiliency for many high seismic, high wind, heavy snow, wildfire and flooding events.

Despite this, a number of recent proposals targeted at making buildings more resilient are predicated on requiring the use of "latest published editions" of certain codes or standards. This is unnecessary and creates a number of challenges. First, although many believe that homes built following the "latest published edition" of the building code equate to more resilient homes, that is not necessarily the case when compared to those built to previous editions of the IRC. Homes built to modern building codes—defined as any edition of the IRC—have been shown to be resilient. Evidence from FEMA and others demonstrate the IRC, throughout its history, has been very effective in preventing the destruction of homes due to various storms and earthquakes and significantly reducing damage to wall and roof coverings.[6] Further, because many of today's new homes are built "above code," with additional sustainable and high-performance building features, they are even more durable and resilient.

Second, it is not clear that this definition recognizes and accommodates the different risks, building technologies and landforms that occur across the country or specifically allows the model codes to be amended—a step that is crucial to maintaining the resiliency of the codes. Third, because each state and local government follows its own code adoption, implementation, and enforcement processes and has limited dedicated resources, many are not able to adopt the latest published codes within expected timeframes. Evaluating and adopting a new building code is a time consuming and costly undertaking—a multi-step process that oftentimes requires state legislative as well as administrative action and that can take years to complete. Given these realities, mandating the adoption of the "latest published editions" creates an unintended disadvantage for many states and localities that, under other measures, would be considered fairly up to date in maintaining their codes (e.g., following a standard and predictable process and timeline).

The successful performance of the IRC over the past 20 years is an indication of the "maturing" of building codes as they have gone through the iterative process of refinement since 2000. While tweaking the code to reflect technological advances will continue, it is clear that major changes aren't as necessary as they used to be. Similarly, because the codes are nearing a point of diminishing returns in terms of the cost/benefit ratio, additional updates may not be cost-effective. Homes can be built to withstand any disaster, but homes cannot yet consistently be built to withstand any disaster *and* be affordable. New homes built to modern codes are safe. New homes built to modern codes are resilient. There is no need to require more stringent requirements or the adherence to the latest published edition of the code—especially if that is interpreted to mean the most recent version.

Modern Codes Address Local Conditions

State and local governments play a key role in the codes adoption process and determining the value of and need for certain code requirements. Because the model codes are meant to be amended, for decades, state and local governments have been responsible for evaluating each new edition of the model consensus-based building codes and determining which provisions are applicable within their borders. They do so by adding, removing, or revising provisions so that the codes better fit the construction practices and techniques, geography and risks, and economic and market conditions within the region. If they were unable to make these vital changes, state and local governments would be stuck trying to fit the square peg of national codes into the round hole that represents local conditions. Equally problematic, doing so

[6] For example, FEMA's Summary Report on Building Performance—2004 Hurricane Season (FEMA 490, March 2005) indicated that "no structural failures were observed to structures designed and constructed to the wind design requirements of . . . the 2000 IBC/IRC", and FEMA's Summary Report on Building Performance from Hurricane Katrina (FEMA 548, April 2006) stated "most structural failures observed . . . appeared to be the result of inadequate design and construction methods commonly used before IBC 2000 and IRC 2000 were adopted and enforced."

would impose numerous unnecessary requirements on builders—requirements that translate into higher costs for buyers.

The ability to tailor the codes is a key component in ensuring the codes are resilient. Some states make few changes to the model codes, others hand-pick the provisions and/or amend certain requirements, and others use the model code as a baseline to create their own state-specific code. In this way, jurisdictions can assess their specific risks and needs to create the code that best suits their specific seismic, wind, flood, and/or other conditions. At the same time, they can avoid imposing mandates (and associated compliance costs) for provisions that are not applicable or designed to address levels of risks that are not present in their areas, such as elevation requirements outside the traditional flood hazard areas, or increased structural requirements for snow loads in more temperate regions.

Under this rubric, Nevada is free to identify the risks it faces and adopt the codes that are best suited to its locale, geography and economic conditions, while North Carolina is able to do the same. In fact, because the model codes are intended to be tailored, amendments are made to nearly every code that is adopted at the state or local level, whether it applies to only the administrative requirements or major rewrite of the entire document. For example, North Carolina adopted its 2018 building codes based on the 2015 I-Codes on January 1, 2019 with 38 pages of amendments.[7] Similarly, Nevada adopts the building codes at the local level, but collaborates statewide on the amending process and had 14 pages of amendments on the residential code alone.[8] Any federal efforts must not alter this vital underpinning and must allow and embrace amendments as an important component of ensuring both the codes' applicability and resiliency, and, in turn, its affordability.

Building Codes do not Address Existing Homes

As currently structured, most building codes apply only to new construction. This means that any effort to increase the stringency or otherwise focus on the implementation of building codes overburdens new construction and essentially ignores the performance and resiliency of the existing housing stock. Such a result is unacceptable.

According the 2019 American Housing Survey, over half (65 million) of the nation's 124 million homes were built prior to 1980 (98 million prior to 2000); and therefore, most were not subject to the modern building codes that are now in effect. Equally problematic, the latest Census statistics show the number of homes built before 1970 that are taken out of commission is only about 6 out of every 1,000 being retired per year. These low rates of replacement mean that the built environment in the U.S. will change slowly and continue to be dominated by structures that are at least several decades old. Indeed, optimistic estimates suggest that if 1.2 million homes were built every year, after 20 years only 16 percent of the conventional housing stock would consist of new homes built between now and then. In comparison, 68 percent would still consist of homes built before 1990.[9] Clearly, these statistics demonstrate the impact that newer building codes can have on the built environment is limited because new construction represents such a small portion of the housing stock. Any effort to increase those gains would be difficult and costly.

In sum, those who call for the adoption of more stringent and costly building requirements fail to acknowledge that this would do very little to provide further protection from natural disasters. Inappropriately focusing on new construction would create hardships for state and local governments and would make new housing prohibitively expensive for hard-working families at a time when the nation is already suffering through a housing affordability crisis.

PRE-DISASTER MITIGATION

The American housing stock continues to age, especially as residential construction continues its modest rebound after the Great Recession. Because recent production has fallen short of even the levels needed to accommodate the number of net new households, there is increasing pressure to keep existing homes in service longer—homes that may not perform as well or be as resilient as newer homes. Retrofitting these homes represents the biggest opportunity to improve the resiliency of the nation's housing stock.

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[7] See http://www.ncdoi.com/OSFM/Engineering__and__Codes/Documents/2018__NCBuilding Code__amendments/2018__NCBuildingCode__amendments.pdf

[8] See http://www.clarkcountynv.gov/building/plan-review/Building%20Codes/2018__IRC__ Amendments.pdf

[9] Emrath, Paul, Ph.D., *More New Homes Needed to Replace Older Stock*, National Association of Home Builders, August 2, 2018, accessed at https://eyeonhousing.org/2019/01/more-homes-needed-to-replace-older-stock/ on March 15, 2021.

Existing Housing Stock Ripe for Retrofit

Older homes are less resilient and energy efficient than new homes. They were not built to the stringent requirements contained in modern codes, use (and lose) more energy, and are more susceptible to damage from natural disasters. Many of the post-disaster investigations support this conclusion. For example, in FEMA's Mitigation Assessment Team Report regarding Hurricane Sandy, the summary reads, "Many of the low-rise and residential buildings in coastal areas [that had observable damage] were of older construction that pre-dates the NFIP."[10] Similarly, the Insurance Institute for Business and Home Safety stated in its preliminary findings report for Hurricanes Harvey and Irma that, "Total destruction from wind occurred to mobile homes, as well as older site built conventional homes," and "Newer homes generally performed better than older buildings."[11] Clearly, upgrading existing buildings and improving their ability to withstand disaster events must play a key role in any efforts to improve the nation's overall resiliency.

Flexible and Cost-Effective Options Critical

As policymakers seek to mitigate the effects of future natural disasters, they need to create an array of opportunities to facilitate upgrades and improvements to the older homes, structures and infrastructure that are less resilient to natural disasters because they were built when there were no national model codes in existence or constructed following codes that are now outdated. Modernizing existing structures and properties to improve their resiliency can take many forms—ranging from better sealing roof penetrations or installing hurricane shutters to elevating the structure or improving the site's stormwater management. Clearly, mitigation will be largely dependent on property location and condition, type of hazard and level of risk, geographic conditions, economic levels, community and individual resources and other factors. Like most efforts, however, there is no one solution that can address the full range of issues and needs associated with improving resiliency. Therefore, flexibility in program design, application and implementation is vital. Any federal assistance must also be broadly applicable over geographic and economic spectrums at both the community and individual levels. While some will need financial assistance, others may benefit from technical expertise or innovation.

At the individual home level, recognizing many households do not have the interest or means to conduct larger scale renovation projects, NAHB, in concert with the Federal Emergency Management Agency, the, International Code Council, and the Insurance Institute for Business & Home Safety, is developing a series of Tech Notes that describe different types of retrofit techniques that can be used to increase the resiliency of existing buildings. Importantly, these how-to fact sheets focus on strategies that require minimal costs (typically less than $1,000 for a typical home), but have a significant impact on reducing damage.

The first six topics that have been completed include sealed roof decks, attachment of roof coverings, flashing and sealing of roof penetrations, use of hurricane shutters, use of impact resistant doors and methods of preventing ice dams. It is hoped that these new resources will help homeowners understand their options, recognize that certain mitigation options can be cost-effective, and compel them to take action. NAHB continues to demonstrate its commitment to increase the performance of homes through the development of these resources and the ongoing promotion of voluntary participation in green building programs.

We strongly urge Congress to recognize and promote voluntary, market-driven, and viable green building, high performance and resiliency initiatives for both new and existing homes. Unlike mandates, these programs can promote lower total ownership costs through insurance and utility savings as well as provide the flexibility builders need to construct homes that are recognized as being cost-effective, affordable and appropriate to a home's geographic location.

INCENTIVES/FUNDING MECHANISMS

Incentive programs that offset the increased costs for above-code and mitigation activities are an important tool to reduce the barriers that many resiliency opportunities pose and encourage more homeowners to invest in home modernization. For example, due to the high initial costs associated with investing in certain resiliency

[10] Federal Emergency Management Agency, Mitigation Assessment Team Report Hurricane Sandy in New Jersey and New York, November 27, 2013, accessed at (https://rucore.libraries.rutgers.edu/rutgers-lib/44511/PDF/1/play/) on May 19, 2019.

[11] Brown-Giammanco, Ph.D., Hurricanes Harvey and Irma—IBHS Preliminary Findings Report, Insurance Institute for Business & Home Safety, accessed at (https://ibhs.org/wp-content/uploads/wpmembers/files/Hurricane-Harvey-Wind-Damage-Investigation_IBHS.pdf) on May 19, 2019.

and mitigation efforts, many homeowners are unable to finance desired or necessary upgrades and, without assistance, would likely forego the improvements. Mitigation funding and/or incentives that are available at the federal and state levels, as well as those that could be offered through the real estate valuation and transaction processes, can address this issue, produce results and have proven to be attractive alternatives to mandates.

Federal Incentives

Congress has taken a number of steps over the years to alleviate the challenges associated with funding retrofits—most prominently through federal funding for pre-disaster mitigation and tax incentives. NAHB asserts that continuing and expanding these types of programs is necessary in order to realize measurable change in the resiliency of the housing stock. Indeed, coming up with what can be significant up-front costs or increased down payments needed to finance improved resiliency is often the most difficult part of new or existing home upgrades.

Tax incentives are another proven way to realize results and, as they have been effective at advancing energy efficiency improvements, perhaps could be used as a model for resiliency. Sections 25C for qualified improvements in existing homes (building components), 45L for new homes and 179D for commercial buildings have permeated the market and assisted many families and building owners to invest in efficiency. Continuing and expanding programs like these, which have demonstrable results, will compel more homeowners to take positive actions.

State Incentives

States can also play a role in enticing positive behavior. One alternative that has been used in several states is providing insurance discounts to homeowners who conduct specific activities. In Texas, the state's hurricane insurance pool, the Texas Windstorm Insurance Association, offers premium discounts of 19 percent to 33 percent for building code compliance. In Rhode Island, insurers are required to waive the hurricane deductible for insured homeowners who voluntarily implement mitigation measures that are specified in the insurance regulation. In Alabama, tax credits of up to $3,000 are available for retrofitting a taxpayer's legal residence to make it more resistant to hurricanes, tornadoes, other catastrophic windstorm events, or rising floodwaters.

In addition, the Alabama State Legislature established the Strengthen Alabama Homes Act in 2011 to provide grants to qualified homeowners to retrofit their homes to reduce property damage caused by hurricanes or other catastrophic windstorm events. Clearly, these state programs have proven to be popular, as they provide value through loss reduction, yet enable and facilitate broader participation through reduced costs. The recognition and expansion of programs like these is one way to engage participation while offsetting the hefty costs associated with upgrades.

Other Incentives

There are a number of other opportunities to facilitate, incentivize, and offset the costs of voluntary above-code construction and/or pre-disaster mitigation that could be achieved through public-private partnerships and other collaboration. These options include modifications to property valuation and financing protocols; loans, grants and other funding programs; and insurance premium reductions within the National Flood Insurance Program (NFIP), among others.

Under current practice, in most instances, mortgage companies, appraisers, assessors and real estate professionals do not consider the costs or benefits associated with the various resiliency upgrades. This creates a disincentive to take proactive steps to reduce a home's exposure, as those expenditures are not necessarily considered to be valuable amenities. If the improvements are not included in the appraisal or appraised value of the structure, not only is the buyer uninformed about the home's qualities, his or her willingness to pay more can be significantly diminished.

By recognizing and valuating the upgrades, appraisers can consistently give weight to these improvements in their valuations, lenders may reconsider qualifying loan ratios, realtors can promote their benefits, and homeowners would get assurances that the investments they have made will retain value and be recognized in resale. Homes will also get the upgrades needed to better weather storm events, thereby reducing future damage, insurance outlays and homeowner displacement.

Other opportunities to facilitate, incentivize, and offset the costs of voluntary above-code construction and/or pre-disaster mitigation include tax incentives, grants, the creation of a weatherization assistance-like program for resiliency, and/or financing programs that would allow the costs of retrofits to be added to a mortgage.

Congress is encouraged to consider a full range of federal incentive and funding opportunities, as well as ways to promote and facilitate state-level and private ef-

forts to optimize the resiliency of new and existing homes. Clearly, overcoming the significant hurdles of how to finance upgrades and entice homeowners to take action will be a key to the success of any effort to increase investment in resilience and mitigation.

MOVING FORWARD

Sound building codes are already in place in most communities and they are doing their job. NAHB is supportive of voluntary and incentive-based efforts to improve the nation's resilience, but remains concerned with how any expansion of federal authority over state and local governments' ability to adopt location-appropriate building codes or take other steps may impact where and how homes are built or severely constrain the production of affordable housing. NAHB is also troubled by the inappropriate focus the adoption of the most recent versions of codes places on new construction at the expense of the existing housing stock and strongly believes that expanding mitigation opportunities and targeting upgrades to existing structures could help to better manage and more evenly reduce the risks.

We strongly urge this Subcommittee through its oversight role to focus any efforts related to housing on cost-effective, market driven solutions that encourage greater resiliency in the nation's housing stock while preserving housing affordability for both new and existing homes. Further, given our members' knowledge and experience building homes and communities—activities that place them on the front lines in terms of designing, planning and building to reduce risks and minimize future losses, we stand ready to assist and help deliver positive results and help you reach your goals.

CONCLUSION

I would like to thank the Subcommittee for the opportunity to testify today and share NAHB's views. The nation's home builders have long supported the adoption and implementation of building codes as a way to ensure the homes we build are solid and safe. In doing so, what has become clear is that with each new home we build, we are transforming our communities into resilient cities of the future.

Ms. TITUS. Thank you very much. And I apologize, it is Mr. Fowke, not Mr. "Folk." So thank you for being with us.

Mr. FOWKE. That is OK.

Ms. TITUS. I now ask unanimous consent that members not on the subcommittee be permitted to sit with the subcommittee at today's hearing and ask questions.

Without objection, so ordered.

I would now like to recognize members of the committee for questions. Each Member will be recognized for 5 minutes of questions, and I will start by recognizing Chairman DeFazio.

Mr. DEFAZIO. Thank you, Madam Chair. I appreciate the opportunity to go first.

Just to any members of the panel, we are looking at major investments in water infrastructure, both wastewater and drinking water, in the infrastructure package upcoming in the next couple of months.

I found in my district that plastic melts in severe fires and, obviously, then you have issues with seismic that could relate to other substances.

How are we going to deal with this? I think maybe the last witness was talking about localities. I guess you would assess what your risks are, what your biggest concern is and then try and attempt to rebuild the infrastructure in a way that deals with that?

Mr. WRIGHT. I guess, Mr. Chairman, if I could, I would tell you that that is exactly the right case. You have got to deal—particularly on this infrastructure side, but on the housing stock as well, specifically with the risk as it exists in that community. So, you

think about how things tie together. You think about the pipes, but also think about water infrastructure, and whether or not the infrastructure itself can withstand a major storm, a major storm surge event, or a fire that approaches it. Things like a flood risk management standard is so imperative because if water comes up and over into a wastewater treatment plant, it shuts down.

Mr. DEFAZIO. All right.

Ms. SMITH. I would add, Mr. Chairman, that the important thing is also to look at the risk as it will exist in the future. You don't want to have to rebuy a new infrastructure. You don't want to have to rebuild housing again. So you want to look, to the extent that you can, where is going to be the saltwater intrusion that could affect the placement of new water supplies, where should the pumps be placed, all sorts of things, the wastewater facilities, how can you keep the electricity running when you are flooded. So to look at future risk as well as current.

Mr. DEFAZIO. Thank you.

And then, I guess, probably to Mr. Fowke, or others can answer, but you raised concerns about the potential for a $1,000 increase in cost; yet, I was just talking to Mr. Garamendi, who had to leave, and he was the insurance commissioner for a number of years in California, and I was talking about how I had seen a photo after a chaparral fire of a neighborhood where everything was toast, except for one house, and that house was built with concrete siding, a tile roof, and metal shutters, and block attic vents, and it was still standing. But I am willing to bet that current building codes don't require that, and it probably cost a lot more than $1,000 to get to that point.

So do you think like with building in chaparral areas and other things as L.A. expands, that the modern building code will take care of that, which would be probably asphalt roof, certainly wouldn't include shutters and other things.

Mr. FOWKE. Well, I believe that codes should be flexible where they can change in nature to where issues take place throughout different regions of the country. To make houses to where they meet and exceed some of the things that you are mentioning here, if they are not affordable, I don't think the consumer will ever have the opportunity to enjoy or appreciate the savings or the use of that facility.

Mr. DEFAZIO. Well, the point being, if someone is doing a major new development, and they are building it in such a way that in the chaparral area, it is likely to burn down, that is going to impose considerable costs, obviously, on the individuals, and on the insurance and potentially on Stafford. So there are kind of front-end costs, back-end costs on these things, and I think there has to be a balance, and it should be, it seems to me, dictated by the region and the risk, and not, say, well, we will get a uniform national building code and houses are bolted down now, they don't fly off the foundation, blah, blah, blah, we are taking care of these things. I think it needs to be more regionalized and localized.

So insurance would like to, or perhaps, someone else respond to that?

Mr. HARPER. Sure. Thank you for the question.

I would echo your comments that, you know, there is a national building code, and there is a need for regional codes as well. Natural disasters, there is uniqueness to different geographical areas. And when you use the example of wildfire, that is one of those where I think it is almost a combination of what can you do from a regional perspective with codes, and then what can you do, also, from a larger built environment perspective? How can we use public lands and parks to create buffer zones? How can zoning be used to reduce exposures by mandating clustering of the built environment, creating defensible space, and ensuring transportation networks are interconnected?

So codes can be used to influence building styles, building materials, and landscapes. So I think there are several tools in the toolbox, but I would agree that there are very unique regional components to what we are trying to do here. But I think we also have to look at all of our possible tools that we have, including the built environment in which that structure is sitting.

Mr. DEFAZIO. Thank you.

Thank you, Madam Chair.

Ms. TITUS. Thank you.

Mr. Webster.

Mr. WEBSTER. I would say that, first of all, Mr. Fowke, you raised some important issues on affordability in your testimony. We can push stronger building codes. However, if those building codes cost too much money, then the homeowners can't afford them and we haven't improved mitigation. So where is the real balance between those two? I mean, there has to be a balance, and I know in Florida there are places where we balance that out. What do you think?

Mr. FOWKE. Well, Ranking Member Webster, I think Florida is a perfect example of balance. After Hurricane Andrew, I was able to witness firsthand the destruction that took place. It was devastating. It was almost hard to imagine the damage that took place.

The knee-jerk reaction was to build homes that were bulletproof and could withstand any kind of storm. But we learned very quickly the affordability was out the window then. A consumer cannot afford the home. It was very unattractive. And, so, we looked for balance, and we worked real hard in research and development after Hurricane Andrew.

And Mexico Beach, Florida, the last hurricane in 2018, was a great example where older homes did not stand. The newer homes that were built post-2000 stood up against the storm, and it was a success story.

We learned a lot about Hurricane Andrew, and the research that took place there and the practices that have happened afterwards have been a success story in Florida.

But, like I said earlier as well, what we do in Florida is not necessarily what they need to do in Nevada, and, therefore, the codes need to be flexible throughout the country in different regions. One size doesn't fit all.

Mr. WEBSTER. How can we support homeowners with existing homes in improving their resiliency at their properties?

Mr. FOWKE. Well, if funding was available for existing homes, the commerce is out there where companies will come in and bring your house up to current codes. Things that we learned that were very simple were application of windows, strapping of the trusses on the building, and installation and application of the exterior doors and garage doors. Some of these items here that I just mentioned would be very cost effective and add value to the home, and also add safety to the homeowner.

Mr. WEBSTER. So can you talk about your work in Florida for which you were typically used as a model for building codes and mitigation, and how the flexibility to address affordability can be worked into mitigation activities and planning?

Mr. FOWKE. Well, we looked at, first, the failure of the homes in Hurricane Andrew, when Hurricane Andrew happened, and from there, we looked at solutions, and we learned quickly that if the roof trusses were to lift, the exterior wall would collapse; therefore, the entire structure would collapse. So we started out with strapping down the trusses, putting more rebar in concrete in the exterior walls and beefing up the exterior walls.

In velocity zones, we made sure that we had the velocity tight windows, impact windows. And, in the installation of windows throughout the State, we used more stringent application for installing the windows so that they weren't easily removed from high winds.

But another thing in Florida, Ranking Member Webster, that we need to pay attention to—and it is not a coastal problem, but the flood insurance issue is set to expire in September, and we continue to put a Band-Aid on that.

And, so, I would say to this committee today, too—and I sat on a roundtable discussion with Congressman Charlie Crist a few years ago, and we began to look for solutions to the flood insurance issue.

And, so, I think—hand-in-hand, I think the insurance members on this call today will also agree with me that we need to quit putting a Band-Aid on flood insurance. And I am not saying that because I am from Florida, because floods are not a coastal issue.

Mr. WEBSTER. Thank you very much.

I yield back, Madam Chair.

Ms. TITUS. Thank you.

I would like to ask a couple of questions myself. This can go to anybody on the panel. We are trying to be the best stewards of taxpayer money, and we have reacted to a lot of this weather that you have all mentioned in creating a number of disaster programs. You have got some in HUD. You have got some in defense, in transportation, DOE, EPA, just all these different programs.

I wonder if you could talk to how we can make them more accountable, how they can be more cost effective, and how they can be more coordinated so you don't just keep creating layers of bureaucracy and difficulty for people who need to apply for these funds that come from different sources.

Mr. STRICKLAND. I would like to speak on behalf of the national emergency managers to that point, because that is an issue that we really are constantly up against. It is the numerous Federal programs, both before, during, and after a disaster.

And, if there could be a way, at the Federal Government level, to centralize this coordination—and, to us, it would really be FEMA needs to be well aware of all of the programs that are available within the Federal Government, and to be able to coordinate with the States those programs and how they may be most effective per what that particular State's issue and risk vulnerabilities might be.

That, to us, would be of great, great assistance.

Thank you.

Ms. SMITH. Madam Chair, if I could add, perhaps, somewhat of a friendly amendment to Mr. Strickland's approach, that we see that this is an issue, and it is important to try to harmonize and allow the various programs to work together, to have more flexibility on trying to match dollars from NRCS at USDA, with FEMA dollars, for buyout, or something of that sort. I think allowing for projects that have co-benefits will be helpful.

Mr. WRIGHT. Taking it one step further, there was a National Mitigation Framework developed 7 years ago, and it has been revised once. And, in that, they created a mitigation framework leadership group. It has all of the Federal agencies on that group. My prior role at FEMA, I got to lead that group.

It has the right people at the table. It had the right conversations. But, to be honest with you, Madam Chair, there is not a mandate legally. There is not a mandate from Congress that tells those individual programs with different departments in different committees of jurisdiction to make it simpler, to bring those efficiencies there.

And, so, it is done far too ad hoc. Far too much of it is informal, because everyone is following their own organic act, their own legal framework.

And, to Mr. Strickland's point, it just becomes unreasonable by the time you are trying to implement it on the ground.

Ms. TITUS. Sometimes you get into jurisdictional battles among the agencies as well. Nobody wants to——

Mr. WRIGHT. Absolutely.

Ms. TITUS [continuing]. Give up any turf or any budget.

Mr. WRIGHT. This is true.

Ms. TITUS. Sounds like from all of you that this might be something that we need to look at more carefully, and we will welcome your wise counsel as we do that.

One other question. We saw in FEMA's National Advisory Committee report that underserved communities stay underserved. They usually don't get the benefits of some of these programs.

I wonder if you all might comment on how we could better serve those communities, get the information to them, get the resources to them, supplement their ability to apply for grants. Any suggestions?

Mr. WRIGHT. I think twofold. One of them is there is a need to have the capabilities on the ground to develop the applications. I think the bigger issue is the ability to bring the match.

In almost every State, the locality has to bring that 25-percent match, which is required in all of these—at least the FEMA grant programs that we are referencing here today. And underserved communities don't have that. And that was my point earlier. While there were $3.6 billion worth of applications that came in from

BRIC, I wonder how many of those are coming from underserved communities. How many of them really have that?

So, I am always reticent to say that we should change cost shares all the way to 100 percent, but I do think it is appropriate to look at that cost share and potentially make adjustments, specifically when underserved communities will increase their resilience.

Ms. TITUS. Well, we did have that included in the rescue package, and so it is a possibility. We might want to give—maybe look at that and shape it in such a way that it would be limited. Good suggestion.

Excuse me, Ms.—sorry——

Ms. SMITH. I would just suggest, Madam Chair, that an example from the State of Florida might be helpful where they provide different amounts for different localities' share, depending on what kind of efforts have been undertaken, and, perhaps, you could do that with a balancing sliding scale based on level of need.

Ms. TITUS. Thank you. Thank you very much.

Mr. Guest?

Mr. GUEST. Thank you, Madam Chairman.

Mr. Harper, in your testimony, you cite my State of Mississippi as an example that you use on page 5. You say there on page 5—it says: "When considering resiliency, we need to consider the entire built environment. For example, if we provide business interruption insurance for a casino operating on the Mississippi coast built with hardened, resilient components, we need to also consider the supporting infrastructure that can have a direct exact impact to that insured. It does no good to have a resilient building that is fully capable of operating after a major weather impact, but the roadways leading to the facility are damaged and impassable. This is just one example of why it is fundamental to consider the supporting infrastructure when building a complete, resilient environment."

Mr. Harper, can you speak on the importance of investing in resilient infrastructure as a public good, which would then support private investment? And do you believe that such investment would then incentivize private investment in resilient structures in new construction in those areas?

Mr. HARPER. Yes, sir. You know, speaking to the importance of infrastructure is also talking about the importance of response and recovery. We need to invest in infrastructure systems that can withstand disaster in order to allow emergency responders—at minimum, allow emergency responders in and to allow recovery to begin as soon as possible, opening up businesses within days, and not weeks.

Further, with more detail provided in my written testimony, as you stated, infrastructure is critical to economic resilience, which is really two parts: One is lessening the impact of the events, and two is the speed to the time of recovery to normal. And, as an insurance provider, that is really our role, is to try to make people whole and make people businesses once again, and that is two-part.

And that is why it is so critical right now, when you do look at an asset, to consider all parts of resiliency, which infrastructure is a critical part of that.

With regards to the second part of your question, I absolutely believe that investment in sound, resilient infrastructure will incentivize private investments. In particular, infrastructure performance is a key due diligence metric in analyzing commercial real estate investment. Simply put, nobody wants to invest in a property with an above-average chance to become a stranded asset.

And, even if there is development in a noninvestment market, companies want safe access to and from their facility for both customers and employees. And that is why resilience in infrastructure has to be part of the conversation.

Mr. GUEST. And, continuing kind of on that same vein, in February, winter storms across the South devastated many local water and electric systems. Jackson, the capital city of Mississippi, a city that I am proud to represent, parts of the city lost water for more than 3 weeks, and here we are now 5 weeks out, and there are still portions of the city that do not have an adequate supply of clean drinking water.

This has affected families, businesses, schools. All have been affected by this.

Mr. Harper, you speak also in your testimony—on page 6, you say that "we are at a crossroads with regards to aging structures and, combined with the significant increase in severe weather events, we can no longer afford to deploy temporary or Band-Aid fixes."

And so my question to you is: What fixes to our aging infrastructure can we make that will be most beneficial to the taxpayers?

Mr. HARPER. I think, at this point, it is not only what fixes can we make, but what replacements need to be made? If you look at a lot of the aging infrastructure, so much of it was built post-World War II, and, with the rapid growth in population in certain areas, that infrastructure, we continued to put Band-Aids on that.

One example is stormwater systems in this country, which, if you look at the ASCE report card, I believe received a D-minus. That is just one example of the aging infrastructure that we not only need to look at it and say, hey, what can we do as a temporary fix, but, has it reached the end of useful life? And would we be better served if we put those funds truly towards replacement with an eye for the future, recognizing that times have changed?

We are living in an environment where the frequency and severity of storms is occurring in a much greater rate, and we need to plan accordingly for that. So, there is that potential that our existing infrastructure, even with certain upgrades, may still be inadequate. So we really need to look at that with an eye for what we expect to see in the coming years.

Mr. GUEST. Thank you, sir.

And, Madam Chairman, I yield back.

Ms. TITUS. Thank you.

Ms. Norton?

Ms. NORTON. Thank you, Madam Chair. And I particularly thank you for this hearing. It is about something that the Congress just seldom does, investing ahead of time in order to save money in the long run.

My first question is for Mr. Fowke. I was interested in your comments on housing affordability. My district and many others like

it find that young people, for example, are living in apartments meant for two. Four or five are in that apartment. Housing affordability is a major concern throughout the country.

Residents who most need to modernize their housing are the least likely to have the resources to do so.

Could I ask you, therefore: how effective are tax incentives for low-income communities who don't pay enough taxes to get a credit for home improvements? And what other resources are there for them to modernize their homes? So could I ask that two-part question.

Mr. FOWKE. Thank you. Thank you for the question.

I think that it is important that there is financing opportunities for people in these areas. The older homes stock in our country is the area that needs real attention, that needs construction to bring it up to being resilient.

Affordability has become more and more difficult with regulations. Twenty-five to thirty percent of a house before it is ever built—the cost of the house—is in regulations. And there are people trying to make code changes out there that are companies that are promoting a product in commerce. So we need to trust research and use good data to make our decisions.

But the financing opportunity should be out there and available to these areas that you are speaking of in your district so that these older homes can be—the construction of those homes can be brought to date, and have them be brought up to being more resilient.

Ms. NORTON. Yes. And I am not sure how low-income people are going to be able to do so. I understand your answer.

My next question is for both Mr. Wright and Ms. Smith, because you have focused on disadvantaged and low-income residents. The most vulnerable housing to face challenging upheavals in a disaster will make it difficult for low-income and disadvantaged people.

What ideas do you have for how Congress can focus resilience and mitigation on aid of some kind on those who are most vulnerable? That is for you, Mr. Wright.

And, Ms. Smith, in a related question, you talk in your testimony about breaking silos, to use infrastructure to deliver benefits to communities. How can breaking silos benefit high-poverty, vulnerable communities?

That two-part question is for Mr. Wright and Ms. Smith.

Mr. WRIGHT. Thank you, Ms. Norton.

I think that there are a number of pieces that are here. So, clearly, when people have the ability to pay for it, we need to nudge them to go do it. Sometimes those kind of tax incentives will help.

But I do think some ideas, like the community disaster resilient zones, literally putting ways by which private investment would be incentivized to go into those areas, you know, variations, or maybe in a more targeted way towards opportunity zones, first of all.

Second of all, many times these people are renting, and this is a point where the HUD financing is there for those multifamily dwellings. They may be a renter, but there is Federal money that is backing those pieces up.

So, how do we make it a requirement at the point of construction and even an ongoing requirement, that if you are getting support,

capital or otherwise, through HUD, you must be meeting these resilience standards so that those who live there can withstand the events.

Ms. NORTON. Ms. Smith?

Ms. SMITH. Yes. I would certainly second what Mr. Wright has said, is that, in many cases, it is the rental housing that suffers significantly, and a lot of those folks are renting and don't even recognize that there is a flood risk, for example.

I would go back to what Mr. Harper said. Some of the answer is a whole-of-community solution. You may be able to help those who are least able to help themselves by having better stormwater infrastructure, and having better protection across the community, not just the housing itself.

My testimony points out a really promising project by Enterprise Community Partners with the city of Miami, called Keep Safe Miami, where they are trying to work with housing portfolio owners, to the multihousing portfolio owners, so that they can improve those housing units, and protect the people who are their renters.

Ms. NORTON. Thank you, Madam Chair.

Ms. TITUS. Thank you.

Miss González-Colón?

Miss GONZÁLEZ-COLÓN. Thank you. Thank you, Madam Chair, and to the ranking member.

And I was looking at the statements of all the witnesses today, and of course I think my constituents have had an intensive 4 years between hurricanes, earthquakes, and now the pandemic. One thing is clear, and it is about not that those disasters are not coming to us, but how fast we can recover from them?

And losing services, losing water, losing electricity, and, in our case, even telecom, was something that we never experienced before. So there is some truths, basics here. First, natural disasters are never going to stop happening, and we need those mitigation measures so our infrastructure and housing and businesses are prepared to face them.

And, second, we cannot make infrastructure and buildings indestructible, even if we wish. So that resiliency and the capacity to get back to functioning should be the one that we measure.

And it is not just fixing what is broken like it was before. Every time, I think, that is wasteful, and the proper mitigation and the resiliency measures in our times should be to build back better. And I have been preaching that for the last 4 years, because I think it is a taxpayer's expense and a waste of money if we do not change the new buildings to the current codes.

So, in that sense, I worked with Congressman Graves in the fight for the Disaster Recovery Reform Act, and I will continue to do and be by his side seeking those provisions to be fully implemented. I think the critical services definition that we have been promoting in several bills—and I am glad that one of the witnesses even brought those issues up.

But I think, also, advocating for bringing structures to the current building and safety codes, regardless of the previous States should be the measure for all areas that are being impacted by disasters.

However, I must bring up that there is something here that we need to take care of as well, and it is the issue of the funding. And you just brought it up. I must point out that, from the information that I do have from FEMA, Puerto Rico received $2.9 billion for risk mitigation assistance. Of that, only $108 million has been obligated.

So, it is not just that the money has been approved by Congress. It is how fast, or why people are stopping that money from being obligated. And we must pay attention to why and who is responsible, and what are the issues that are stopping that money from coming?

So I will make one question right now to the Insurance Institute for Business and Home Safety, and it is that—I am looking at the appendix that you provided in your statement. And I think it is good to know the census tract about the National Risk Index among other things, but I am not seeing Puerto Rico there.

So my question is: Are we included, and, if not, why?

Mr. WRIGHT. So thank you for the question.

We included two illustrations in this, looking at the one in Florida and one in Nevada, and I would be pleased to follow up with you and look at some of the particulars that are existing that apply there. It is built off of national risk inventory pieces from FEMA, as well as other private-sector pieces. And I will work with your staff to make sure that you get yours as well.

Miss GONZÁLEZ-COLÓN. Thank you.

And one of the issues that has been one of the hurdles and obstacles back home in Puerto Rico is that, in order to get some FEMA funds to be obligated for Public Assistance, in many areas, you need those municipalities and the State to actually look at their insurance. And we have been fighting, for the last 3 years, to get the insurance to pay.

Some of them went into bankruptcy. So it has been a nightmare for a lot of private owners, including the government of Puerto Rico, just to recover those funds. And that is stopping much of the rest of the recovery process with government buildings and public infrastructure, because we need to wait for that.

In that sense, there is a claim, at least in my district—I don't know if that is happening in the rest of the districts here—how can we expedite that process of reviewing, doing the assessment, making the proper payments, because once that is done, then you have FEMA, and then you have the local government doing the matchup for many of those issues.

Do you have any recommendations to direct me in that sense?

Mr. WRIGHT. You know, ma'am, I think everything has to do with the particulars of the claim that is in place, as is the case in Puerto Rico, as is all across the United States. It is a State-regulated entity on the insurance side of the equation, and oftentimes, they are best positioned to lay in that space. And, in some cases, you are saying some of those providers may not exist as they did formerly.

Miss GONZÁLEZ-COLÓN. I know my time has expired, Madam Chair, so I will submit some questions for the record.

I yield back.

Ms. TITUS. Well, we want to be sure that you follow up with the information on Puerto Rico to Miss González-Colón.

Mr. WRIGHT. We will do so.

Ms. TITUS. Thank you.

Ms. Davids?

Thank you. Then we will go to Mrs. Napolitano.

Mrs. NAPOLITANO. Thank you, Madam Chair.

It is with great interest that I am listening to this. One of the things that we noted is that Mother Nature no longer is dependable. We have things that have happened, like the cold in Texas. And in California, we have problems with earthquake, with fire, and with the levees out in northern California. But I have long been a proponent that below ground is where the utilities are to go.

But Mr. DeFazio is right [audio malfunction].

Ms. TITUS. We lost you, Grace. I don't know if it is your end or at our end. Do you want to try something, some magic?

We will come back to you, Grace. Oh, sorry.

Ms. Van Duyne?

Ms. VAN DUYNE. Oh, yes. Thank you very much.

Mr. Fowke, I just wanted to ask you a question. You had suggested that we should take a comprehensive look at disaster preparedness and recovery.

Would you mind elaborating on that?

Mr. FOWKE. Would you repeat the question again?

Ms. VAN DUYNE. Sure. Sure. You had suggested that we should take a comprehensive look at disaster preparedness and recovery, and I am just wondering if you wouldn't mind elaborating on that.

Mr. FOWKE. Well, I think, if I spoke to that, it was in regards to the model that the State of Florida has been over the years, responding to hurricanes, preparing for future hurricanes, and disasters that happen.

I am proud to say that I am a resident of Florida and a homebuilder in Florida, and some of the requirements have been difficult for everyone to accomplish and adjust to, but the fruits of our labor have proven, like I said earlier, in Mexico Beach, the results that we saw from there.

But, going forward, the State of Florida has done an outstanding job being prepared for hurricanes, and the response we have when a natural disaster happens, and even strong winds can cause a lot of disaster or rain.

So the State of Florida has done an outstanding job of being prepared for this, and I am just proud to say that we have done a lot of work and research towards that goal.

Ms. VAN DUYNE. Well, I know you have. When I worked at HUD back in 2017, when we had Hurricane Harvey and we had Hurricane Maria—I am sure you remember that—I think the initial estimates for damage in Florida was going to be over $5 billion, and ended up being less than half a billion dollars. And that was almost specifically exclusively due to the fact of the resiliency build; and a lot of States did not have that, as Jenniffer was pointing out about Puerto Rico.

So I think we definitely learned our lessons on that.

Mr. FOWKE. And we are very, very much in favor of anything that we can do, because Puerto Rico is kind of a neighbor of ours, and we have been working very hard to do what we can to help Puerto Rico and the residents in Puerto Rico.

But, to give you an example of construction preparedness, though, there has been a new rule in Florida where you have your code where the house has to be built, for instance, 12.5 feet above sea level, to meet 100-year flood plain requirements, and now they have just added an item called freeboarding, which adds another foot to that requirement.

And the layman doesn't understand how 1 more foot adds, in some cases, $5,000 to $10,000 to the cost of a house. So I keep going back to housing affordability.

Ms. VAN DUYNE. Yeah.

Mr. FOWKE. It is of the utmost importance for everyone, everybody that has the dream of owning a home in our country.

Ms. VAN DUYNE. Oh, yeah. You just kind of teed me up, by the way, for my other question.

There are some regulations, or administrative burdens, that increase the time it takes homebuilders to deliver projects and prevent innovation on resiliency. How can Congress address those, and what kind of recommendations would you have? What are you seeing?

Mr. FOWKE. Policymakers need to reduce regulations.

Ms. VAN DUYNE. Do you want to be more specific? I just got here. I just got here.

[Laughter.]

Mr. FOWKE. Well, next time I am up in Washington, I will have a class for you.

Ms. VAN DUYNE. OK.

Mr. FOWKE. But, no. In Florida, I guess we are the leaders in a lot of things in coastal construction, because hurricanes are so prominent in our area. Ranking Member Webster was involved with our codes committees that worked to create these codes for hurricanes.

Ms. VAN DUYNE. Well, I guess I was just asking, do you see that some of the regulations basically prohibit kind of the innovations on different——

Mr. FOWKE. Yeah, it does. It takes time, especially in the land development side of it.

Ms. VAN DUYNE. OK.

Mr. FOWKE. In some areas, there are multiple layers of approvals, and, so, we have experienced that in Florida, and we are—as a State, we are trying to do some things to help eliminate some of the regulations. But some of it is repetitive, and once you get past one layer of regulation, there is another layer for you that is redundant. It is almost a similar request, but just from a different office.

And so, I mentioned earlier that 25 to 30 percent of the cost of a house right now is regulations, and the majority of the regulations are attributed to the land development side of it. But time is money, and under the circumstances now with COVID and a lot of the shortages of materials and things we are experiencing as an industry, lumber prices, affordability is becoming very, very difficult.

And we take this very seriously at the National Association of Home Builders.

Ms. VAN DUYNE. Excellent. Well, thank you very much.

Chairman, I yield back my time.

Ms. TITUS. Thank you.

I believe Mrs. Napolitano is back with us?

Mrs. NAPOLITANO. Yes, I am. Can you hear me now?

Ms. TITUS. OK. We can, so the floor is yours.

Mrs. NAPOLITANO. Thank you very much, Madam Chair.

My statement has been that maybe we need to look at what agencies deal with hurricanes, or any kind of emergency and what they do with the moneys they get. I know that you say that they don't want to give up any kind of title or ownership, but it would be nice to know what they do with anything they are given.

The other thing I want to say is we ignore the Native Americans, and, of course, the Territories as you have heard from Puerto Rico. The Mariana Islands have suffered a lot of hurricanes.

But, to Mr. Wright, the building codes in California are very extensive and very harsh—I know that—but we have earthquake, we have fires, and we have levees up in northern California. Mother Nature has thrown a lot of curves, and will continue to give us heartache, I think.

So how can we prepare for that? How do we amend our building codes? Because every area is different. You can't say that one applies to all of them. And any information that you can give, dissemination to the legal cities, to the Governors, to give to the cities so they can start looking at things that they should be looking out for in their own areas. Anybody?

Mr. WRIGHT. Yes. And thank you, Congresswoman.

What I would say to you is, first of all, California has really, really solid building codes. I think on the earthquake side, particularly, they are very good. They have good pieces on wildfire as well.

But remember that most of the homes in California were built well before any of the wildfire building codes came into effect in that space.

As we move forward in that space, we have got to find a way, particularly in wildfire, to understand there is individual to the——

[Audio interruption.]

Mr. WRIGHT. I will keep going. Sorry. That there is the structure itself, but it is also the neighborhood and the surrounding community, and it really requires all three of those layers to take action.

Wildfire is one of those few pieces, that even if you perfectly mitigate your home, your neighbor's not doing the right thing can cause your home to burn.

Mrs. NAPOLITANO. Sorry about that.

Yes. And I have an area in my backyard that we have a mountain range, and so, we do have the ability of fires, and we had several in the last couple of years that have really been devastating. And then, it deals with the slush, the mud coming down off the mountains, because later you get rains, and then you get that additional burden for residents.

Mr. WRIGHT. Yes. The Bobcat Fire this year that kind of set off a whole series of cascades there in your district, and then, when the rains do come, that turns into mud and flooding.

Mrs. NAPOLITANO. To Ms. Smith, can you discuss the need for increased investment in water quality in some water projects? That is one of the areas that Chairman DeFazio and Mr. Fitzpatrick and I introduced in the reauthorization of the Clean Water SRF Program recently, and it includes a grant program. But can you touch on that?

Ms. SMITH. Be happy to.

As a former member of the Virginia State Water Control Board, I know how important those programs are to States and to localities. And I do understand that, it was maybe 10 years ago, some of the leaders actually from California in the wastewater industry and the water utility industry were calling it the era of assessments, so that there is a lot of work going on assessing vulnerability.

And I think, to the extent that you—for the utilities that haven't done the assessments, to getting that going in your infrastructure package, and also, to adding money so that they will be able to start building in the protections to elevate their mechanical components, their electric, to protect—put up berms to protect their intake points, protect groundwater supplies, all of that.

If you can add that into your package, that would be greatly needed and greatly appreciated, I think.

Mrs. NAPOLITANO. Well, we appreciate any comments you have to forward to the committee or to committee staff or to my office, and we will look at them and see if we can add them now. But I would certainly like to thank everybody for being on here.

It is interesting. Back maybe 10 years ago, maybe more than that, I was looking at the insurance for the riverbed, and it opened my eyes to the fact that many people don't know, because they are renters that have the housing, and they don't hear about it, and they don't get the insurance, and they are at risk.

Thank you very much, Madam Chair.

Ms. TITUS. Thank you.

You know, one thing that hadn't been mentioned is all these projects, whether it is assessment or mitigation or construction, result in the creation of jobs, and that is another plus that comes from all of this.

Now I go to Mr. Graves.

Mr. GRAVES OF LOUISIANA. Thank you, Madam Chair.

And, Madam Chair, I want to actually commend you for your statement and questions earlier about all of the different funding streams and resiliency programs across the Federal Government. I believe Mr. Wright, to some degree, covers it in his testimony as well.

As we all know, in this committee, we have nearly $100 billion in backlog Corps of Engineers-authorized projects. We put $2 to $3 billion a year into the construction of those. You do the math, and you will finish them approximately never.

In addition, we have the BRIC program; pre-disaster mitigation; Hazard Mitigation Grant Program; Community Development Block Grant; disaster recovery; you have NFIPs, ICC program; the Federal Highway Administration has an emergency program; the USDA Natural Resources Conservation Service. On and on and on. And the problem is, is all of these programs, they are siloed.

Now, Madam Chair, we work with you, and I, again, want to thank Chairman DeFazio for the work we did on at least knocking down one wall between Corps of Engineers programs and the Hazard Mitigation Grant Programs.

Look, if somebody has got a great idea for mitigation or resiliency in their communities, we should be incentivizing them to commingle the dollars and get these projects done, not installing barriers to that.

And I want to turn to Mr. Strickland.

Mr. Strickland, would you like to share opinions or just thoughts about the various Federal funds that can be used potentially for mitigation or for resiliency-type investments, yet the programs coming from a Federal agency—in some cases, even the same agency—aren't allowed to be commingled, which therefore prohibits completing projects? Do you think that is something we should be addressing?

Mr. STRICKLAND. Absolutely, and that is something our association has been very interested in. And it really came to light, particularly with some of the disasters in North Carolina, where there is the pre-disaster mitigation money, and then there is also the post-disaster mitigation money, and then the opportunity for the funding out of HUD with the Community Development Block Grant.

And the challenge of trying to line those programs up so they can complement each other and truly make a long-term difference, what I would call, really pushing forward the future of mitigation, making it transformational—I know North Carolina had some real challenges with that, and worked very heavily with you all on that as well as at their State level.

But we constantly run into that where we have money from two or three different Federal programs, but we can't use that money to be part of the match to another program. Then we will run into situations where the national highway administration has coverage of the center of the roadway after a disaster, but FEMA has the left and right of the roadway. It is very cumbersome and challenging to get through that.

Mr. GRAVES OF LOUISIANA. Thank you.

And, Madam Chair, look, I remind you, part of the dysfunction, or perhaps a lot of it, is our fault. You know, in the Congress, the House Financial Services Committee has jurisdiction over the Community Development Block Grant program.

Candidly, I think that that really is something that is related to disasters and should be more so under this committee's jurisdiction.

But thank you, Mr. Strickland.

Mr. Wright, I really enjoyed reading through your testimony. There are a lot of things in here that I think are really insightful, based on your extensive experience with NFIP. Actually, one thing I maybe disagree with and I just want to ask you to clarify. You have said that we should permanently authorize the Community Development Block Grant Disaster Recovery Program, and I wanted to understand.

Do you believe that that specific program should be permanently authorized, or do you believe that a long-term recovery program should be authorized?

Mr. WRIGHT. It is a long-term recovery program, CDBG–DR being the one that Congress has been using. The principal reason to say it needs to be permanently authorized is, right now, it is a whole new program that starts up every single time. It can have very different rules. It would be better if there were some predictable pieces to CDBG–DR, thus our recommendation that it have a permanent imprimatur from the authorizers, as opposed to just getting filled up by the appropriators.

Mr. GRAVES OF LOUISIANA. Thank you. And I think that that objective is what we really should be focusing on, and just to——

Mr. WRIGHT. Thank you.

Mr. GRAVES OF LOUISIANA [continuing]. Remind the committee, we worked with Congresswoman Plaskett and introduced legislation to actually do a FEMA long-term recovery program within this committee's jurisdiction that would achieve the objectives. Folks came and testified before this committee, and, on average, it takes HUD 7 years to hit the same outlays, percentages as the Economic Development Administration's disaster program that they hit—I think it was in 12 months or 16 months or something like that. So it further impacts the disaster victims.

And, Madam Chair, thank you very much. I look forward to working with you on some of these issues, and yield back.

Ms. TITUS. Yeah. I think we have our work cut out for us, but we have some common goals here, and I look forward to pursuing them with you, Mr. Graves.

Ms. Davids?

Ms. DAVIDS. Thank you, Madam Chair.

And I would actually love to follow up on what Congressman Graves brought up a couple of minutes ago. You know, I represent Kansas' Third Congressional District. We are pretty centrally located. We have one of the largest intermodal hubs in the country, and we happen to also have the confluence of the Kansas and Missouri Rivers.

Unfortunately, studies have shown that the Kansas City metro area is likely to be one of the most impacted metropolitan areas because of climate change. And I think the idea of how we fund projects and what we are doing around that is really important, and Mr. Graves brought up some of the different funding options.

And, at the close of the 116th Congress, the House and the Senate reached an agreement to establish a resilience revolving loan fund that would seed State-level funds, and would make 30-year low-interest-rate loans to communities for investments in resilience and mitigation projects. And that loan option is one that has worked well on water infrastructure.

I am curious, Mr. Strickland, from your perspective as a State leader in this space, if you could provide the subcommittee with some of your thoughts on this new funding option. And, you know, maybe we will be looking at Maryland for ways to utilize this new option.

Mr. STRICKLAND. Well, I appreciate that very much, because, actually, Maryland has a bill in right now that would create a fund

that we could utilize for building resilience, and really through mitigation projects.

Several other States have done the same thing, and I think it is in the cooperation between the State governments and the Federal Government with this project that we will really be able to make some strong headway, particularly where we build these funds, and we ultimately have some of the match requirements that are available for the other grant programs as we move forward. So we are 100 percent behind that.

Ms. DAVIDS. Thank you, Mr. Strickland.

And I don't know if anybody else wants to weigh in on this new funding option.

Ms. SMITH. I would add from The Pew Charitable Trusts that we certainly see a revolving loan fund concept—that construct can help build institutional capacity and knowledge that can be shared. So it is a good approach. We had backed that specifically for flood, but think it makes sense to do it as well across the board.

So we are very supportive.

Mr. WRIGHT. If I could, I would go just one step farther down this line. I think, as we look at the larger amounts of dollars that are available in a BRIC program, or other kinds of recovery pieces, the ability to bring match will be a gap.

If this revolving fund is put in place and adequately filled up, I think it really becomes a reservoir for people to be able to take actions far faster than they would be able to do if they were simply waiting.

Ms. DAVIDS. Thank you. I appreciate that.

And I yield back.

Ms. TITUS. Thank you.

Well, I would like to thank our panelists very much for your information. Your presentations have been very helpful. We will want to pursue some of the things that we have talked about today, and we will look to you as a resource.

Are there any other questions? Mr. Webster, any comments?

Well, then, in that case, I don't see any questions, so, again, thank you all for participating. I will ask unanimous consent that the record of today's hearing remain open until such time as our witnesses have provided answers to any questions that may have been submitted to them in writing, or provide information that was requested by the Members during the hearing.

I also ask unanimous consent that the record remain open for 15 days for any additional comments and information submitted by the Members or the witnesses to be included in the record of today's hearing.

Without objection, so ordered.

Thank you again, and the subcommittee stands adjourned.

[Whereupon, at 3:49 p.m., the subcommittee was adjourned.]

SUBMISSIONS FOR THE RECORD

Prepared Statement of Hon. Sam Graves, a Representative in Congress from the State of Missouri, and Ranking Member, Committee on Transportation and Infrastructure

Thank you, Chair Titus, and thank you to our witnesses for being here today.

I also want to thank and recognize the new Subcommittee Ranking Member, Mr. Webster of Florida.

Florida's annual hurricane season has given him significant practical and policy experience with federal disaster preparation, mitigation, and recovery programs.

I want to thank him for taking on this leadership role.

Whether it's combating the threat of hurricanes in Florida, severe flooding in my district, or wildfires or tornados in others, resiliency has been the cornerstone of the emergency management work of the Committee.

Even before it was popular, it was this committee that helped press the importance of investment in mitigation.

We can't continue to throw good money after bad by simply rebuilding infrastructure and communities year after year rather than building and rebuilding to withstand and last.

I've seen that firsthand in my district and I know other members have as well.

Again, it is through investment in mitigation that we are going to get a handle on the increased costs of disasters.

I look forward to hearing from the witnesses today and the ongoing work of the Committee on this topic.

Thank you, Chair Titus. I yield back.

Letter of March 18, 2021, from the National Ready Mixed Concrete Association; National Stone, Sand and Gravel Association; and Portland Cement Association, Submitted for the Record by Hon. Daniel Webster

MARCH 18, 2021.

Hon. DINA TITUS,
Chair,
Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings and Emergency Management, 2165 Rayburn House Office Building, Washington, DC.

Hon. DANIEL WEBSTER,
Ranking Member,
Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings and Emergency Management, 505 Ford House Office Building, Washington, DC.

CHAIRWOMAN TITUS, RANKING MEMBER WEBSTER, MEMBERS OF THE SUBCOMMITTEE:

Thank you for holding today's hearing on "Building Smarter: The Benefits of Investing in Resilience and Mitigation." The General Services Administration (GSA) owns and leases nearly 377 million square feet of space in 9,600 buildings in more than 2,200 communities nationwide.[1] This footprint represents a significant investment of public funds and houses many of the most critical functions of the federal government.

We applaud the Subcommittee's recognition of the importance of resilience and mitigation related to these buildings. Constructing federal buildings and leasing existing structures built to resilient standards will safeguard taxpayer dollars, prevent

[1] https://www.gsa.gov/real-estate/gsa-properties

the need to rebuild after natural disasters, and lower the embodied carbon of federally owned and utilized structures.

Resilient Construction and Breaking the Cycle of Destruction

The number of billion-dollar disasters per year is rising. In 2020, the U.S. experienced 22 billion-dollar severe weather and climate disasters.[2] These disasters represent devastating loss of life, crippling economic setbacks, and significant expenditure of federal emergency relief funds to rebuild and restore communities.

For federal buildings, natural disasters also represent a potential disruption in service and loss of taxpayer funds as buildings are repaired or restored. Building to resilient standards and investing in pre-disaster mitigation efforts to prepare our built environment and our communities to resist the impacts of natural disaster represents significant taxpayer savings as resilient buildings do not require significant repairs.

A study by the National Institute of Building Sciences indicates that resilience and mitigation yield a $13 savings for every $1 invested.[3] Similarly, the Massachusetts Institute of Technology (MIT) Concrete Sustainability Hub reports that factoring resilience into building design can also reduce lifetime repair and maintenance in hazard-prone areas.[4]

To that end, it is critical that we build our public buildings, infrastructure and federally-funded structures to resilient standards that allow our facilities to withstand extreme weather events and return to normal operations as quickly as possible.

Recognizing the limits of this Subcommittee's jurisdiction, we would further note that resilient construction and mitigation should not be limited to federal buildings. Nearly one-third of all existing buildings in the United States will need to be rebuilt by 2030, simply because they were not designed to last any longer. As these buildings are rebuilt, we must take the opportunity to rebuild and replace with resilient construction materials and techniques that will improve their resiliency and durability to the changing climate.

We recommend to the Subcommittee's consideration the Disaster Savings and Resilient Construction Act, legislation to provide a tax credit for home and business owners who build or rebuild after a natural disaster to a resilient standard. The legislation will incentivize owners of structures to build or rebuild to a structure to withstand future natural disasters. This policy will reduce federal and social costs or rebuilding, but also eliminate the embodied carbon associated with reconstruction activities. We strongly encourage Congress to pursue policies that incentivize private construction and reconstruction to a resilient standard, and strongly encourage this Subcommittee to prioritize resilient construction in standards for federal buildings.

Federal agencies have an important role to play as well. The General Services Administration, for example, has been a leader in developing policy to promote green building design and procurement. Much of that work has focused on the construction phase of the planning and assessment process, largely focusing on greenhouse gas intensity. But greenhouse gas intensity and resiliency are inextricably linked. To be truly effective in incentivizing sustainable construction and operations, these efforts need to consider resiliency on equal footing with carbon intensity and other factors.

Sustainable and Climate Benefits of Resilient Construction

In addition to preserving life, preventing economic losses, saving taxpayer dollars, and minimizing disruptions in federally provided services housed in public buildings, incorporating resilient construction standards and pre-disaster mitigation planning in public buildings represents an opportunity for reducing carbon emissions. Buildings account for nearly 40% of U.S. emissions.[5] While much of that is operational emissions, embodied emissions can be reduced by resilient construction.

In addressing methods for reducing embodied carbon, the Underwriters Laboratory identified building and designing for the long haul, use of recycled material and taking note of the embodied impacts through Environmental Product Declarations.[6]

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[2] https://www.ncdc.noaa.gov/billions/

[3] https://cdn.ymaws.com/www.nibs.org/resource/resmgr/reports/mitigation__saves__2019/ms__v4__overview.pdf

[4] https://cshub.mit.edu/sites/default/files/documents/CSHub__Building__Resilience__Final%20.pdf

[5] https://www.eesi.org/topics/built-infrastructure/description

[6] https://spot.ul.com/blog/embodied-vs-operational-carbon/

Building to resist damage brought on by natural disasters prevents emissions generated by rebuilding and repairs.

Research shows that in hazard-prone areas, the maintenance costs can be significant over the lifetime of a building. In fact, the costs of hazard-related repairs—financially and environmentally—can exceed the initial construction costs. To reduce repair related costs, which include energy consumption and repairs due to damages from hazards, it is important to invest in resilient building construction. Research published by Massachusetts Institute of Technology helps building designers and owners calculate the risk and level of investment for residential buildings in hurricane-prone communities.

This research can be used to calculate the break-even cost when comparing a proposed baseline wood construction with an enhanced concrete design for a multi-family residential building. In New Orleans, for example, MIT's research shows the break-even cost for an $8.5 million midrise apartment building is 8%, meaning nearly $700,000 could be spent up front on mitigation while still breaking even on total cost over the life of the building—and obviating the need for future reconstruction and its environmental impacts.[7]

Material Neutral Approach to Construction Materials

In approaching resilient construction and mitigation, we urge the Subcommittee to take a material neutral approach. Establishing material neutral standards for the durability, sustainability and performance of federal buildings allow engineers and construction professionals to construct the most resilient buildings and facilities. A material neutral approach avoids picking winners and losers and maximizes engagement from industry.

In establishing material neutral standards, we urge the Subcommittee to encourage the adoption of a life cycle analysis that evaluates the impacts of competitive materials using a cradle-to-grave or cradle-to-cradle full life cycle view of materials and a full life cycle cost analysis of construction and building operations. Without considering the costs and benefits of material selection during the use, reuse, recycling, or disposal phases of the lifecycle, federal efforts to transition to a carbon neutral economy will be limited, if not counterproductive.

Concrete as a Sustainable Building Material

While we strongly advocate that Congress take a material neutral, standards-based approach to resilient construction, we believe that concrete is a critical building material to improve the resiliency of infrastructure and buildings—both public and private.

Concrete represents disaster-resilient construction that is capable of withstanding the impacts of natural disasters and climate change, resistant to natural elements like water and fire, and represents building systems with the potential for net-zero energy efficient structures.[8] Concrete absorbs and permanently sequesters carbon over its lifetime and is recycleable—further absorbing carbon during the recycling process and over its next life. Furthermore, technological innovation and optimal mix designs hold the promise of net zero emission concrete.

Similarly, stone, sand and gravel—critical components to concrete—are an essential resource for developing any type of infrastructure and are key to producing renewable energy sources and sustainable public works. From new electric vehicle charging stations, to natural gas and hydrogen production and transportation, our members stand ready to supply the needed construction materials for these projects that will be needed to reduce emissions across the transportation industry.

In producing these essential materials, the aggregates industry takes every effort to run operations effectively to minimize waste, reduce air emissions, and to conserve water and are always working to improving energy efficiencies and developing alternative energy sources. The aggregates industry has undertaken many greenhouse gas mitigation efforts, such as investing heavily in fuel-efficient mobile equipment and improving operational efficiency. Further, our members are working to deploy new technologies that help further the goal of reducing environmental impacts like the utilization of recycled construction materials.

Members of the National Stone, Sand and Gravel Association are leaders in taking aggressive action to protect our environment and enhance environmental stewardship. Companies across the industry routinely develop award-winning projects reclaiming land and unused areas that conserve critical habitats and promote biodiversity.

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[7] https://cshub.mit.edu/bemp-dashboard

[8] https://www.specifyconcrete.org/blog/icfs-and-net-zero-residential-construction

Cement, the binding agent that binds these materials and gives concrete its strength, is also part of a sustainable future. US cement manufacturers have invested heavily in technology to make their plants more energy and fuel efficient, substituting fossil fuels for lower-carbon alternative, and leveraging alternative low-carbon cement mixes like portland limestone cement and fly ash cement. These new technologies not only reduce the carbon emissions associated with cement manufacturing, they divert fly ash, nonhazardous wastes, and other alternative materials from landfills, impoundments, and the environment in the form of discarded waste, reducing the burden on host communities.

The Portland Cement Association sees significant opportunity to advance this transition to more efficient operations and lower carbon feedstocks and fuels going forward. Indeed, these innovations are at the heart of the cement industry's developing roadmap for achieving carbon neutrality across the cement concrete supply chain by 2050. To achieve these advances, however, the industry looks forward to working with the committee to develop incentives and reduce impediments to rapid transition.

Sustainable Access to Construction Materials

We encourage the Committee to examine policies that ensure local sources of aggregates are available to supply construction projects. To build the 21st century energy and transportation infrastructure that will lead to reduced emissions we must have a sustainable supply of building materials.

Further, having access to locally sourced materials is a key factor in reducing costs of infrastructure projects and provides greater return to taxpayers. Further, decreasing the distance aggregates must travel to a project has shown to significantly reduce tail pipe emissions from haul trucks and improve road safety. Ensuring sustainable aggregates supply will support local economies with high paying jobs, reduce construction costs, and improve environmental outcomes.

We appreciate the opportunity to present these views and look forward to working with you on these important issues.

Respectfully,

National Ready Mixed Concrete Association.
National Stone, Sand and Gravel Association.
Portland Cement Association.

APPENDIX

QUESTIONS FROM HON. PETER A. DEFAZIO AND HON. DINA TITUS TO RUSSELL J. STRICKLAND, EXECUTIVE DIRECTOR, MARYLAND EMERGENCY MANAGEMENT AGENCY, ON BEHALF OF THE NATIONAL EMERGENCY MANAGEMENT ASSOCIATION

Question 1. At the close of the 116th Congress, the House and Senate reached an agreement to establish a resilience revolving loan fund that would seed state-level funds that would make 30-year low-interest loans to communities for investments in resilience and mitigation projects. This loan option is one that has worked well with water infrastructure. From your perspective as a state leader in this space, can you provide the subcommittee with your thoughts on this new funding option and whether Maryland is looking to utilize this new option?

ANSWER. The resilience revolving loan fund is an opportunity which Maryland intends to utilize, and communities across the nation will be able to use to build stronger communities as the program is developed. The Maryland General Assembly passed a bill establishing a state-level revolving loan fund intended to capitalize on this federal legislation in an effort to generate additional funding for mitigation and resilience actions. The Resilient Maryland Revolving Loan Fund also promotes equity by prioritizing communities with the greatest financial need and targeting historically disenfranchised jurisdictions. We believe that this action, in addition to the actions by the federal government, will greatly enhance our mitigation, building resilience efforts, specifically with the matching fund requirements. We also encourage Congress to prioritize resilience and mitigation as they consider bills that provide sweeping investments in infrastructure. The investments we make now will have impacts for generations to come.

As a witness representing all state emergency managers, however, I would be remiss in not also mentioning apprehensions by some of my colleagues. Hurdles in other states include a lack of organizational capacity to manage such a program and potential legal impediments to local participation. At this time, I am not sure how widespread the use of resilience revolving loan funds will be nationwide.

Question 2. Studies show that $1 of prevention saves $4–$6 in disaster losses. Yet the government spends $1 pre-disaster for every $14 post disaster. Does the National Emergency Management Association (NEMA) believe more should be done at the federal level to shift and balance these numbers since we know pre-disaster spending saves taxpayer dollars and lives? If so, does NEMA have specific recommendations to modify the Federal Emergency Management Agency's (FEMA) existing Hazard Mitigation Assistance programs?

ANSWER. NEMA strongly believes that mitigation spending is paramount to creating more resilient infrastructure and driving down the overall costs of disasters. Programs such as the National Public Infrastructure Predisaster Hazard Mitigation Program (also known as BRIC) will go a long way toward shifting the paradigm away from mitigating post-event. But while pre-disaster mitigation is important, so too are the programs currently built to aid in mitigation efforts. The Hazard Mitigation Grant Program (HMGP), for example, is funded based on receiving a disaster declaration and known costs while BRIC is a competition-based program. Both provide benefits to the overall system and allow a diversity of states to participate. Not all mitigation funding should be post-disaster, but neither should it all be competitively based through programs such as BRIC.

Overall, grantees should be empowered to implement transformative mitigation actions with the greatest potential community benefits by allowing states and locals the discretion to choose projects which meet FEMA allowable project types and align them with the goals established in approved mitigation plans. Given that local communities are on the front lines of fighting the battle against climate change and disasters, they understand more clearly the threats and hazards facing their communities. Thus, Congress should give FEMA the flexibility to maximize BRIC funds by exploring a combination of competitive and formula-based awards. This will allow

states to administer BRIC grants and will better-align mitigation priorities across all levels of government.

States and communities have access to a variety of possible mitigation programs across the federal government, all with the overarching goal of helping grantees become more resilient and better prepared for future disasters. The specific authorities and purposes of such programs usually vary, however, and FEMA may not have authority to allow grantees to co-mingle funds or shift the priorities of specific grant dollars. Nonetheless, FEMA should:

- Work across the federal interagency and with Congress to obtain the necessary authorities to allow grantees to blend various projects with support from other mitigation programs available within FEMA and across the federal government.
- Allow for collaboration, convergence, and promotion of projects that enhance the level of protection of people and property across various programs regardless of the funding sources and legal requirements.
- Anticipate future conditions by broadening allowable project types which meet hazard impacts.

In terms of broad programmatic changes, NEMA believes time must first be allowed for new programs such as BRIC to take hold and be properly evaluated. BRIC was created in 2018 and a full application and award cycle has not yet been completed. While we appreciate the excitement over further developing mitigation programs, constantly changing guidance, programs, and priorities creates confusion at the state and local levels and does not allow newly established programs to be fully implemented.

Question 3. Investment in hazard mitigation such as flood control projects and seismic retrofitting is key to improving our disaster resilience and reducing the costs of future disasters. To this end, in the nine-year period fiscal year 2010 to 2018, FEMA funded $11 billion in state and local hazard mitigation efforts through four grant programs. However, many state and local officials report that the grant application process for these programs is prohibitively complex and lengthy. What steps could FEMA take to simplify and streamline the grant application process and encourage state and local investment in hazard mitigation?

ANSWER. Grantees should be empowered to implement transformative mitigation actions with the greatest potential community benefits by allowing states and locals the discretion to choose projects which meet FEMA allowable project types and align them with the goals established in approved mitigation plans. This will better-align mitigation priorities across all levels of government. Additionally, trusting the applicants' judgement in making policy and project determinations will better meet the varied needs of diverse communities. This can be accomplished by FEMA establishing its priorities as early as practical in the application process.

Applicants should also be allowed greater oversight of funding activities. The current oversight regime is overly restrictive due to the numerous stipulations requiring applicants to serve as the "middleman" to convey information and arrange reviews between sub-applicants and FEMA. This prevents the achievement of FEMA's goal of proper, full-cycle grant management and implementation. If an application is eligible under FEMA's allowances and meets the guidelines established through the FEMA approved hazard mitigation plans, then applicants should be provided the ability to exercise discretion in funding allocations to include decisions such as conducting sub-award reviews, approving sub-awards, and monitoring projects and finances.

Disasters occur without warning and require immediate resources. The length of time the FEMA Hazard Mitigation Assistance application takes must be shortened. Oftentimes disaster survivors are not able to wait several months or years for hazard mitigation assistance when in reality funding is needed quickly. In these circumstances they pursue alternative pathways to return to normal and the opportunity for mitigation is lost. This creates a disaster rebuild cycle that could potentially be averted by seizing the opportunity for mitigation.

Question 4. Have you, or has the Maryland Emergency Management Agency (MEMA), found resistance in your efforts to better prepare Maryland communities for disasters? If so, from whom?

ANSWER. "Resistance" is not necessarily seen in our efforts to strengthen resilience. However, resultant financial requirements can sometimes generate resistance given competing priorities. In our efforts to inculcate a culture of preparedness, the greatest resistance we encounter again, is financial, in that we need staff and operational support. Too much of the time we are focused on the response phase, without which when events occur additional damage could potentially result. Thus, we need to be prepared to respond. And yet the need to build a resilient state through

transformational prevention, protection, and mitigation is equal, if not greater, when coupled with our recovery efforts.

Maryland is a state with diverse needs. Our rural, low resourced communities raise concerns regarding the ability to provide the non-Federal share portion of the projects for community-based proposals, but there are also financial concerns in our urban communities. In some urban communities, homeowners face challenges with providing the cost-share for individual projects.

Local communities must be mindful of local, state, and federal priorities in order to be successful in the nationally competitive grant cycles. As such, providing local jurisdictions and states the flexibility to prioritize the projects that align with their priorities will reduce the complexity of identifying and developing projects.

Investments made today will translate into safer communities in the future. Across the nation most emergency managers do not experience resistance to implementing these types of programs, however there are many other programs and initiatives that are prioritized for funding ahead of mitigation and resilience. With a renewed bipartisan focus on building stronger infrastructure and the first year of BRIC projects submitted it is an opportune time to surge funding into communities to not only build needed infrastructure but do so in a way that will adapt to our changing environment and save future taxpayer dollars.

Question 5. As the Committee looks to be the best stewards of taxpayer dollars, what actions can Congress and federal agencies take to better harmonize the numerous emerging disaster programs (HUD's CDBG–DR and Mit programs, DOT, DOE, EPA, etc.) so these that they are accountable, cost effective, and coordinated for seamless delivery of disaster assistance and that they remove unnecessary barriers to recovery?

ANSWER. There are three specific ways in which the Committee can ensure disparate federal disaster programs are accountable, cost-effective, and coordinated.

First, clarify FEMA's role during incidents and disasters that require multi-agency coordination. FEMA should be the lead coordinating agency for all multi-agency incidents across all phases of the incident, to include recovery. This includes Stafford Act and non-Stafford Act events.

Second, develop a universal application for disaster survivors and grant management system for applicants and subapplicants that could then be utilized across all federal disaster assistance programs. This seamless interagency data sharing would enable significantly better communication and coordination, as well as faster disbursement of funds and improved oversight and accountability.

Finally, no discussion of long-term recovery would be complete without addressing the CDBG–DR program at the Department of Housing and Urban Development (HUD). We always appreciate the support of Congress in appropriating funds to CDBG–DR, and HUD has been a great partner to the states in administering the program. The program, however, remains bifurcated from other federal recovery programs and the lack of a regular authorization leaves states waiting months, if not years for HUD to publish Federal Register notices for funding.

Congress should consider working with stakeholders to affect Stafford changes that include prioritizing pre-disaster mitigation funding programs, aligning federal funding for recovery and resilience (e.g. CDBG) under FEMA, and applying the countless lessons learned in the wake of the COVID–19 global pandemic.

Question 6. How does NEMA believe that FEMA can better help communities identify and implement hazard mitigation and disaster resilience efforts that will have the greatest impact on reducing community risk?

ANSWER. FEMA has adopted the National Institute of Standards and Technology (NIST) definition of resilience: "The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. Resilience includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents." It is better to allow the states to work with locals to identify those efforts as they are the most knowledgeable of the impacts to a certain region, as long as they stay within the confines of what FEMA has adopted to mean resiliency. FEMA can certainly maintain their role as support but should provide flexible funding to state and local organizations to implement resilience locally.

True investment and commitment is required in order to assist communities in identifying hazards and assessing vulnerabilities. FEMA must ensure sufficient resources and funding are available and accessible to continue to support hazard mitigation planning efforts and subsequent implementation.

Question 7. What actions should federal agencies take to help the nation achieve greater disaster resilience? For example, what opportunities exist for federal agen-

cies to "mainstream" risk reduction, by integrating disaster resilience goals and activities into all their missions and initiatives?

ANSWER. Federal agencies must start now in understanding each of the missions and how they respond to varying events. Through these partnerships, they could find out who would be best positioned to implement assistance to the states and locals for the next disaster; find ways to improve mitigation and preparedness efforts; and overall provide a more robust national resiliency plan that covers the health of our citizens and communities. If it is FEMA's role to be the primary lead, then they must be challenged to create such partnerships and understanding of the other agencies' missions. FEMA should apply the emergency management system model of multi-agency coordination to the issue of resilience and mitigation programs. Having those partnerships and knowledge already in place adds to the resiliency of our nation by stakeholders knowing where to go at any given point rather than waste valuable time trying to understand all the intricacies of each of our federal partners and how they could be best utilized to streamline response and recovery. Leveraging FEMA as a one-stop-shop for all mitigation and resilience programs across the federal agencies would be a tremendous benefit to resource constrained state and local communities. This is not to suggest that all these programs should legally reside within FEMA, but rather to empower FEMA to assist states in managing disparate federal programs.

Question 8. Fewer than 40 percent of FEMA-funded Public Assistance projects have included a mitigation component during the period 2010 to 2018. What can FEMA do to incentivize state and local officials to incorporate mitigation measures when repairing disaster-damaged facilities?

ANSWER. NEMA believes the incentive for state and local officials to incorporate mitigation measures when repairing disaster-damaged facilities is inherent in states' desire to prevent impacts from future disasters. What interferes with that incentive, however, is the flexibility in existing programs to give states the ability to manage necessary improvements to facilities during repair operations. Projects funded through the Public Assistance (PA) program are currently micro-managed primarily out of fear of fulfilling audit requirements in subsequent years. If states had more flexibility to implement PA at their discretion with FEMA merely ensuring programmatic requirements are met, such mitigation priorities would occur naturally.

Question 9. In the latest Government Accountability Office (GAO) High-Risk Report, issued early this year, GAO again finds that the federal government must reduce its fiscal exposure by managing climate change risks and that it has yet to make measurable progress to reduce its fiscal exposure to climate change. What do you think the federal government ought to do to build or rebuild infrastructure so that it is resilient to future conditions of climate change-related impacts such as inland and coastal flooding, wildfires, or extreme heat over the life-cycle of the project?

ANSWER. NEMA strongly believes that mitigation spending is paramount to creating more resilient infrastructure and driving down the overall costs of disasters. States hold the expertise on the impacts their communities experience due to such future conditions listed in the question. The federal government can support efforts to mitigation spending in such programs already discussed such as BRIC or HMGP. These programs should prioritize addressing climate change risks and encourage projects with co-benefits.

Question 10. The Building Resilient Infrastructure Communities (BRIC) program offers the opportunity for the nation to make sizable investments in disaster risk reduction. How can FEMA administer BRIC to ensure effective reduction of risk to whole systems, communities, and regions rather than as a "pre-disaster mitigation on steroids" that invests more money using the same fragmented, stove piped, and parochial approaches that historically have failed to result in significant overall risk reduction or address the nation's most significant infrastructure and community risks?

ANSWER. NEMA believes the BRIC program will be successful if the following tenets are followed:

1. Promote broader Grantee Collaboration and Consistency. Promote broader grantee collaboration to encourage creative applications crossing state, jurisdictional, or artificial FEMA regional boundaries.
2. Expand the Traditional Definition of "Mitigation" and Encourage Large Infrastructure Projects. This includes encouraging large infrastructure projects that would not only promote health and safety but expand economic opportunities and the impact of mitigation.

3. Empower Grantees to Control Mitigation Priorities. By allowing grantees greater oversight of funding activities, the new program can be uniquely streamlined and ensure better alignment of mitigation priorities across all levels of government.
4. Allow for Coordination Across Existing Programs. Existing federal programs remain disjointed which does not harness the full power of available programs and funding. If not already in place, FEMA must seek the appropriate authorities to leverage various mitigation programs across the federal interagency to reduce administrative burdens and ensure responsible use of taxpayer funds.
5. Maintain a Minimum Set-Aside for All Applicants. A minimum set-aside allows those small or rural states a fair chance to compete for mitigation projects while also rewarding disaster-prone states which already support large mitigation initiatives.
6. Support and Enhance Planning and Traditional Projects. While large infrastructure projects remain the hallmark of the new mitigation program, the underlying need for building capacity and supporting traditional projects is paramount to achieving nationwide resilience.
7. Rethink the Notice of Priorities, Application Process, and Award Cycles. The establishment of priorities, the overall application process, and even common assumptions on traditional award cycles should be challenged, streamlined, and improved if barriers exist.
8. Build Implementation Capacity Through Technical Assistance. Large infrastructure projects require expertise from across federal, state, and local agencies. Grantees and FEMA must reach across other partners and stakeholders in all aspects of this new program from setting priorities, aligning projects, and implementing strategies.
9. Offer Flexibility in Benefit-Cost Analysis Approaches. The current Benefit-Cost Analysis is cumbersome and unfair to small and rural states. While making changes to the overarching programs, the Benefit-Cost Analysis must be simplified with a more level playing field.

Question 11. We are just beginning to assess the response to the 2020 BRIC grant cycle. Can or has NEMA already identify areas which need to be improved or challenges that need to be addressed?

ANSWER. Given that local communities are on the front lines of fighting the battle against climate change and disasters, they understand more clearly the threats and hazards facing their communities. Thus, Congress should give FEMA the flexibility to maximize BRIC funds by exploring a combination of competitive and formula-based awards. This will allow states to administer BRIC grants and will better-align mitigation priorities across all levels of government.

The program must also be fully funded. Up to six percent of the previous year's disasters losses are available for the program. In 2020, despite over $900 million in funding availability, the administration only authorized $500 million in BRIC funding. Demand far outpaced the available funding in this grant cycle. Additional funding, to include the full six percent of COVID–19 disaster losses from 2020 should be included in the 2021 cycle.

Question 12. State and local officials often mention the challenges they face in implementing and enforcing codes, largely due to a lack of resources. What more could the federal government do to help states and communities overcome this hurdle?

ANSWER. The federal government should incentivize state and local adoption of strong building codes based on national standards and the hazards of the region. In many states, legislatures can take action on the matter by implementing statewide building code requirements. The federal government should provide resources to states to make this a reality, as well as support states and communities that are unable to unilaterally make these changes. NEMA is positioned to assist state emergency managers in state-action on building codes.

Question 13. In November 2020, a FEMA study found that over a 20-year period, cities and counties with modern building codes would avoid at least $32 billion in losses from natural disasters, when compared to jurisdictions without the same codes. What steps can FEMA take to further promote and help communities adopt modern building codes?

ANSWER. While not all codes are appropriate in all instances, ensuring building codes meet the needs of a locality and its hazard profile has a demonstrated impact on community resilience in the event of a disaster. FEMA programs should be careful not to usurp state authority in setting building codes appropriate to a variety of situations based on local conditions; however, FEMA can incentivize adoption of

building codes through administration of grant funds and provide additional resources to assist communities in updating building codes.

Question 14. Building departments are charged with protecting their communities and ensuring construction adheres to the building codes and resiliency requirements their jurisdiction has adopted. Many of these departments relied on paper-based processes prior to the pandemic and had to quickly adapt to work remotely—presenting challenges to their efforts. As Congress considers investments in infrastructure, should resources be provided to assist building departments in modernization, resulting in more efficient processes while maintaining their public protection mission? Does NEMA feel these resources should pass through emergency management agencies to building officials, or directly to state building agencies?

ANSWER. The day to day management of building codes is the responsibility of building officials, but emergency managers must be able to provide consultation on local and regional hazards. While resources to address these challenges could go directly to building officials, they should include stipulations that require input from the local emergency manager. Emergency managers understand the broader implications of disaster risk and are uniquely positioned to apply a strategic perspective to the issue of building codes. Similarly, emergency managers are not involved in the technical execution of infrastructure projects (e.g., roads) but should provide input into the process from a risk reduction perspective. In summary, emergency managers should have equal/fair representation in the planning and building code adoption process.

Question 15. We know that the adoption of the latest edition of the building code gives the greatest return on investment—$11 for every $1 invested. What can be done federally to incentivize states to adopt and enforce model statewide building codes?

ANSWER. FEMA has stated that it wishes to support the adoption of appropriate building codes through programs such as BRIC but if applicants are disadvantaged due to their older building codes and are unable to obtain funding for those projects it only perpetuates a cycle that leaves buildings and people less safe. Especially in the initial years of the BRIC process, we encourage FEMA to be understanding of the different status of codes nationwide and work collaboratively and not punitively to support the states as they work to raise their building code standards.

Question 16. As Congress considers comprehensive legislation to modernize and strengthen our nation's infrastructure—our road, rail, and aviation networks, hospitals, schools, public housing, and other public facilities—would you be supportive of a requirement that these structures and facilities be built to the latest consensus-based building codes whenever federal funding is used? Are there areas where the standards should be increased beyond code requirements to industry best practices (i.e., high wind areas)?

ANSWER. In recent years, NEMA's state-based membership has evolved to accept "consensus-based building code" requirements in many cases. While this still interferes with the ability for states to set their own requirements, it at least sets a baseline of quality while avoiding more onerous requirements such as "modern" building codes.

Question 17. It seems that even across FEMA's programs, there is not the uniform application of consensus-based codes and standards (Public Assistance, Individual Assistance, Hazard Mitigation, and the National Flood Insurance Program). There is also inconsistent application across the numerous federal programs that drive investments in resilience and mitigation. One of President Biden's early executive orders effectively reinstated the Federal Flood Risk Management Standard. Should there be a legislative requirement that the investments of all federal funds in built infrastructure follow these foundational flood requirements?

ANSWER. Federal grant funds to state and local communities should be focused on providing flexible solutions to state and local risk problems. The federal government should not be investing in projects that fail to eliminate long-term risk to disasters. In the same vein, FEMA and other granting organizations should avoid overly prescriptive requirements that increase barriers to entry for vulnerable and disenfranchised communities.

Question 18. What are the biggest obstacles facing residential mitigation? How can those be overcome?

ANSWER. Across the nation households are struggling to meet the basic requirements of daily life. While there are a number of actions households can take to reduce their disaster risk, they are oftentimes cost prohibitive or not in line with the immediate priorities of the family. A nationwide campaign to inform homeowners

of the concrete steps is a first step in raising awareness of hazards and what can be done to lessen said hazards. The federal government also can provide incentives for homeowner action through tax credits for eligible actions.

Aside from existing homes, new construction standards should be based upon consensus building codes for the area and lessen the impacts of hazard impact on individual homes. This includes limiting future development in high-hazard areas and installing hazard mitigation solutions in new construction like tornado safe rooms in areas vulnerable to tornadoes. Other steps, including mandatory residential sprinkler systems have been shown to drastically reduce losses and save lives.

Question 19. What actions can Congress take that would be most effective in supporting the resilience of low- and moderate-income families?

ANSWER. The first action Congress can take to most effectively support the resilience of low- and moderate-income families is to ensure federal programs maintain the necessary flexibility to allow states to serve those populations. In addition to providing flexibility to states, Congress should not over-prescribe requirements on FEMA, thereby allowing the states and FEMA to work together in making sure programs are best tailored to the conditions of individual communities.

Broadening the definition of small, impoverished communities will provide a pathway for more low- and moderate-income families to access the increased Federal cost-share and reduce financial barriers to implementing mitigation.

Question 20. In its recent equity report, FEMA's National Advisory Committee stated that throughout the entire disaster cycle, communities that have been underserved stay underserved, and thereby suffer needlessly and unjustly. How could FEMA better target federal assistance to communities of low- to middle-income, and communities who have been historically and disproportionately disadvantaged?

ANSWER. FEMA could target federal assistance to communities of low- to middle-income, and communities who have been disadvantaged by:

- Providing easier access and simplifying FEMA disaster assistance programs so that rural communities and disadvantaged individuals/families can apply and receive assistance;
- Reviewing all grant programs through an equity lens to determine whether funding increases or decreases equity over time, and make necessary adjustments; and
- Targeting preparedness and mitigation resources to communities that are most in need of federal funding to build resilience in those communities.

Question 21. According to the First Street Foundation there are nearly 4.3 million homes across the U.S. with substantial flood risk that would result in financial loss. The analysis indicates that if these homes were to be insured against flood risk through the National Flood Insurance Program (NFIP), the rates would need to increase to cover the risk today, and that the cost of expected annual loss of properties in the next 30 years will grow by as much as 61% due to climate change. Do you think Congress should compel FEMA to develop an affordability program under the NFIP? If so, how urgent is the need, especially for low- and fixed income, historically disadvantaged communities and communities of color?

ANSWER. The National Flood Insurance Program does not fall under the emergency management agency in most states. NEMA believes, however, that Congress should do all it can to ensure a robust, affordable, solvent, and effective flood insurance program available to the broadest population of eligible residents.

Question 22. How can the private and public sectors forge creative partnerships to help educate and promote resilience and overcome potential obstacles to individuals, communities, and states investing in resilience?

ANSWER. Building relationships and trust are the most critical elements of forging creative partnerships between the private and public sectors to help educate and promote resilience. The biggest obstacle that has plagued the public private partnership conversation is the myth that you have to give something to get something. After what we have seen and experienced this past year, we should all have a better understanding of what community is and that we are all in this together.

Recent changes in funding programs have opened the door to a community's ability to apply the whole of community approach but the education on how to implement and engage is lacking. Some stakeholders have expressed concern that smaller projects or funding for planning may be less likely to obtain support through programs like FEMA's Building Resilience Infrastructure and Communities (BRIC) Program, and that small, impoverished, or rural communities may not have the capacity to apply for and administer the larger amounts which could be funded by such programs.

In addition to federally funded programs, Congress could consider a program similar to a medical thrift savings plan translated to disaster preparedness and resilience initiatives. This could mean that an individual and businesses could participate by directing pre-tax dollars toward preparedness and resilience efforts for themselves and their employees. Similar to a medical savings plan, specific activities would be pre-determined as being eligible. Private sector partners could, and likely would, promote these programs internally and benefit from the outcomes and the tax breaks. For example, a business could match savings and implement preparedness programs teaching and supporting employees to build personal plans and put policies and protocols in place for how they deal with disasters. Similarly, individuals who participate could direct money towards priorities such as flood insurance, preparedness kits, home generators, and disaster savings.

The full solution to developing these relationships, however, do not and cannot rest solely with Congress. Another obstacle that needs to be considered are the various regulations and laws currently in place in each state dictating the way in which states and locals can engage with the private sector. Each state must determine what if any legislative changes need to be made to enable these partnerships to flourish.

QUESTIONS FROM HON. MICHAEL GUEST TO RUSSELL J. STRICKLAND, EXECUTIVE DIRECTOR, MARYLAND EMERGENCY MANAGEMENT AGENCY, ON BEHALF OF THE NATIONAL EMERGENCY MANAGEMENT ASSOCIATION

Question 1. Mississippi and America struggle protecting our most vulnerable populations from recurring disasters. Low-income and minority communities often bear the brunt of disasters such as flooding yearly in places like Mississippi's South Delta and throughout the state. FEMA and MEMA, our state agency in Mississippi, work together to implement programs such as mitigation buyouts to remove these vulnerable populations from high hazard areas and build back to Federal mitigation standards. However, many of these families struggle to participate in these programs because of an inability to build back in a more resilient way by the time FEMA mitigation funds reach the property owners, often taking 6 to 7 months.

a. What are ways that the Federal government can better streamline assessments and fund disbursement to citizens so that they can rebuild in a more resilient way while also maintaining appropriate living standards?

ANSWER. FEMA must reduce the complexity of the grant programs the agency administers in all program areas. This includes making Public Assistance funding that is used to rebuild public infrastructure flexible enough to not only recover but also build back stronger, while simultaneously applying the principles of mitigation in the recovery process.

With regard to FEMA's Individual Assistance (IA) Program, efforts should be made to continue to streamline the process and lessen the administrative burden on survivors. This includes continuing to embrace strategies to shift the burden from survivors to FEMA staff, and working to implement known challenges in the administration of the IA program.

FEMA should have field staff who can immediately deploy and begin the process of appraising structures as an effort to streamline this process for individuals and communities. The current standard practice is that the homeowner and/or community hire an appraiser and are reimbursed once the project is approved.

Based on the state-specific issues inherent with this question, however, we recommend consulting with the Mississippi Emergency Management Agency for further elaboration.

b. Please expand on ways to improve FEMA and state agency mitigation buyout programs that take into account what happens following the buyout offer, such as ensuring the ability to purchase a new home or offering temporary housing until funds are disbursed, allowing for more individuals in need to participate in the programs.

ANSWER. FEMA should look to the real estate market to identify opportunities to expedite the buyout process following disasters. Disaster survivors are not able to wait several months to relocate or find alternative housing. In addition to expediting the time required to develop an application and receive FEMA funding, FEMA should offer support services for relocation. These include social services required when individuals are unexpectedly relocated from their homes. For low- and moderate-income families, they may be limited on how far they can move from their existing homes due to transportation, employment, and other factors. FEMA should coordinate with other agencies in order to provide these types of social services to assist in relocation.

Based on the state-specific issues inherent with this question, however, we recommend consulting with the Mississippi Emergency Management Agency for further elaboration.

QUESTIONS FROM HON. PETER A. DEFAZIO AND HON. DINA TITUS TO ROY E. WRIGHT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, INSURANCE INSTITUTE FOR BUSINESS AND HOME SAFETY

Question 1. You indicated during the hearing that your organization had done follow-on studies about how Hurricane Michael affected the Florida Panhandle, including the importance of building codes. Could you please detail for us the findings with specific attention to homes built prior to 2000, prior to 2008, and over the past decade?

ANSWER. The IBHS damage assessment for Hurricane Michael focused on the initial landfall location near Panama City, Florida. This allowed the team to investigate structural performance of residential construction in the area of highest winds and in lower wind speed areas west of the storm track to obtain a cross-section of performance of residential construction across the various wind speed zones.

Although IBHS was not able to assess houses based on year of construction in this study, IBHS did observe that newer residential buildings built under the modern Florida building codes as compared to older construction. In addition, IBHS observed that FORTIFIED construction proved effective for minimizing wind damage in the hardest-hit area of Mexico Beach. Another nearby FORTIFIED residence demonstrated the added advantage of elevating the structure to minimize the effects of storm surge. Further, construction practices for the Habitat for Humanity's Habitat Strong residences (which encourages beyond-code construction techniques based on those of the FORTIFIED Home program) proved effective, as these structures performed better than many of the surrounding structures when subjected to winds near the design level. This finding demonstrates that resilience is possible across all levels of home values.

Aerial images available from NOAA also provide points of comparison between homes constructed to the Fortified standard and neighboring houses. The below image demonstrates that the roof on the circled Fortified house, located above the canal, performed better than the roofs on the line of houses, built in the 2004–2006 time frame according to real estate records, on the other side of the canal.

Question 2. You highlighted the need to target investments in expanding and modernizing building code implementation through the Federal Emergency Management Agency's (FEMA) Building Resilient Infrastructure and Communities (BRIC) program. Could you please provide specific details on your recommendation?

ANSWER. Congress can amend the Stafford Act to direct FEMA's Building Resilient Infrastructures and Communities (BRIC) program to create set-asides to incentivize *new* state-level building code enactment, modernization, and enforce-

ment. These funds should target the *creation and expansion* of building code activities, not simply fund what is ongoing in given jurisdiction. These funds would be most effective if used to catalyze advancement in building code adoption and enforcement, not as a stream of ongoing financial support.

Question 3. You spoke at length in your testimony about housing as infrastructure. What are the biggest obstacles facing residential mitigation? What specific actions do you suggest Congress take to address this infrastructure need while advancing resilience, both for new and existing construction, and also for low- and moderate-income families?

ANSWER. The two most significant obstacles for residential mitigation are risk awareness and funding. Regarding the first obstacle, social science suggests that effectively evaluating risk—particularly high impact, low likelihood risk like natural disasters—is challenging for most people. When it comes to natural perils, people usually feel more protected than they are. To overcome this obstacle, Congress should direct federal agencies to make more climate- and natural disaster-related data available to the public. This will allow both the public and private sector to use this data to shape policies, inform communities and individuals, and develop market-based solutions to risk.

Regarding the second obstacle, different types of financial incentives and support mechanisms are needed to provide funding for residential resilience. This includes:

- Tax credits for eligible expenses paid by individuals and businesses for purchases that help reduce potential damage from hurricanes, flooding, and other forms of natural disaster. Making these tax credits transferable would make them a useful financial resource for low- and moderate-income families that otherwise would not be able to take advantage of the credits.
- Ending federal taxation for of the benefits individuals and businesses receive from state-based catastrophe-loss mitigation programs.
- Creating resilience set-asides within funding authorization for existing affordable housing programs. Investing in resilience and energy- and water-efficiency for housing for low- and moderate-income families ensures that those homes have lowered monthly utility and insurance costs and are more able to avoid damage in future natural disasters. This creates a framework in which those homes are enduringly affordable—and not just affordable on the day of purchase.

Question 4. Our water infrastructure has proven time and again to be vulnerable to be heat and seismic events. We have learned that some water systems have been contaminated in the wake of wildfire due to melting pipelines. What can we do to strengthen key infrastructure against these risks?

ANSWER. IBHS research does not extend to the components of water infrastructure. As with other types of infrastructure, however, water infrastructure should be built to both current consensus standards (if available) and be able to withstand knowable risks for a thirty-year period. Put another way, infrastructure should only need to be built once in a generation. Moreover, existing infrastructure need not be rebuilt in every instance to make it resilient to knowable natural perils. For example, replacing materials that can melt during wildfires could be a more cost-effective resilient-enhancing investment than replacing whole water infrastructure systems.

Question 5. Wildfires in western states have been devastating to the lives of so many survivors and communities. In the wake of every fire, we worry about the next one. How can Congress provide new tools to mitigate against the risk of wildfires and prepare before wildfires strike?

ANSWER. Wildfire risk to homes, businesses, and communities can be reduced but it cannot be eliminated. In part, this is because the intensity of wildfires varies in parcel scale, and wildfire-resistant building materials and designs that are effective up to a certain thermal exposure are limited once these thresholds are met. The insurance industry's understanding of wildfire risk and the steps that can make homes and communities more resilient is improving. We know a variety of mitigation actions at different price points that can decrease a home's resilience to wildfire. Notwithstanding this initial progress, developing a collective understanding of the various dynamics of wildfire risk is complicated by the interdependencies in densely developed suburban neighborhoods, where resilience-enhancing actions by one homeowner can be undermined by a neighbor's failure to take proper actions. In addition, because of the importance of defensible space, ongoing property maintenance (including but not limited to controlling vegetation) makes it very difficult to assess a home's vulnerability over time.

Due to the interdependence of homes that make up a community when it comes to wildfire risk and resilience, Congress should consider ways to incentivize or fi-

nancial support whole neighborhoods to take consistent resilience actions that will maximize the benefits for all members of the neighborhood.

Question 6. How can FEMA better help communities identify and implement hazard mitigation and disaster resilience efforts that will have the greatest impact on reducing community risk?

ANSWER. FEMA could work with communities—particularly those that face heightened risk of natural perils and have high levels of socioeconomic vulnerability—to develop community-wide resilience projects that can be put into place should funding—through federal programs or private sector investment—become available. FEMA, along with the Army Corps of Engineers and other relevant federal departments and agencies, can provide technical assistance by collaborating with State Hazard Mitigation Officers and local officials to develop such projects. Congress can consider additional funding to support technical assistance for such communities.

To the extent Congress enacts a Community Resilience Development Zone program with a related bond program—as referenced in my March 18th testimony—or a community wants to apply for BRIC funding in the future, pre-planned projects benefiting from technical assistance from federal agencies and departments would be particularly useful.

Question 7. What actions should federal agencies take to help the nation achieve greater disaster resilience? For example, what opportunities exist for federal agencies to "mainstream" risk reduction, by integrating disaster resilience goals and activities into all their missions and initiatives?

ANSWER. All government programs and investments that have bearing on the built environment should take natural disaster resilience into account, such that federally funded projects need only be built once during a generation. The Federal Flood Risk Management Standard (FFRMS), which requires that federally funded projects be resilient to flood hazard, exemplifies this approach. The common-sense purpose of the FFRMS is to provide reasonable assurance that the American taxpayer need not pay twice for the same project. Congress should enshrine the FFRMS in statute so it cannot be revoked by executive order, and expand it to require that federally funded projects be designed and built for resilience to other significant natural perils, including high winds and wildfire.

Government coordination on resilience and risk reduction—such as what already occurs at the Mitigation Framework Leadership Group (MitFLG)—can help integrate disaster resilience and activities into a broader set of governmental missions and initiatives. The National Mitigation Investment Strategy, developed by the MitFLG, is one example of this type of coordination. In addition, the nation would benefit from the development of a National Climate Resilience Strategy, which should focus specifically on building climate resilience into communities, services, built infrastructure, and natural and working lands. Like the FFRMS but with a broader focus, such a strategy could assess the expenditures and programmatic decisions of every federal agency—including procurement, grants, and loans—through a climate resilience lens.

Question 8. The BRIC program offers the opportunity for the nation to make sizable investments in disaster risk reduction. How can FEMA administer BRIC to ensure effective reduction of risk to whole systems, communities, and regions rather than as a "pre-disaster mitigation on steroids" that invests more money using the same fragmented, stove-piped, and parochial approaches that historically has failed to result in significant overall risk reduction or address the nation's most significant infrastructure and community risks?

Question 9. We are just beginning to assess the response to the 2020 BRIC grant cycle. Can we already identify areas which need to be improved or challenges that need to be addressed?

ANSWER. This response refers to Questions 8 and 9.

FEMA has a tremendous opportunity to make BRIC the flexible, creative, simple, and transformative program it was envisioned as to drive resilience on a systemic basis. The following approaches can help optimize BRIC to meet the needs of communities across the country.

- *Encourage community-wide participation in resilience.* FEMA should use BRIC to encourage and incentivize holistic approaches to SLTT disaster risk reduction that bring a variety of community stakeholders into the planning and carrying out of resilience-enhancing projects and programs. Resilience is not solely an emergency management issues—community disaster reduction must also include input from stakeholders representing housing, public works, transportation, and other forms of infrastructure. FEMA should use the BRIC applica-

tion process to encourage SLTTs to bring together these stakeholders to develop projects that improve community resilience holistically. Additionally, FEMA should ensure that BRIC funding goes to support projects that improve resilience to all natural hazards—including wildfire and wind—and not just flood projects.

- *Improve access and equity*. Too many communities lack the technical capability to develop projects that would qualify for BRIC funding and the financial capacity to pay the 25% state cost-share for BRIC funding. This lack of capability and capacity may create a significant barrier for underserved communities with small tax bases and fewer resources in taking advantage of the program—an inherently inequitable outcome that runs contrary to the purpose of BRIC. Congress can address this issue by funding additional technical assistance for underserved communities and by allowing greater flexibility for the state cost-share of BRIC funds (i) by allowing states to buy down their share through resilience-advancing actions like smart land use and modern building codes, and (ii) by allowing SLTT entities to partner with private and philanthropic sources to pay for some of the cost share. While SLTTs should always have some skin in the game, greater flexibility in putting together the state cost-share will make BRIC more meaningful for underserved communities and, thus, more equitable.
- *Encourage residential resilience*. The BRIC program could be better calibrated to fund residential resilience projects. This could be accomplished through the creation of a pilot program to establish residential resilience grant programs and by streamlining the application process to make it easier for projects involving multiple structures to qualify for funding by instituting a benefit cost analysis (BCA) waiver for SLTT initiatives that fund certain kinds of residential resilience projects.
- *Integrate Stafford Act funding*. BRIC and HMGP have similar resilience goals and more could be done to integrate how the programs operate and fund resilience projects. Successful BRIC applicants should be able to access HMGP funds to spend down unused funds in the post-disaster program—this will alleviate challenges associated with BRIC oversubscription. Additionally, if HMGP funds expire, they should automatically roll over to BRIC to provide additional funds for that program.

Question 10. State and local officials often mention the challenges they face in implementing and enforcing codes, largely due to a lack of resources. What more could the federal government do to help states and communities overcome this hurdle?

Question 11. In November 2020, a FEMA study found that over a 20-year period, cities and counties with modern building codes would avoid at least $32 billion in losses from natural disasters, when compared to jurisdictions without modern building codes. What steps can FEMA take to further promote and help communities adopt modern building codes?

Question 12. We know that the adoption of the latest edition of the building code gives the greatest return on investment—$11 for every $1 invested. What can be done federally to incentivize states to adopt and enforce model statewide building codes?

ANSWER. This response refers to Questions 10, 11 and 12. A mitigation provision in the Bipartisan Budget Act of 2018 included new Public Assistance cost-share incentives for states to invest in resilience, including an increased federal share (up to 10 percent more) for Stafford Act funding to states and territories that undertake eligible mitigation actions like adopting current building codes. Congress can amend the Stafford Act to give FEMA the flexibility to use a portion of the cost-share for all disaster relief and mitigation programs as a tool to encourage strong building codes and other pro-resilience actions by SLTTs.

In addition, Congress can amend the Stafford Act to direct FEMA's BRIC program and Hazard Mitigation Grant Program (HMGP) to create set-asides to incentivize new state-level building code enactment, modernization, and enforcement. These funds should target the creation and expansion of building code activities, not simply fund what is ongoing in given jurisdiction.

Question 13. As Congress considers comprehensive legislation to modernize and strengthen our nation's infrastructure—our road, rail, and aviation networks, hospitals, schools, public housing, and other public facilities—would you be supportive of a requirement that these structures and facilities be built to the latest consensus-based building codes whenever federal funding is used? Are there areas where the standards should be increased beyond code requirements to industry best practices (i.e., high wind areas)?

ANSWER. The FEMA Building Codes Save report makes clear that the adoption of the latest edition of the building code gives the greatest return on investment—$11 for every $1 invested. Legislation requiring that federal investments in infrastructure meet current, consensus-based building codes *and* be resilient to knowable natural hazard risks would provide an assurance that the American taxpayer need not pay twice for the same project. In some instances, consensus-driven model building codes may not provide the greatest appropriate protection from knowable risks such as high winds or wildfire. Where available, Congress should mandate the use of science-based resilience standards—such as IBHS's FORTIFIED standards—to ensure that federally-funded infrastructure only needs to be built once during a generation.

Question 14. It seems that even across FEMA's programs, there is not the uniform application of consensus-based codes and standards (Public Assistance, Individual Assistance, Hazard Mitigation, and the National Flood Insurance Program). There is also inconsistent application across the numerous federal programs that drive investments in resilience and mitigation. One of President Biden's early executive orders effectively reinstated the Federal Flood Risk Management Standard. Should there be a legislative requirement that the investments of all federal funds in built infrastructure follow these foundational flood requirements?

ANSWER. Legislation is more stable and long-lasting than executive order. The Federal Flood Risk Management Standard (FFRMS) represents an important principle: that federally funded projects should be built to withstanding knowable risks, so they last for at least a full generation. By passing legislation consistent with FFRMS, Congress would enshrine this principle in statute and protect it from future revocation by executive order. However, flood is not the only known natural peril that endangers federally funded projects. Congress should go beyond the FFRMS to require that all federally funded projects be designed and built for resilience to all knowable natural hazard risks, including high winds and wildfire.

Question 15. Can you please comment on the work that IBHS is doing to protect Americans who live in the Midwest and other inland areas from the weather disasters that affect these areas of the country?

ANSWER. IBHS research into wind, wind-driven rain, and hail are all very relevant to Americans who live in the Midwest and other inland areas. IBHS research has taught us that wind is wind—whether the wind is associated with hurricanes, tornadoes, or severe convective storms. The same lessons that hurricane coast has learned over years of landfalling hurricanes can protect communities from high winds in severe thunderstorms, derechos, and tornadoes. Wind will attack a home or business and find the weakest element. Once wind begins to attack a home, it often leads to a cascade of damage including costly water intrusion. These high winds can push a garage door inward, allowing pressure to build inside the garage and push up on the roof and surrounding walls—often resulting in major damage to the home and displacing families.

IBHS also has invested resources in better understanding the way that hail damages homes and other structures. We developed a roof shingle hail impact test to provide insights into the performance of shingles labeled as impact resistant. Homeowners in the Midwest and inland areas subject to hailstorms can use the IBHS shingle hail impact performance ratings to make informed decisions when they replace their roof or build a new home.

Separately or together, wind, rain and hail can cause significant damage to roofs and homes. In response, IBHS developed the FORTIFIED Home—High Wind & Hail resilience standard, which—in addition to meeting the requirements set out in IBHS's FORTIFIED Roof resilience standard—requires that the roof use high performing impact-resistant shingles rated good or excellent by IBHS. These actions can narrow the path of damage and reduce disruption and displacement so often caused by these storms.

Question 16. Can you give some examples how federal legislation could draw upon the work of IBHS to help protect Americans from the weather disasters they face today, and the weather effects of climate change?

ANSWER. IBHS delivers top-tier science and translates it into action so we can prevent avoidable suffering, strengthen our homes and businesses, inform the insurance industry, and support thriving communities. One of the ways we translate our science into action is through the development of beyond-code resilience standards (e.g., FORTIFIED Home and Commercial) and mitigation guidance documents (e.g., our Wildfire Ready Guide, Thunderstorm Ready Guide, and Hurricane Ready Guide). Federal legislation could draw upon these standards and guides to structure resilience programs. For instance, the proposed Disaster Savings and Resilient Con-

struction Act explicitly references FORTIFIED as meeting the resiliency requirements needed to qualify for a tax credit. FORTIFIED could also be used as one component to a legislative "building back better" requirement for post-disaster relief programs like HUD's Community Disaster Block Grant-Disaster Relief program.

Question 17. How can the private and public sectors forge creative partnerships help educate and promote resilience and overcome potential obstacles to individuals, communities, and states investing in resilience?

ANSWER. In my March 18th testimony, I highlighted the importance an "all of the above" approach to strengthening climate change adaptation and residential resilience. This approach includes a need for creative partnerships between the private sector and public sector. One example of this kind of collaboration is the analytical tool developed by the Reinsurance Association of America (RAA), using federal data, that I referenced in my oral and written testimony. This tool allows the private and public sector to identify communities that have high exposure to natural perils and high levels of socioeconomic vulnerability. Using this tool, Congress could establish programs that encourage private sector financing of resilience projects that could make a meaningful difference for those communities, particularly when paired with government programs in the affordable housing, pre-disaster mitigation, and economic development space that also seek to strengthen resilience for families, businesses, and communities. Creativity in not just educating consumers but layering different funding opportunities for communities that need the most help is an important way we can collectively increase resilience and adapt to climate change.

Question 18. Is there a role for the insurance industry to help bridge the coverage gap, provide risk identification and data, and leverage resources to help communities successfully mitigation disaster risks?

ANSWER. Yes. The insurance industry has the expertise and capacity to work with communities all over the United States to help bridge the coverage gap, provide risk identification and data, and leverage resources to help communities successfully mitigation disaster risks. However, Congress should reconsider existing programs which disincentivize SLTTs from taking full advantage of private market insurance solutions. FEMA funding should not take the place of insurance.

QUESTIONS FROM HON. MICHAEL GUEST TO ROY E. WRIGHT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, INSURANCE INSTITUTE FOR BUSINESS AND HOME SAFETY

Question 1. Mississippi and America struggle protecting our most vulnerable populations from recurring disasters. Low-income and minority communities often bear the brunt of disasters such as flooding yearly in places like Mississippi's South Delta and throughout the state. FEMA and MEMA, our state agency in Mississippi, work together to implement programs such as mitigation buyouts to remove these vulnerable populations from high hazard areas and build back to Federal mitigation standards. However, many of these families struggle to participate in these programs because of an inability to build back in a more resilient way by the time FEMA mitigation funds reach the property owners, often taking 6 to 7 months.

a. What are ways that the Federal government can better streamline assessments and fund disbursement to citizens so that they can rebuild in a more resilient way while also maintaining appropriate living standards?

ANSWER. The time following a natural disaster, particularly one which displaces a family, is the worst time to contend with government bureaucracy. The process by which homeowners apply for post-disaster relief from FEMA, HUD, and SBA should be simplified and streamlined. Congress can direct these agencies and departments to develop a single application and tracking process to support Americans seeking government aid when they are most vulnerable.

b. Please expand on ways to improve FEMA and state agency mitigation buyout programs that take into account what happens following the buyout offer, such as ensuring the ability to purchase a new home or offering temporary housing until funds are disbursed, allowing for more individuals in need to participate in the programs.

ANSWER. Too often, the FEMA mitigation acquisition program for residential structures takes too long. These choices, often difficult for a homeowner, are best made immediately after the disaster—before major repair and rebuilding activities begin. Speed matters. If a homeowner has already rebuilt, the incentive to participate in the acquisition program fades. If the residential acquisition strategy was implemented within 30 days of the disaster, survivors would be able to use the authorized Individual Assistance programs for temporary housing needs.

QUESTIONS FROM HON. PETER A. DEFAZIO AND HON. DINA TITUS TO VELMA SMITH, SENIOR GOVERNMENT RELATIONS OFFICER, FLOOD-PREPARED COMMUNITIES INITIATIVE, THE PEW CHARITABLE TRUSTS

Question 1. How can the Federal Emergency Management Agency (FEMA) better help communities identify and implement hazard mitigation and disaster resilience efforts that will have the greatest impact on reducing community risk?

ANSWER. Given that flooding events have long been the most common and costly natural disasters in the United States and that the science in this field is advancing rapidly, Pew recommends that FEMA prioritize improved information sharing in this area. Most importantly, FEMA should work to provide an initial or preliminary set of complete flood maps for communities all across the country and to assure that every community has the opportunity to engage in a local RISK MAP public meeting.

Basic information about flood risk is a fundamental building block for resilience—the means by which communities can understand the extent of their existing vulnerabilities as well as the factors that may exacerbate or ameliorate those vulnerabilities over time. Armed with a recognition of the dynamic nature of flood risk, a deeper understanding of current risks, and a sense of what factors drive the risk for a given community, local and state decision-makers can address existing problems and safeguard the community from future disasters, choosing sensible locations for new public infrastructure investments, adopting appropriate land use and zoning controls, and selecting the adaptation or mitigation actions that will provide the greatest benefits.

FEMA's National Flood Mapping Program, authorized by Congress as part of NFIP reform in 2012, mandates that a complete set of flood risk data be provided to communities. This includes 100-year and 500-year flood elevations in all areas that potentially could be developed as well as residual risk information as it relates to flood control structures and dams (like dam failure inundation mapping) and future conditions information. Pew believes that if communities were provided what Congress has mandated, they would begin to have a clear picture of overall flood risk. Unfortunately, what FEMA is providing communities today is not complete. While the Agency does a credible job in maintaining currency of existing flood hazard data, it struggles to provide new flood hazard data in areas that have not yet been mapped and has not yet begun to provide either residual risk or future conditions data.

Such a mapping effort would require substantial increases in funding. In 2019, FEMA testified that based on current appropriations, they cannot provide complete flood maps for all communities in the nation. With only about one-third of the nation's land area currently mapped for flood hazards, expanded coverage across the country would be major undertaking—something of a moonshot for FEMA's mapping program. For some areas, then, it may be reasonable to allow for a departure from the most sophisticated and detailed methods of hydrologic and hydraulic analysis that precede formal adoption of flood maps by local governments. Instead, the Agency may be able to use base level engineering or other methods appropriate on a broad geographic scale to build the understanding of flood risk in areas where little knowledge exists. See, for example, the information available to supplement official flood map information in FEMA region 6: https://webapps.usgs.gov/infrm/estbfe/
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Question 2. What actions should federal agencies take to help the nation achieve greater disaster resilience? For example, what opportunities exist for federal agencies to "mainstream" risk reduction, by integrating disaster resilience goals and activities into all their missions and initiatives?

ANSWER. The goal of "mainstreaming" adaptation and risk reduction is an important one, not only for federal agencies but also for states, local communities, nonprofit institutions and businesses of all sizes. Ultimately, policies should drive not just a certain number of resilience projects or actions but the creation of a resilience culture in which planning for future disasters is incorporated into the range of decision-making regarding where and how to build.

To create this culture of resiliency, the Federal government can lead by example, establishing resiliency leadership positions within a multitude of agencies, from the White House on down, including, for example, the Federal Emergency Management Agency, as well as the Council on Environmental Quality, the Department of Commerce, the Environmental Protection Agency, and the U.S. Army Corps of Engineers, and assuring that resilience personnel work collaboratively, communicate with regularity, and share scientific knowledge and the lessons learned from disaster experience. In our view, those positions will be effective only if they are adequately resourced and provided with the authority and staffing to assure that resil-

ience objectives and strategies can be integrated into the day-to-day decision-making within those agencies.

An important report released in 2010 offers a perspective on this point of integration. Under contract to FEMA, the American Planning Association looked at the extent—or the lack thereof—to which local hazard mitigation plans were actually integrated into key local decision frameworks. The study demonstrated that many of the hazard mitigation plans that had been produced to that point had, unfortunately, been essentially ignored as the same communities updated comprehensive plans, adopted zoning and subdivision requirements, and laid out plans for capital spending on infrastructure and economic development. Many plans reviewed—though they served to qualify communities for federal disaster assistance and provided a basic assessment of local vulnerabilities—were relegated to bookshelves and files, rather than used as guideposts to improve local decision-making.

While this study was specific to local planning, it illustrates that challenge for all levels of government and what we would hope the federal government will model for others: Resiliency is not accomplished simply by report production and appointments. It requires an ongoing commitment to assessing and understanding risks, including the trajectory of future risks, and to making decisions and deploying resources that will mitigate against those risks. It must also be an iterative process—with decision-makers taking care to observe the results of their choices and improve their adaptive capacity over time. Ideally, it will become standard practice—for everything from designing roads and bridges to locating affordable housing or critical infrastructure—to consider of an array of plausible hazard scenarios and to evaluate the consequences of those hazards being realized. Decision-makers can then opt for the low-regrets solutions that will protect people and property and allow for speedier recovery when disasters do occur.

Pew believes that the federal highway legislation passed out of this Committee last year and the measure passed out of the Senate Environment and Public Works Committee offer good models for what will be required. Though the two bills differ in many aspects, both include provisions that weave disaster preparedness into the existing fabric of long-range transportation planning and asset management. It is the integration of resilience factors into the everyday decision-making of federal programs that is needed, not simply the creation of new, isolated silos.

For the Environmental Protection Agency, this may mean working with states to integrate resilience assessments and actions into the intended use plans for water and wastewater utility spending; for the Department of Housing and Urban Development, collaboration with states and localities to assure that the consolidated plans that set priorities for affordable housing and community development fully incorporate data on current and future hazards and include needed protection strategies; for the Office of Management and Budget, a review of the methods used to judge cost-effectiveness of projects and spending with multiplying benefits achieved far into the future or those resolving long-standing social equity problems. For the Small Business Administration, targeted education and assistance to small scale entrepreneurs to help them safeguard their investments and their employees in the event of disasters. Again, we would expect different solutions in different agencies, and those diverse responses might well be a sign of successful integration.

Question 3. Fewer than 40 percent of FEMA-funded Public Assistance projects have included a mitigation component during the period 2010 to 2018. What can FEMA do to incentivize state and local officials to incorporate mitigation measures when repairing disaster-damaged facilities?

ANSWER. In our view, the most important figure may not be the percentage of Public Assistance projects recorded as containing a mitigation component. The more troubling numbers are the overall statistics that show increasing demands on the permanent work under the Public Assistance program.

Those numbers combined with large demands on the Disaster Relief Fund overall and the backlog of commitments under the Federal Highway Administration's Emergency Relief program, tell us that too many public assets, including roads, fire stations, schools, and utilities, have not been planned and built in a fashion that allows them to continue functioning or quickly return to functioning following a natural disaster. The demand for repair and rebuild monies also indicates that many of these assets are either uninsured or underinsured. The United States has, as the National Institute for Building Sciences says, an enormous "resilience gap"—a growing gap cannot be filled solely with federal assistance. We see multiple opportunities for Congress and the Administration to encourage states and localities to take more initiative in this area.

First, FEMA should assure that any rebuilding or major repair work to be accomplished with the aid of Public Assistance dollars will follow, at a minimum, the lat-

est consensus building codes. Compliance with the latest building codes is a common-sense essential for enhanced resiliency.

Pew also believes that federal tax dollars should be conditioned on going beyond current codes. As laid out in H.R. 481, the Flood Resiliency and Taxpayer Savings Act, federal agencies should be working to assure that projects built with federal support consider not just today's risk, but the risk that will be encountered over the expected or hoped-for design life of a facility. Such requirements can not only assure that federal dollars are not squandered on short-lived, disaster-vulnerable projects but also compel states and localities to begin assessing the options for fortifying and protecting existing critical facilities, roadways, public buildings, and utilities. Even in cases where a locality does not have the resources at hand to carry out improvements or needed mitigation before disaster strikes, a pre-disaster assessment of vulnerabilities and possible solutions may allow for quicker action on a safer rebuild if disaster strikes. (See support letter for H.R. 481 here: https://www.pewtrusts.org/-/media/assets/2021/02/national__support__flood__resiliency__and__taxpayer__savings__act__of__2020.pdf .)

Related to this point, Pew also recommends that all post-disaster FEMA teams deployed to help with damage assessments include staff who are expert in mitigation projects. By identifying mitigation opportunities early on, even as inspectors are still in the process of assessing damages and tallying the number of substantially damaged structures, these experts can address the timing imperatives that drive many communities to opt for less protective, but faster build back.

Pew also supports efforts to update the disaster declaration criteria in ways that will reward states that are making significant commitments of state resources to pre-disaster action and, over time, will lessen the amount of assistance available to states that choose not to make those needed investments.

In comments submitted to FEMA in February of this year, Pew recommended consideration of an indexed approach to declaration decisions that could incorporate relative disaster risk, social vulnerability, and a demonstrated commitment to and investment in mitigation. Given the current concerns around declines in budget capacity voiced by many states and localities, we also recommended that FEMA move forward on this topic, not with a final rulemaking, but by convening a working group of key stakeholders to develop recommendations and eventual policy changes. The task for such a group would be to develop workable policy recommendations that put the nation on an effective path to equitably sharing the challenges and burdens of natural hazard risk management and preparedness. Ideally, these policies would manage federal costs while establishing mechanisms that reward forward-thinking, strategic investments in resilience by state and local governments. See the Pew comments here: https://www.pewtrusts.org/-/media/assets/2021/02/pew-comments-fema-2020-0038.pdf

Finally, we would also recommend that the Committee consider requiring improved record-keeping and reporting on buildings, utilities, and other assets that suffer repeated damages and require Public Assistance funding on multiple occasions. Several years ago, the Federal Highway Administration finalized a rule that requires states to track and report on repeatedly damaged federal highway segments. (See an explanation of the requirements of 23 CFR Part 667 here: https://www.fhwa.dot.gov/programadmin/23cfr667__qa.cfm.) A similar requirement may be appropriate for other infrastructure assets. This record-keeping should also cover the extent to which such assets may be uninsured or under-insured.

Question 4. In the latest Government Accountability Office (GAO) High-Risk Report, issued early this year, GAO again finds that the federal government must reduce its fiscal exposure by managing climate change risks and that it has yet to make measurable progress to reduce its fiscal exposure to climate change. What do you think the federal government ought to do to build or rebuild infrastructure so that it is resilient to future conditions of climate change-related impacts such as inland and coastal flooding, wildfires, or extreme heat over the life-cycle of the project?

ANSWER. Since 2013, the GAO has included the fiscal risks associated with climate change in its high-risk report series on significant government vulnerabilities. The most recent report echoes warnings issued earlier and identifies two key imperatives to reducing the federal government's fiscal exposure: One is an increase in resources dedicated to pre-disaster hazard mitigation, and the second is enhanced state and local disaster resilience. We agree, and we urge the Committee to consider both sides of this resilience coin.

In our view, the federal government can and should more generously fund pre-disaster mitigation programs, allowing the National Flood Insurance Program a higher level of Federal Mitigation Assistance (FMA) funding that can go toward

buyouts of flood-prone structures, for example, or increasing appropriations to NOAA's National Coastal Resilience Fund, which can help coastal communities avert flooding disasters while they also protect the integrity of sensitive coastal ecosystems. Congress could also initiate and seed new state revolving loan funds aimed at promoting mitigation and, as this Committee has done, work to establish new resiliency grant programs within the Department of Transportation.

At the same time, however, federal policymakers should press their state and local counterparts to do their part. States and localities are the key decisionmakers when it comes to land use and, with very few exceptions, they are the arbiters of where and how new housing developments, local schools, hospitals, and businesses will be built. They also benefit directly from long-lived, safe infrastructure and building within a community, supporting economic development and quality of life as well as generating local tax revenues. If local and state governments make decisions and investments that promote unsafe building in risky areas, however, the need for more mitigation dollars and more recovery dollars will never subside. State and local governments must be true partners in resilience with assistance from the federal government but also with better management of flood and hazard risks—promoting growth and development in areas that are high, dry, and safe, not in areas that are at high risk of floods and fires.

Again, we see great value in the framework laid out in H.R. 481 to accomplish these objectives. By clearly requiring the sponsors of projects funded in whole or in part with federal dollars to assess and address future flood risk, federal agencies will promote a vastly improved resilience culture. Pew also sees a need for new policies regarding disaster declarations and the availability of funding for permanent repairs or rebuilding of roadways, utilities, water and wastewater treatment plants, and public buildings. Over time, states should be scored and rewarded based on their commitment to smart, safe building and reasonable mitigation investments.

Question 5. The Building Resilient Infrastructure Communities (BRIC) program offers the opportunity for the nation to make sizable investments in disaster risk reduction. How can FEMA administer BRIC to ensure effective reduction of risk to whole systems, communities, and regions rather than as a "pre-disaster mitigation on steroids" that invests more money using the same fragmented, stove-piped, and parochial approaches that historically have failed to result in significant overall risk reduction or address the nation's most significant infrastructure and community risks?

ANSWER. See answer below.

Question 6. We are just beginning to assess the response to the 2020 BRIC grant cycle. Can we already identify areas which need to be improved or challenges that need to be addressed?

ANSWER. Given that the new BRIC program closed out its first grant application period only three months ago, it may be premature to judge the failings or successes of this program at this point. We are optimistic, however, that the BRIC framework is a good one that can give state and local resilience leaders a level of confidence that federal mitigation dollars will be a more reliable source of assistance.

As Members know, the Stafford Act's Hazard Mitigation Grant Program (HMGP) has long been the largest source of federal assistance for mitigation projects. But that mitigation money flows only after a disaster has occurred—and because the levels of HMGP funding scale off the size of other disaster expenditures—after the costs of recovery projects have been tallied. In some instances, disaster-struck states have opted to use available HMGP dollars in communities other than those affected by the most recent disaster, but for the most part HMGP has operated as a post-disaster program.

BRIC's funding levels also scale from the estimated expenditures associated with disasters, but the funding allotments are not earmarked for specific states. Instead, those monies go into a fund, and states, territories, and tribes, along with localities as sub-applicants, may apply and compete for assistance without having experienced a recent disaster. By de-linking the funding availability from specific disasters, the program is able to operate as a true pre-disaster program, thus opening the door for assistance to states that may already have done a reasonably good job of mitigating their risks but hope to do more. And, with FEMA's decision to manage the fund without drawing it down to zero each year, states, territories, and tribes may be willing to staff up for mitigation and develop in-house expertise, rather than relying solely on contract help with large sums are suddenly available.

The available statistics for this first round of applications confirm the pressing need for help: While $500 million was available, FEMA received requests totaling $3.6 billion. Considering matching funds associated with these requests, the total project costs would have come in at close to $5.5 billion. While the bulk of the fund-

ing requested was for project costs, about a third of the applications sought assistance for capacity-building—in our view, a positive sign that many communities understand the imperative to get smart and get going on adaptation.

While we would withhold final judgment based only on these broad numbers, we suspect it may make sense for FEMA to increase the amount of technical assistance it offers in the next round of applications. Hopefully, if FEMA sees a pattern of small, under-resourced, or highly vulnerable communities having difficulty with certain aspects of the application process, it will conduct special outreach and/or simplify aspects of the program, such as the benefit-cost calculations.

And, as Pew noted in comments to the Agency as it set up the program, we are hopeful that funding that goes toward writing or renewing local or state mitigation plans comes along with greater scrutiny and pressure to integrate hazard mitigation planning into comprehensive planning, zoning, and capital improvements planning.

We also agree that broader solutions may be called for in many instances, and we would note that the FEMA scoring criteria currently provides for additional credits for collaborative applications. As this first round of funding concludes, we would also suggest that FEMA also consider help connect applicants and sub-applicants within a watershed or region who may share a common risk and may each be better able to solve their local problems with a regional approach that leverages knowledge and resources.

Question 7. State and local officials often mention the challenges they face in implementing and enforcing codes, largely due to a lack of resources. What more could the federal government to help states and communities overcome this hurdle?

ANSWER. See answer below.

Question 8. We know that the adoption of the latest edition of the building code gives the greatest return on investment—$11 for every $1 invested. What can be done federally to incentivize states to adopt and enforce model statewide building codes?

ANSWER. With recent changes to the Stafford Act, Congress has allowed for more federal resources targeted at building code adoption and enforcement. FEMA may now assist local governments post-disaster when the tasks of inspections and permitting can overwhelm a community that has suffered major damage but has limited capacity in a building department. The law is also clear that FEMA may consider local commitments to adopting and enforcing the most recent code versions as it provides financial and technical assistance to applicants. In our view, these were appropriate and useful changes.

FEMA also incentivizes adoption and enforcement of building codes through its Community Rating System (CRS), which provides discounts in flood insurance to policyholders based on the activities of the local government, including the ratings independently released as the Building Code Effectiveness Grading Schedule (BCEGS). These ratings produced by Verisk's Insurance Services Office (ISO) consider the level of code adoption and enforcement. (See, for example, FEMA's CRS guidance https://crsresources.org/manual/ and a summary report on state BCEGS https://www.isomitigation.com/siteassets/downloads/iso-bcegs-state-report_web.pdf.)

We also support efforts to ensure that federal dollars are used only for projects that incorporate, at a minimum, the most recent consensus-based codes and standards, and we applaud states and localities that have taken steps to incorporate or promote even stronger requirements, including higher freeboard standards and stronger roofing requirements. Alabama, for example, uses its Strengthen Alabama Homes program to provide grant funding to residents of Mobile or Baldwin counties to make improvements to the FORTIFIED Home™ standards Mobile or Baldwin Counties (https://www.smarthomeamerica.org/resources/strengthen-alabama-homes), and New York City has released Climate Resiliency Design Guidelines (https://www1.nyc.gov/assets/orr/pdf/NYC_Climate_Resiliency_Design_Guidelines_v4-0.pdf) that will help the City ensure that City-funded infrastructure and facilities are built withstand the future impacts of extreme weather and climate change.

Unfortunately, however, incentives as well as significant outreach and technical materials produced and disseminated from through FEMA's Building Sciences programs, have not yet led to an adequate nationwide commitment to building code adoption and enforcement. As a recent report from FEMA's National Advisory Council notes:

> "Pushback from builders and manufacturers that benefit financially or otherwise from weaker building codes have stunted inclusion of some disaster-resistant provisions. Despite FEMA's positive efforts to strengthen consensus model building codes and standards over time, the Agency is ill-

equipped to engage in a sustained way as building code adoption issues threaten the growth of resilience in communities across the U.S."

The Council's assessment is a troubling one, as is the statistic they cite showing that nearly 70 percent of communities facing hazards fall short in code adoption and use. That is why we support not only the continuation of appropriate incentives and widespread sharing of technical information but also clear requirements for code-compliance for any project using federal resources. As discussed earlier, Pew also supports the possible lowering of rebuilding assistance to states and communities that fail to act on code adoption and enforcement.

Question 9. As Congress considers comprehensive legislation to modernize and strengthen our nation's infrastructure—our road, rail, and aviation networks, hospitals, schools, public housing, and other public facilities—would you be supportive of a requirement that these structures and facilities be built to the latest consensus-based building codes whenever federal funding is used? Are there areas where the standards should be increased beyond code requirements to industry best practices (i.e., high wind areas)?

ANSWER. Pew fully supports clear requirements for new construction or major reconstruction with federal funding to

1) follow, at a minimum, the latest consensus-based codes and standards; and
2) account for hazards that are anticipated to impact those facilities over their excepted lifetimes, incorporating protective features to better manage that risk.

The framework of H.R. 481 offers a common-sense approach for addressing future flood risk. For flooding hazards, it provides an approach for identifying areas of likely future risk or, where there is inadequate information, incorporating a modest safety factor into decision-making. This approach will be particularly important in areas projected to be impacted by sea level rise, increased frequency and intensity of storms, and significant levels of erosion.

Question 10. It seems as if even across FEMA's programs, there is not the uniform application of codes and standards (Public Assistance, Individual Assistance, Hazard Mitigation, and the National Flood Insurance Program). There is also inconsistent application across the numerous federal programs that drive investments in resilience and mitigation. One of President Biden's early executive orders effectively reinstated the Federal Flood Risk Management Standard. Should there be a legislative requirement that the investments of all federal funds in built infrastructure follow these foundational flood requirements?

ANSWER. Pew strongly supports application of up-to-date codes and standards for all new construction and the enactment of H.R. 481 as a durable, common-sense approach to addressing future flood hazards. We urge Congress not to miss the opportunity to assure that newly built infrastructure is built to last, and we believe you can do so by assuring that any allocations of new funding immediately trigger requirements for forward-looking hazard assessments and protective designs and construction. In our view, such requirements are important to public health and safety and fiscally responsible.

Question 11. What are the biggest obstacles facing residential mitigation? How can those be overcome?

ANSWER. For flooding, the problem is not simply one of historical settlement patterns and the natural affinity that many have for waterside living. Multiple additional factors work against residential resiliency, including

a long and continuing resistance to updated building codes;
serious misunderstandings about the nature and uncertainty of flood risks;
inappropriate price signals; and
decision-making frameworks that focus solely on the short term.

One of the most frequent arguments against protective building code adoption and enforcement is that code requirements will make new housing unaffordable. This is an argument that has been proven wrong over and over by flood events. The argument assumes that the primary or sole focus should be the selling price of a home and contends that because code compliance has the potential to raise the construction price by some increment, codes create problems. What this argument ignores, however, is the fact that the cost of home ownership is not simply the price of a house. The cost of home ownership includes the purchase price, but it also includes the cost of living in, maintaining, and insuring that home throughout the lifetime of ownership. In our view, an "affordable" home that is subject to recurrent flooding or situated in a dangerous surge or landslide area is not truly affordable, when its residents must evacuate to safety, lose their belongings, and make costly repairs, often multiple times.

On this point, states should work to assure that all communities adopt and enforce up-to-date codes, and federal funding should not support projects that fail to meet current codes or fund new unsafe construction located in known high hazard zones.

Another obstacle derives from misinterpretations of flood maps and misunderstanding regarding the 1-percent-annual-chance or so-called 100-year floodplain. While many people, including policymakers, see this as a of the worst-case flood or a prediction, it is neither. The designated Special Flood Hazard Areas (SFHAs) depict the land areas that would be inundated by a flood with an estimated one percent chance of occurring in any given year—an imaginary event based on past storms and the land uses existing at the time the map is created. The lines on the map do not represent a point at which all major flooding would be expected to stop, and the one percent probability actually translates to a one in four chance of flooding over the 30-year term of many mortgages. The government's continued emphasis and reliance on these SFHAs as flood forecasts oversimplifies the task of understanding flood risk, creating confusion and complacency about managing that risk.

To address this obstacle, Pew supports adding more information to flood maps, including information on future risks, and new requirements for disclosure of information on past flooding to allow consumers to make sensible decisions before making financial commitments to mortgages or leases. FEMA's new insurance rating methodology, Risk Rating 2.0, will also improve public understanding of flood risk and correct the misleading price signals linked to current and past NFIP pricing.

An additional obstacle is one that FEMA's National Advisory Council has discussed. The Council's 2019 report (https://www.fema.gov/sites/default/files/2020-08/fema__nac-report__11-2019.pdf) points out that the use of a seven percent discount rate for assessing the benefits of future savings from flood damages drives decision-makers to reject valuable and needed pre-disaster mitigation projects. This requirement, instituted long ago by the Office of Management and Budget, is one that should be lowered to more effectively support effective, long-term mitigation projects that will reap savings over time.

Question 12. Prioritizing mitigation and resilience creates a significant opportunity for future infrastructure investment. As Congress is poised to consider a comprehensive infrastructure package, how can we ensure that those investments also foster disaster resiliency? How to we make sure all new infrastructure is resilient?

ANSWER. Pew supports clear requirements for federally supported projects to be planned and designed to address future risks and, at a minimum, to be built in compliance with up-to-date codes and standards. In addition, it may be useful for legislative language specific to certain types of infrastructure to include references to recommended safeguards or approaches, for example, safe rooms for schools in hurricane or tornado prone areas; backup power capacity for critical facilities; or use of the Department of Transportation's Vulnerability Assessment Scoring Tool for roadway projects.

On this point, it may also be useful for the Committee to confer with experts from FEMA's Building Science Branch, which has long partnered with other organizations such as the National Institute of Standards and Technology, the National Institute for Building Sciences, the National Earthquake Hazards Reduction Program, and the Institute for Business & Home Safety to develop and disseminate important technical information and guidance. Their "Catalog of FEMA Building Science Branch Publications and Training Courses," (https://www.fema.gov/sites/default/files/2020-07/fema__p787__catalog__2016.pdf) may be a good starting point for useful guidance of better protecting newly funded assets like hospitals, schools, water utilities, and multi-family housing.

Question 13. What actions can Congress take that would be most effective in supporting the resilience of low- and moderate-income families?

ANSWER. Pew strongly supports enhanced flood risk disclosure as a means of helping all families, particularly those with low- and moderate-incomes, make sensible decisions about where to live and how to protect themselves from flood losses.

When provided with useful risk information, including information about past flooding events, prospective homebuyers can consider alternative neighborhoods, purchase flood insurance, and/or investigate mitigation options, such as landscaping improvements, building elevation, flood vents, or special placement of electrical or 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 result in lowered insurance rates. For renters, full flood knowledge can allow for the same sort of informed decision-making. The individual with mobility issues may choose a safer location, for example, and more indi-

viduals may decide that an insurance policy to cover loss of their belongings in a sensible and affordable safeguard.

Legislative proposals offered in past sessions of Congress tied new flood loss disclosure requirements directly to the National Flood Insurance Program, but Members of this Committee may also wish to consider disclosure obligations within the context of new federal investments in housing.

Additional mitigation support for low- and moderate-income families might also include enhanced funding for pre- and post-disaster mitigation actions. For low-income families hit by disasters and anxious but unable to move, such assistance might be increased by allowing for application of the Uniform Relocation Assistance and Real Property Acquisition Act (URA) to more federal buyout offers. Offers made under URA or potential new requirements could include additional relocation assistance when payment for the market value of a property is not sufficient to move the family into a safe and affordable alternative home.

Question 14. In its recent equity report, FEMA's National Advisory Committee stated that throughout the entire disaster cycle, communities that have been underserved stay underserved, and thereby suffer needlessly and unjustly. How could FEMA better target federal assistance to communities of low- to middle-income, and communities who have been historically and disproportionately disadvantaged?

ANSWER. As Roy Wright with IBHS noted in his testimony to the Committee, the Reinsurance Association of America (RAA) has developed a tool that leverages publicly available data to depict the geographic intersect of natural hazards and socioeconomic vulnerabilities. Their work builds on that of the National Risk Index and would allow for identification of some of the communities and neighborhoods that may be in most need of assistance. In some cases, the history of these areas may have roots in the segregationist policies that "redlined" people of color or immigrants outside of desirable areas and neighborhoods. (See, for example, https://www.bloomberg.com/graphics/2021-flood-risk-redlining/ .) Some of these areas may also have missed out on opportunities for hazard investments due to continuing benefit-cost-analysis policies that prioritize the value of structures protected for selection of flood control or mitigation priorities.

To address these inequities, FEMA should look to incorporating equity considerations into its grant assistance scoring and, as necessary, adjust its approaches to benefit-cost analyses. If the Agency determines that it lacks authority in this area, then Congress should consider new authorities and directives to the Agency. Congress might also consider directly targeting enhanced federal assistance to these areas and working to leverage these investments with private mitigation support through tax credits or other incentives.

Question 15. According to the First Street Foundation there are nearly 4.3 million homes across the U.S. with substantial flood risk that would result in financial loss. The analysis indicates that if these homes were to be insured against flood risk through the National Flood Insurance Program (NFIP), the rates would need to increase to cover the risk today, and that the cost of expected annual loss of properties in the next 30 years will grow by as much as 61% due to climate change. Do you think Congress should compel FEMA to develop an affordability program under the NFIP? If so, how urgent is the need, especially for low- and fixed income, historically disadvantaged communities and communities of color?

ANSWER. In our view, the information available from the First Street Foundation is a welcome addition to what is readily available to the public about flood risk. Their analyses and presentations attempt to provide credible information about the changes in risk that are likely to occur over time. We believe that this information, along with more information about past flooding events and claims are important tools that should be provided to consumers.

As Members of Congress understand, however, flood insurance is made available and priced on a yearly basis, and while a consumer investing a significant portion of his or her savings and income in a 30-year mortgage for a property (or the lender) would be wise to consider how risk could change over time, the potential for the long-term increase in risk does not factor into the current year premium. So some of the First Street information speaks, not to this year's insurance rates and prices, but to the longer term.

Will rising sea levels, increases in the intensity and severity of storms, and other land use changes mean that some areas will face rising threats and likely rising rates in the future? Absolutely. But providing subsidies or deep discounts in the short term, though it may help to alleviate today's financial pain, is not a true long-term solution for those living in these areas. In fact, such subsidies, if not carefully targeted and provided along with clear information about that growing level of risk,

could worsen the problem—further eroding the capability of the NFIP to pay premiums and encouraging people to remain in or move into risky areas.

Pew sees the need for multi-pronged solutions. As we have discussed, the federal government can help provide good information about current risks and the drivers of risk to certain areas. This information is essential to good decision-making about land use and building requirements imposed at the local or state levels. It can also help to identify those areas where current practices may be increasing the level of risk and the areas that should be prioritized for mitigation. The federal government can also help increase the resiliency of communities by increasing its own investments in adaptation and mitigation actions and reward state and local partners that contribute resources to such projects. In those areas where risks are growing or already extreme, this may mean helping people to move to safer locations and restoring the natural ecosystems.

At the same time, FEMA can address the financial pain that some low-income families feel as they work to keep themselves insured. An important first step in this regard is the implementation of what FEMA is calling Risk Rating 2.0. This new rating methodology—the first serious update of FEMA's pricing models since the 1970s—offers fairer premiums to those who own modestly priced homes, removing the cross-subsidies that those policyholders were paying to support those with larger, pricier homes.

Beyond this, the House Financial Services Committee has a proposal for targeted insurance assistance to low-income policyholders and a proposal for a revolving loan fund that could help those families and their communities take mitigation actions. Both of these helpful proposals were reported out of Committee in the last session of Congress on a bipartisan basis. Pew supports the affordability assistance proposal, not only because it is carefully targeted to low-income policyholders and less complicated and expensive to administer than other proposals, but also because it is packaged with additional investment in flood mitigation.

Question 16. How can the private and public sectors forge creative partnerships that help educate and promote resilience and overcome potential obstacles to individuals, communities, and states investing in resilience?

ANSWER. Several effective private and public partnerships that may offer good models or simply deserve additional support from Congress.

For example, the National Fish and Wildlife Foundation's National Coastal Resilience Fund partnership program (https://www.nfwf.org/sites/default/files/2021-03/national-coastal-resilience-fund-fact-sheet.pdf) works to restore natural infrastructure in coastal communities. This program uses regional coastal resilience assessments to identify lands suitable for restoration that could protect people and wildlife and minimize the impacts of natural disasters. On-the-ground work is carried out with support from Congressional appropriations and collaboration involving NOAA, EPA, and the Department of Defense, as well as Shell Oil Company, TransRe, AT&T, and Occidental. Since 2018, the program has enhanced protection to roughly 100,400 properties and 2,500 critical facilities or assets.

Another notable partnership is located in Alabama, where a small non-profit, Smart Home Alabama, was able to demonstrate the value and the affordability of IBHS's FORTIFIED standards on Habitat for Humanity projects in the State's coastal communities. (https://nextcity.org/features/view/what-alabama-can-teach-you-about-storm-resilience) Assistance from the Mississippi-Alabama Sea Grant Consortium and from Allstate Insurance allowed the group, not only to provide residents with safe housing, but also to demonstrate to others that building to FORTIFIED standards could be done at reasonable costs, saving money and lives. Today, Alabama residents who build or retrofit to FORTIFIED standards receive discounts on the wind portion of their homeowners' insurance policies, and according to the Alabama Center for Insurance Information and Research at the University of Alabama, FORTIFIED homes sell for nearly seven percent more than comparable, non-FORTIFIED homes. (https://www.smarthomeamerica.org/assets/uploads/UniversityofAL__Value-Study__FORTIFIEDReport__V2___2.pdf)

Elsewhere, as we noted in written testimony, Enterprise Community Partners has launched a program with the City of Miami to encourage and assist the owners of affordable housing to examine the vulnerabilities of their buildings to climate change and natural disasters. This program aims to keep affordable housing affordable and safe by helping these businesses prioritize needed actions and find financing to support improvement projects.

On a larger scale, it may also be possible for Congress to incentivize additional private investments into high-risk and high-social-vulnerability areas using analytics such as that developed by RAA to identify priority areas for mitigation investments. Federal, state, and local public funding for infrastructure projects within

identified priority areas could then be leveraged by providing incentives to the private sector to also invest and contribute to these projects.

QUESTIONS FROM HON. MICHAEL GUEST TO VELMA SMITH, SENIOR GOVERNMENT RELATIONS OFFICER, FLOOD-PREPARED COMMUNITIES INITIATIVE, THE PEW CHARITABLE TRUSTS

Question 1. Mississippi and America struggle protecting our most vulnerable populations from recurring disasters. Low-income and minority communities often bear the brunt of disasters such as flooding yearly in places like Mississippi's South Delta and throughout the state. FEMA and MEMA, our state agency in Mississippi, work together to implement programs such as mitigation buyouts to remove these vulnerable populations from high hazard areas and build back to Federal mitigation standards. However, many of these families struggle to participate in these programs because of an inability to build back in a more resilient way by the time FEMA mitigation funds reach the property owners, often taking 6 to 7 months.

a. What are ways that the Federal government can better streamline assessments and fund disbursement to citizens so that they can rebuild in a more resilient way while also maintaining appropriate living standards?
b. Please expand on ways to improve FEMA and state agency mitigation buyout programs that take into account what happens following the buyout offer, such as ensuring the ability to purchase a new home or offering temporary housing until funds are disbursed, allowing for more individuals in need to participate in the programs.

ANSWER. The question of how best to help the most vulnerable amongst us is an important one. 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 disasters. Some will be permanently impacted.

Pew believes we can improve on current approaches to helping the most vulnerable populations in several ways. In making such improvements we caution, however, that speed can work against safety in some respects, and policies must guard against shorter timelines that simply return families to unsafe conditions.

In terms of the damage assessments, Pew supports the additional resources that have been made available through recent changes to the Stafford Act. Additional resources for local governments to staff up for assessments can now be made available during disaster response. We also urge FEMA to assure that mitigation experts accompany any federal teams deployed to help local communities conduct the appropriate damage assessments. Those experts can help communities identify important opportunities for fortifying structures or otherwise offering better protection to damaged neighborhoods.

We would also recommend that Congress work with FEMA to assure that the Agency can extend or expand the availability of temporary housing assistance during instances in when repairs or reconstruction may take a longer time period in order to incorporate improved protections.

Pew has also been looking into the issues surrounding buyouts and the operation of several state and local programs, including those in Birmingham, Alabama; Nashville, Tennessee; Austin, Texas; and Charlotte-Mecklenburg, North Carolina. Our research to date points to several possible solutions, including easing of certain procedural requirements for state and local governments that establish effective ongoing buyout programs. In addition, as a previous response for the record indicated, application of the Uniform Relocation Assistance and Real Property Acquisition Act to certain federally funded buyouts may be helpful. The experience of Austin, Texas may be instructive here. Over the years, as Austin has developed its own policies and procedures and used local funding to supplement buyout offers for low-income families. (https://www.austintexas.gov/sites/default/files/files/Auditor/Audit__Reports/Flood__Buyout__Program____February__2017__.pdf) In a similar fashion, the State of North Carolina has offered supplemental assistance for buyouts in certain cases. (https://www.ncdps.gov/news/press-releases/2019/10/15/state-awards-supplements-local-governments-buyout-properties%C2%A0flooded)

QUESTIONS FROM HON. PETER A. DEFAZIO AND HON. DINA TITUS TO BEN HARPER, HEAD OF CORPORATE SUSTAINABILITY, ZURICH NORTH AMERICA

Question 1. Our water infrastructure has proven time and again to be vulnerable to be heat and seismic events. We have learned that some water systems have been contaminated in the wake of wildfire due to melting pipelines. Given your experience from an engineering and insurance perspective, what can we do to strengthen key infrastructure against these risks?

ANSWER. This very issue was discussed in an article published in the *January/February 2021 issue of* Civil Engineering. The article notes that additional study and research is needed. However, the authors do make a few suggestions on how water contamination issues may be addressed. Those suggestions include:

- deploying system isolation methods,
- deeper burial or the use of protective casing, and
- carefully selecting materials in fire-prone areas.

For the Committee's convenience, the article can be read at https://source.asce.org/response-team-investigates-wildfire-damage-to-buried-drinking-water-infrastructure/.

Question 2. Wildfires in western states have been devastating to the lives of so many survivors and communities. In the wake of every fire, we worry about the next one. How can Congress provide new tools to mitigate against the risk of wildfires and prepare before wildfires strike?

ANSWER. In 2019, Zurich conducted a Post Event Review Capability (PERC) of the 2017 and 2018 California Wildfires (https://www.zurichna.com/-/media/project/zwp/zna/docs/kh/wildfire/california-wildfire-report.pdf?la=en&rev=490b6ac68b5e447a81430529d1ef40d9&hash=406FCE82EC0568F9C15C374627142B4E).

That review makes several recommendations including:

- Using public lands, parks and playing fields to create buffer zones can reduce community exposure;
- Zoning can be used to further reduce exposure by mandating clustering of the built environment. Creating defensible space and ensuring transportation networks are interconnected and appropriately sized can reduce vulnerability;
- Parks and recreation centers within the city center can be designed to provide both recreational value and space to shelter in place as a last resort when conditions overwhelm the community's other plans;
- Codes can be used to influence building styles, building materials and landscaping.

As Congress considers comprehensive infrastructure legislation, projects that are designed and planned to mitigate loss and enhance community resiliency should be given priority.

Question 3. What do you believe are the most significant steps that can be taken to better protect individual homes and communities against wildfire, both for new and existing construction?

ANSWER. In addition to the recommendations noted previously, the adoption and enforcement fire resistant building codes is an important component to making homes and communities more resilient. For example, chapter 7A of the California Building Code is an excellent first step in helping communities in the Wildland-Urban Interface (WUI) reduce their vulnerability. The California code can be a model for other wildfire prone states.

Question 4. How can FEMA better help communities identify and implement hazard mitigation and disaster resilience efforts that will have the greatest impact on reducing community risk?

Question 5. What actions should federal agencies take to help the nation achieve greater disaster resilience? For example, what opportunities exist for federal agencies to "mainstream" risk reduction, by integrating disaster resilience goals and activities into all their missions and initiatives?

ANSWER. Combined answer to questions 4 and 5:

As referenced in my written testimony, Zurich has conducted 16 PERCS globally. In the United States, we have conducted four (4) such reports covering flooding events in North Carolina, South Carolina and Houston; and wildfires in California. The PERC methodology was specifically designed to turn the lessons learned from the consequences of disasters into actions that help businesses and communities become more resilient and recover quickly from devastating events. We encourage FEMA and other federal agencies to consider adopting a similar approach. In fact, the PERC model could be adapted to also conduct a "Pre-event" assessment.

Additional information on the completed PERC studies and a manual that serves as a guide for conducting PERCs are available at Post-Event Review Capability—Flood Resilience Portal [https://floodresilience.net/perc/#:~:text=The%20award%20winning%20Post%2DEvent,risk%20management%20and%20catastrophe%20intervention.]

Question 6. Fewer than 40 percent of FEMA-funded Public Assistance projects have included a mitigation component during the period 2010 to 2018. What can FEMA do to incentivize state and local officials to incorporate mitigation measures when repairing disaster-damaged facilities?

ANSWER. As noted in written testimony, the Intergovernmental Panel on Climate Change (IPCC) finds strong evidence that climate change is occurring, that it is influenced by human action, and that it is leading to changes in extreme weather and climate events. When awarding funds under its Public Assistance program, FEMA should ensure that state and local officials are considering the impact of climate change and future conditions on the damaged facility. And, if needed, provide assistance to ensure that the facility is repaired in accordance with the most up to date codes.

Question 7. In the latest Government Accountability Office (GAO) High-Risk Report, issued early this year, GAO again finds that the federal government must reduce its fiscal exposure by managing climate change risks and that it has yet to make measurable progress to reduce its fiscal exposure to climate change. What do you think the federal government ought to do to build or rebuild infrastructure so that it is resilient to future conditions of climate change-related impacts such as inland and coastal flooding, wildfires, or extreme heat over the life-cycle of the project?

ANSWER. Zurich has identified climate change as perhaps the most complex risk facing society today—it is intergenerational; it is international; and it is interdependent. Congress should require that federal agencies consider future conditions and the impact of climate change in the development, planning, and design stages of federally funded projects. Several prominent industry groups, including the American Society of Civil Engineers, have developed the technical guidance that provides the details with regards to integrating climate resiliency in infrastructure.

Additionally, federal agencies should explore the use of risk-transfer opportunities, particularly the use of insurance and reinsurance. For example, FEMA has transferred over $2 billion of its flood risk to the private sector by purchasing reinsurance. Through the use of insurance and reinsurance, federal agencies could transfer some of the costs associated with climate change from the government (taxpayer) to willing private sector participants.

Question 8. State and local officials often mention the challenges they often face in implementing and enforcing codes, largely due to a lack of resources. What more could the Federal Government to help states and communities overcome this hurdle?

ANSWER. Congress could provide tax incentives to individuals and business to take steps to harden their homes and businesses. For example, the Disaster Savings and Resilient Construction Act, would create a $3,000 tax credit for homes and a $25,000 for businesses to help with resilient construction.

Question 9. In November 2020, a FEMA study found that over a 20-year period, cities and counties with modern building codes would avoid at least $32 billion in losses from natural disasters, when compared to jurisdictions without modern building codes. What steps can FEMA take to further promote and help communities adopt modern building codes?

ANSWER. Through its Building Resilient Infrastructure and Communities (BRIC) program, FEMA could prioritize projects that are already subject to modern codes and/or those projects that include the development of updated codes.

Question 10. We know that the adoption of the latest edition of the building code gives the greatest return on investment—$11 for every $1 invested. What can be done federally to incentivize states to adopt and enforce model statewide building codes?

ANSWER. Congress took an excellent first step in enacting the Disaster Recovery Reform Act of 2018, which emphasized pre-disaster mitigation and allowed funds to be used for the development of enforcement of consensus-based codes. Considering the response to FEMA's Building Resilient Infrastructure and Communities (BRIC) program, Congress should consider making additional resources available for these activities.

Question 11. As Congress considers comprehensive legislation to modernize and strengthen our nation's infrastructure—our road, rail, and aviation networks, hospitals, schools, public housing, and other public facilities—would you be supportive of a requirement that these structures and facilities be built to the latest consensus-based building codes whenever federal funding is used? Are there areas where the standards should be increased beyond code requirements to industry best practices (i.e., high wind areas)?

ANSWER. Yes, it is imperative that modern, consensus-based codes are used in new construction. I also urge the Committee and Congress to consider the development and use of a sustainability standard, such as "ENVISION," which was developed by the Institute for Sustainable Infrastructure (ISI) and Zofnass Program for Sustainable Infrastructure at Harvard University's Graduate School of Design. Done correctly, such a standard can address sustainability, resiliency, and equity.

Question 12. It seems that even across FEMA's programs, there is not the uniform application of consensus-based codes and standards (Public Assistance, Individual Assistance, Hazard Mitigation, and the National Flood Insurance Program). There is also inconsistent application across the numerous federal programs that drive investments in resilience and mitigation. One of President Biden's early executive orders effectively reinstated the Federal Flood Risk Management Standard. Should there be a legislative requirement that the investments of all federal funds in built infrastructure follow these foundational flood requirements?

ANSWER. Flooding continues to be the most common natural disaster. Zurich, working with other stakeholders and the property and casualty industry, supports efforts to enact a federal flood standard. In fact, we are working with the American Property Casualty Insurance Association (APCIA) and the Smarter Safer Coalition to support the Flood Resiliency and Taxpayer Savings Act of 2021.

Question 13. What are the biggest obstacles facing residential mitigation? How can those be overcome?

ANSWER. Cost is often cited as a major obstacle facing property owners. As mentioned in my response to question #8, Congress could provide tax incentives for mitigation.

Question 14. Prioritizing mitigation and resilience creates a significant opportunity for future infrastructure investment. As Congress is poised to consider a comprehensive infrastructure package, how can we ensure that those investments also foster disaster resiliency? How to we make sure all new infrastructure is resilient?

ANSWER. As noted previously, Congress should incentivize the development and enforcement of modern, consensus-based codes; encourage sound land use planning and ensure transportation networks are interconnected and appropriately sized to reduce vulnerability. Further, Congress should require that future conditions and the impact of climate change be considered in the development, planning, and design stages of federally funded projects.

Question 15. What actions can Congress take that would be most effective in supporting the resilience of low- and moderate-income families?

ANSWER. As noted in my written testimony, our PERCS have found that the neediest in society are often neglected before and after disasters, and sometimes are still recovering from one event when the next one strikes. This was precisely the case in NC when Hurricane Florence came during the slow recovery from Matthew. In addition to investing in pre-disaster mitigation funding, we need to improve risk communication, ensure have that individuals and business have insurance and, importantly, have the appropriate coverage. We need to ensure that mitigation funding is indeed reaching vulnerable populations living and working in areas vulnerable to catastrophes—that may include expanding buy out programs.

Question 16. According to the First Street Foundation there are nearly 4.3 million homes across the U.S. with substantial flood risk that would result in financial loss. The analysis indicates that if these homes were to be insured against flood risk through the National Flood Insurance Program (NFIP), the rates would need to increase to cover the risk today, and that the cost of expected annual loss of properties in the next 30 years will grow by as much as 61% due to climate change. Do you think Congress should compel FEMA to develop an affordability program under the NFIP? If so, how urgent is the need, especially for low- and fixed income, historically disadvantaged communities and communities of color?

ANSWER. Zurich North American does not participate in the National Flood Insurance Program. However, a fundamental principle of insurance is that the price of insurance accurately reflect risk. Not only does proper pricing ensure solvency, it sends important risk signals to the market and property owners. Rather than ob-

scure the true risk, Congress should invest in flood mitigation and pre-disaster preparedness, particularly in communities where investment has historically lagged.

Question 17. What would you say is the most important thing for policy makers in Congress to do to establish the federal framework to facilitate the ability of the private sector—through environmental, social, and governance investments and creative financing and opportunities—to bring funding and financial resources to communities and states to invest in cost-effective, risk reducing disaster mitigation and resilience projects?

Question 18. How can the private and public sectors forge creative partnerships help educate and promote resilience and overcome potential obstacles to individuals, communities, and states investing in resilience?

ANSWER. Combined answer for questions 17and 18—

Building resilient communities will take the combined efforts of federal, state and local government; the private sector; and individual property owners. In addition to the use of traditional risk transfer mechanisms (insurance and reinsurance), as a way to leverage private investment, Congress could consider approaches such as the Reinsurance Association of America's Community Disaster Resilience Zones (CDRZ) proposal.

Question 19. Is there a role for the insurance industry to help bridge the coverage gap, provide risk identification and data, and leverage resources to help communities successfully mitigate disaster risks?

ANSWER. Yes, insurers play a critical role in assisting communities, individuals, and businesses recover when catastrophe strikes. Importantly, the industry also plays a vital role in improving community preparedness and risk management before the disaster hits. Risk communication is vital to ensure that individuals and businesses have insurance, and, importantly have the proper coverage. As a commercial insurer, Zurich provides extensive risk management, risk engineering, and loss prevention services to our customers.

QUESTIONS FROM HON. MICHAEL GUEST TO BEN HARPER, HEAD OF CORPORATE SUSTAINABILITY, ZURICH NORTH AMERICA

Question 1. Mississippi and America struggle protecting our most vulnerable populations from recurring disasters. Low-income and minority communities often bear the brunt of disasters such as flooding yearly in places like Mississippi's South Delta and throughout the state. FEMA and MEMA, our state agency in Mississippi, work together to implement programs such as mitigation buyouts to remove these vulnerable populations from high hazard areas and build back to Federal mitigation standards. However, many of these families struggle to participate in these programs because of an inability to build back in a more resilient way by the time FEMA mitigation funds reach the property owners, often taking 6 to 7 months.

a. What are ways that the Federal government can better streamline assessments and fund disbursement to citizens so that they can rebuild in a more resilient way while also maintaining appropriate living standards?
b. Please expand on ways to improve FEMA and state agency mitigation buyout programs that take into account what happens following the buyout offer, such as ensuring the ability to purchase a new home or offering temporary housing until funds are disbursed, allowing for more individuals in need to participate in the programs.

ANSWER. When it comes to mitigation programs related to floods, insurers see a loss of opportunity in these programs being used by property owners due to the timely and complex bureaucratic process. Property owners are most receptive to mitigation offers (including buy-outs) immediately following the disaster. The impediments of the current lengthy improvement processes often prevent property owners from taking advantage of these programs. Rather, property owners are left with the untenable decision to wait months, if not years, without certainty in their living situation, or accept insurance claims payments and rebuild in the same high-risk area. A streamlined approval process for severe repetitive loss properties could allow for an increase acceptance of mitigation offers, reducing the future burden on taxpayers and the NFIP that these properties present.

QUESTIONS FROM HON. PETER A. DEFAZIO AND HON. DINA TITUS TO JOHN C. FOWKE, CHAIRMAN, NATIONAL ASSOCIATION OF HOME BUILDERS

Question 1. You indicated during the hearing that NAHB, similar to the Insurance Institute for Business and Home Safety, had done follow-on studies about how Hurricane Michael affected the Florida Panhandle, including the importance of building codes. Could you please detail for us the findings with specific attention to homes built prior to 2000, prior to 2008, and over the past decade?

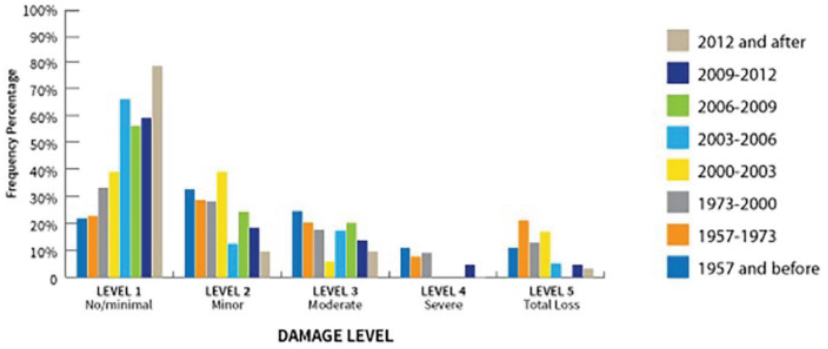
ANSWER. In 2017, regions of Texas and Florida experienced damage due to Hurricanes Harvey and Irma, respectively. The following year, NAHB commissioned Texas A&M University to determine how building code editions impacted the amount of damage incurred by residential structures.

The study found that, in Texas, homes built to the International Residential Code (IRC) after 2003 performed much better during the severe weather events than older homes. The study also found that Florida homes built after 1994 and to the Florida-specific building code based on the IRC were more resilient to wind damage.

The study also found that building to the IRC (post 2003) was very effective in preventing the destruction of homes due to wind during Hurricanes Harvey and Irma and resulted in significantly less damage to wall and roof coverings and loss of those components while also minimizing window breakage.

Prior to this study, anecdotal reports, including statements in the Federal Emergency Management Agency's damage assessments and media coverage, suggested that homes built to the IRC performed well in both states. However, there was little empirical evidence to support those claims.

The table below highlights the results from the Texas (Harvey) analysis. There is a clear change in the results from pre and post 2003. Although the overall sample size of homes exceeded 3,000, the study did not include forensic analysis of the actual failures (e.g. heavy wind, debris, installation errors, etc.). NAHB would encourage FEMA, NIST or NSF to perform a more in-depth analysis to better understand the failure modes of homes built to the modern (post 2000) codes to ensure any further changes to the building codes are targeted to documented problems and recurrence levels and properly cost justified. NAHB would be willing to participate in the study.



For the complete study, go to: https://www.nahb.org/advocacy/top-priorities/building-codes/Construction-Codes-Standards-Research/Damage-Assessment-from-Hurricanes-Harvey-and-Irma

Question 2. Wildfires in western states have been devastating to the lives of so many survivors and communities. In the wake of every fire, we worry about the next one. How can Congress provide new tools to mitigate against the risk of wildfires and prepare before wildfires strike?

ANSWER. There are number of tools that Congress can provide to help mitigate the risk of wildfires. First, funding for state and local foresters, land managers and others to implement forest management practices, such as selective burning and cutting to improve forest health, can go a long way toward significantly reducing the intensity of many wildfires and improve the ability of the fire service to contain them. Also, Congress can provide funding to assist utilities in properly maintaining their transformers and transmission lines to reduce the chances of their equipment contributing to igniting fires.

Second, Congress can provide financial incentives to homeowners to make existing homes more resistant to wildfires. Replacing existing roofing or siding with ignition-

resistant materials provides a first line of defense against wildfires. But replacing roofing or siding can be prohibitively expensive. Helping homeowners cover the up-front costs of these retrofit through grants and tax credits can reduce damage and improve safety. Likewise, recognizing these retrofits through insurance premium reductions or rebates could also make them more cost-effective and convince homeowners to invest in mitigation.

Third, Congress can help communities and homeowners better understand their risks and plan and implement effective mitigation options. Because wildfire is an interdependent risk, as the damage faced by homeowners is dependent on both their actions and the actions of their neighbors (and potentially communities), promoting cooperation and planning, as well as motivating property-level investments, is vital to reducing damage. Likewise, because many homeowners don't know where to start or what actions to take to reduce their risks, providing information on low-cost options and/or technical assistance to guide consumers to desirable endpoints could be an important key to success.

Question 3. What do you believe are the most significant steps that can be taken to better protect individual homes and communities against wildfire, both for new and existing construction?

ANSWER. States and communities can extend water supply lines to developments in wildland-urban interface areas to improve the fire service's ability to protect buildings and people from wildfires and better contain house fires within originating properties. In addition, education should be provided for homeowners located within high fire risk areas on the need to create and maintain "defensible space" around their homes. These spaces are designed to slow the rate and intensity of fires and provide opportunities to suppress them. Examples of maintenance might include removing dry vegetation, leaves, pine needles and other combustible materials from such spaces. Homeowners also need to be educated about the importance of keeping roofs and gutters clean of leaves, pine needles and other debris and making sure vents and openings are covered with ⅛″ or smaller mesh to prevent embers from getting into attics and crawlspaces.

If determined appropriate by a community, the International Wildland Urban Interface Code (IWUIC) can be adopted, with amendments as necessary to serve local needs and understanding of risk, to mitigate the spread of wildfires, and protect people and property from wildfire exposure. One of the family of I-codes, the IWUIC has as its objective the establishment of minimum special regulations for the safeguarding of life and property from the intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to prevent structure fires from spreading to wildland fuels, even in the absence of fire department intervention.

Question 4. As Congress considers comprehensive legislation to modernize and strengthen our nation's infrastructure—our road, rail, and aviation networks, hospitals, schools, public housing, and other public facilities—would you be supportive of a requirement that these structures and facilities be built to the latest consensus-based building codes whenever federal funding is used? Are there areas where the standards should be increased beyond code requirements to industry best practices (i.e., high wind areas)?

ANSWER. NAHB continues to support the requirement for infrastructure and public facilities to be built to the latest published edition of the code as long as the definition of "latest published edition" means either of the two most recently published editions, but cautions against extending such a requirement beyond critical facilities.

Further, NAHB urges Congress to ensure that any such requirement to build to the latest code is further clarified to ensure that "reference to a specification or standard that incorporate the latest hazard-resistant designs" is limited to only the edition(s) of those specifications or standards that are referenced in the two most recently published editions of the applicable consensus-based code. This is critical to ensure clarity and avoid any unintended consequences for program implementation in the field.

Finally, NAHB strongly believes that State and local governments must retain authority over land use and their code adoption processes so they can continue to direct community development and implement the codes that best fit their jurisdictions. NAHB urges Congress to ensure that any requirement that structures and facilities be built to the latest consensus-based building codes be limited to the specific projects in question and not be unintentionally used to force community-wide adoption of a specific code.

Question 5. It seems that even across FEMA's programs, there is not the uniform application of consensus-based codes and standards (Public Assistance, Individual Assistance, Hazard Mitigation, and the National Flood Insurance Program). There is also inconsistent application across the numerous federal programs that drive investments in resilience and mitigation. One of President Biden's early executive orders effectively reinstated the Federal Flood Risk Management Standard. Should there be a legislative requirement that the investments of all federal funds in built infrastructure follow these foundational flood requirements? If not, what exceptions do you believe are necessary?

ANSWER. NAHB remains concerned about implementation of the Federal Flood Risk Management Standard (FFRMS) due to the potential that many federal housing and permitting programs the home building industry relies on to provide affordable housing for all Americans will become unnecessarily burdened by new and unwarranted federal requirements. While it is not certain what this administration's implementation of FFRMS might look like, prior attempts to implement the FFRMS, which sought to apply new federal flood risk reduction standards to all federal actions was overly broad and unnecessary. The ripple effect of such an expanded scope of coverage could impose unnecessary regulatory requirements and additional red tape for home building, home financing, home sales, and land development along coasts, rivers, streams, lakes and ponds. Equally problematic, these additional requirements will severely hinder housing affordability at a time when there is already a significant affordable housing shortage.

Question 6. What are the biggest obstacles facing residential mitigation? How can those be overcome?

ANSWER. NAHB believes it is essential that Congress keep housing affordability and homeownership at the forefront of any discussions involving residential resilience. In doing so, Congress is urged to focus on cost effective mitigation strategies for the existing housing stock, financial assistance options, and reliance on incentives and voluntary above-code programs to compel market action and consumer response.

In doing so, Congress must address the biggest challenges, which are the initial costs, the need to account for the value of the upgrades within property assessments and appraisals, and the need for technical assistance to help property owners understand the needs and options so they can make the best choices.

Residential mitigation can take many forms, from reinforcing roofs to installing new siding, elevating electrical equipment to elevating entire structures. The specific upgrades that are ultimately selected and performed are dependent upon risk level, type of risk, structure specifics and cost, among others. Many families, however, have limited savings and cannot fund the thousands or tens of thousands of dollars needed to complete most mitigation projects. Although some funding may be available, the federal aid programs are typically oversubscribed and payments delayed, making them of limited widespread use. Developing programs, grants, incentives, insurance rebates or other mechanisms designed to help homeowners overcome the initial costs could go a long way toward convincing them to invest in mitigation.

Similarly, revamping appraisal and assessment protocols to recognize the added value associated with these mitigation efforts is vital. Under current practice, in most instances, mortgage companies, appraisers and real estate professionals do not consider the costs or benefits associated with various disaster mitigation and resilience projects. This creates a disincentive to take proactive steps to reduce a home's exposure, as those expenditures are not necessarily considered to add value. If the improvements are not included in the appraisal or appraised value of the structure, not only is the buyer uninformed about the home's qualities, his or her willingness to pay more can be significantly diminished.

In an effort to spur private investment in efficiency and resiliency, the value and benefit of above code practices and mitigation measures should be incorporated into standard real estate lending practices and real estate listings. By recognizing and valuating the upgrades, appraisers can consistently give weight to these improvements, lenders may reconsider qualifying loan ratios, realtors can promote their benefits, homeowners would get assurances that the investments they have made will retain value and be recognized in resale and homes would be more likely to get the upgrades needed to improve their performance.

Similar to the valuation process and state insurance discounts, recognizing improved resiliency can also be done by tweaking the NFIP. Currently, all improvements to fortify a home against flood hazards do not result in flood insurance premium discounts. For example, in its "Reducing Flood Risk to Residential Buildings That Cannot Be Elevated" document, FEMA outlines several alternative actions

that can be taken in lieu of elevation. Of the measures discussed, however, only 50 percent of them are eligible for flood insurance premium reductions. Congress should work with FEMA to ensure that all building practices that mitigate risk and improve resiliency provide homeowners with clearly understood rate discounts without regard for rating methodology.

Question 7. What actions can Congress take that would be most effective in supporting the resilience of low- and moderate-income families?

ANSWER. NAHB urges Congress to ensure that programs adopted to support the resilience of low- and moderate-income families are not myopically focused solely on the residential structure itself. Truly effective resilience outcomes will only be achieved when programs look holistically at the community in which these families live. Residential resilience relies not only on the home in which families live but on the community's ability to maintain and continue access to such lifelines as transportation, electricity, water, food and medical care.

Additionally, Congress can help support these families and the communities they live in by providing help with funding and technical assistance needed to ensure mitigation programs are understood and accessed. These efforts should include a review of the disparate processes and timelines of various mitigation and support programs to determine if better alignment will improve understanding and access of the programs. Congress should also consider establishing an office similar to the Office of the Flood Insurance Advocate (OFIA), to serve as a central clearinghouse for homeowners, tenants and communities facing roadblocks to conducting effective mitigation via federal programs.

Question 8. What would you say is the most important thing for policy makers in Congress to do to establish the federal framework to facilitate the ability of the private sector—through environmental, social, and governance investments and creative financing and opportunities—to bring funding and financial resources to communities and states to invest in cost-effective, risk reducing disaster mitigation and resilience projects?

ANSWER. NAHB encourages Congress to focus on creating a framework to support and facilitate measurable, on the ground improvements, as well as investments that target first cost financing for mitigation and resilience projects. While planning is a vital component to improving resiliency, tangible results oftentimes can better compel additional action. Likewise, the focus on first cost financing is crucial as many people cannot afford to purchase a home, much less one that exceeds current building requirements. Likewise, due to the high initial costs associated with purchasing and/or installing many above-code resilience features, many homeowners are unable to finance desired or necessary mitigation projects. For those seeking to incorporate mitigation and resilience into construction practices, numerous challenges exist in obtaining the necessary financing to support their efforts including access to funding or financing that reflects the value of those projects.

Question 9. How can the private and public sectors forge creative partnerships to help educate and promote resilience and overcome potential obstacles to individuals, communities, and states investing in resilience?

ANSWER. Partnerships typically grow out of shared interests and similar goals. One step that the federal government could expand upon that could lead to new relationships is hosting forums, roundtables, or other broad gatherings through which participants are able to network and explore common interests. A key component of the success of such programs is to ensure all impacted and interested stakeholders are invited to participate. NAHB held a summit on green home valuation and invited key industry stakeholders, the Mortgage Bankers Association, the National Association of REALTORS and the Appraisal Institute to attend. This event uncovered the need for consistent education, term definition and messaging around green and energy efficient homes within the industry to lessen confusion in housing policy, legislation and valuation. A similar approach among this same group of stakeholders could help in overcoming obstacles to invest in resilience.

In addition, NAHB has partnered with the National Association of REALTORS to develop an initiative called "Home Performance Counts," which provides easy access to resources and information for home buyers, home builders, real estate professionals and consumers on the potential benefits and value that high-performance building features can provide. The outreach and education focus of this initiative can serve as a model for other partnerships to build awareness and promote investing in resilience.

QUESTIONS FROM HON. MICHAEL GUEST TO JOHN C. FOWKE, CHAIRMAN, NATIONAL ASSOCIATION OF HOME BUILDERS

Question 1. Mississippi and America struggle protecting our most vulnerable populations from recurring disasters. Low-income and minority communities often bear the brunt of disasters such as flooding yearly in places like Mississippi's South Delta and throughout the state. FEMA and MEMA, our state agency in Mississippi, work together to implement programs such as mitigation buyouts to remove these vulnerable populations from high hazard areas and build back to Federal mitigation standards. However, many of these families struggle to participate in these programs because of an inability to build back in a more resilient way by the time FEMA mitigation funds reach the property owners, often taking 6 to 7 months.

a. What are ways that the Federal government can better streamline assessments and fund disbursement to citizens so that they can rebuild in a more resilient way while also maintaining appropriate living standards?

ANSWER. Many have recognized that the current federal disaster programs, while playing a vital role in enabling recovery, are challenging for all, but even more so for lower-income households.[1] In addition to providing additional funding, which can be done through any one of the existing assistance and mitigation programs, other proactive measures include making HUD's CDBG–DR program a permanently authorized program or at a minimum, shortening the turnaround time for fund disbursement; funding technology upgrades and training to equip FEMA and local communities to quickly complete damage assessments and improve the pace at which payments can be made; simplifying the programs and streamlining the associated paperwork burdens that must be completed to qualify for assistance; and providing technical expertise to help homeowners better understand what mitigation and/or funding assistance they may qualify for and what is required to apply.

b. Please expand on ways to improve FEMA and state agency mitigation buyout programs that take into account what happens following the buyout offer, such as ensuring the ability to purchase a new home or offering temporary housing until funds are disbursed, allowing for more individuals in need to participate in the programs.

ANSWER. When considering post-disaster efforts, NAHB urges Congress to focus on promoting comprehensive community recovery planning that includes a variety of options and actions to restore the vital infrastructure and functions of the community as well as the full spectrum of housing needs. In doing so, state and local governments must retain the authority to make land use decisions and determine how best to meet their community redevelopment goals. While mitigation buyout programs can be a useful tool within a comprehensive housing recovery plan, there are many other options available to address local needs. Plans that integrate a full range of housing solutions to assist local jurisdictions will not only help in speeding up the process of moving local citizens into permanent long-term housing following an event, but also serve to help mitigate future risk. NAHB encourages Congress to reinforce efforts by FEMA to enhance local disaster and recovery planning to ensure that issues such as housing recovery and resilience are thought through long before those plans are needed. Congress should also facilitate the work of State and local jurisdictions by aligning the planning requirements across all of the federal agencies to ensure they are working together to achieve risk mitigation, increased resilience and maintain the necessary balance between the environment and community development.

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[1] See, for example, Urban Institute Policy Debate: Improving the Disaster Recovery of Low-Income Families, at urban.org/debates/improving-disaster-recovery-low-income-families