

*Prepared statement by*

***Alice C. Hill***

Senior Fellow for Climate Change Policy  
Council on Foreign Relations

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## ***Hearing on Creating a Climate Resilient America: Reducing Risks and Costs***

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Thank you, Chairwoman Castor, Ranking Member Graves, and Members of the Committee for inviting me to testify today. It is an honor to appear before you and I look forward to answering any questions you may have.

Natural disasters are on the rise. According to the Fourth National Climate Assessment, climate change has already brought more extreme weather and will continue to bring greater extremes in the foreseeable future. The nation will experience a range of climate impacts, including more intense storms, bigger wildfires, and greater temperature and precipitation extremes in the coming decades. Sea level rise has accelerated since the 1990s and will continue to do so in the years ahead.

The costs of weather and climate-related disasters are also rising. Between 1980 and 2018, the United States suffered 254 weather and climate-related disasters carrying a price tag of over \$1 billion each, according to the National Oceanic and Atmospheric Administration (NOAA). The total cost of these events is more than \$1.7 trillion dollars. From 1980 to 2013, the nation averaged 6.3 such billion-dollar events per year. For the years from 2013 to 2018, however, the annual average leapt to 12.6 events. In 2019, the United States has already experienced ten weather and climate-related disasters over \$1 billion each, not even counting the wildfires in California. This year is also the fifth consecutive year in which the total number of events has reached ten or more. These figures support the finding of the Fourth National Climate Assessment that the nation's efforts to prepare for climate change impacts have not yet reached the necessary scale to avoid substantial damage to the economy, environment, and human health.

When communities suffer devastation, Americans respond with generosity. The Congress has increasingly authorized supplemental appropriations to provide relief to local and state governments overwhelmed by disasters, to small businesses and individuals who have suffered losses, and to repair damaged federal assets. According to the Government Accountability Office (GAO), between 2007 and 2013, federal appropriations for natural disasters increased 46 percent as compared to the previous six years. In just the last three years, supplemental appropriations for disasters has totaled \$183 billion. In light of the growing fiscal exposure to the federal government, the GAO has identified climate change as a "high risk" since 2013.

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In addition to greater climate-driven extremes, the increase in damages also stems from decisions made about where and how people build. Those decisions rest almost entirely with the states, and often with local governments. That means that, even though the federal government currently has comparatively little say in state and local choices about land use and construction quality, it frequently picks up the bill for those choices after disaster strikes. The growing propensity of the federal government to absorb the costs of disasters means that state and local governments, developers, and individuals can build in riskier areas and in ways that provide less protection because they believe the federal government will cover the damage when the disaster occurs. In other words, the federal government's growing generosity to victims of disaster creates a "moral hazard": communities and people place themselves at greater risk knowing that federal taxpayers will bail them out. In the face of accelerating climate change, the federal government must reduce the incentives for people to settle in at-risk areas and to build in risky ways.

Take, for example, California's recent experience with wildfire. Ten of the most destructive fires in the state of California have occurred since 2015 and the state is currently fighting a vicious wildfire season. California holds the dubious record for having more buildings destroyed by wildfire than all other states combined. A recent study has estimated it has more than 2.7 million people and 1.1 million homes located in areas at very high risk of fire. In 2008, California enacted a strict new building code designed to reduce fire risk. During the devastating 2018 Camp Fire, only 18% of the 21,100 homes built to older versions of the code survived the fire. Those built to the new, stricter code performed much better, but only 50% of those homes survived.

With only half of the homes built to the latest code withstanding climate-fueled wildfires, California cannot assume that its building codes will keep people and property safe. California faces worsening wildfire risk. Its own climate assessment estimates that climate change will likely expand burn areas 77% by 2100. Just days after the Camp Fire, however, Los Angeles County approved a new 19,000 home development in an area that the state had determined is already at "high" or "very high" fire risk based on past risk and without consideration of the increased fire risk from climate change. If those houses should burn under the worsening conditions brought by climate change, it could be the federal government that pays, not those who made the decision to build in an area at high risk.

To avoid this moral hazard, the federal government should set as its objective that federal taxpayer dollars provided to states, communities, businesses, or individuals—either pre-or post-disaster—be spent resiliently. The federal government should not subsidize new development that is constructed in less than resilient ways or in areas at high risk from climate impacts. The government can make immediate progress in these areas by focusing on three issues: 1) creation and enforcement of resilient building codes, 2) provision of accurate risk assessments to inform land-use decisions, and 3) provision of technical assistance to decision-makers.

### *Resilient Building Codes*

Building codes reduce risk of damage. According to the 2019 Edition of the ISO National Building Code Assessment Report, Florida's implementation of a statewide windstorm building code reduced losses by approximately 72 percent. Effective building codes also "have a strong positive effect on disaster preparation and resilience," as the recently released National Mitigation Strategy noted. A 2018 study by the National Institute of Building Sciences (NIBS) found that designing buildings to meet the latest model building codes yields a national benefit of \$11 for every \$1 invested. In light of the proven value of building codes in reducing damage, the federal government must insist on compliance with resilient building codes where federal taxpayer money underwrites construction.

The United States does not have a national building code. Instead, non-governmental organizations, develop model codes and revise them periodically. The decision as to whether and which model building codes to adopt rests with states and, in many instances, local jurisdictions. Despite the case for strong building codes, however, the Federal Emergency Management Administration estimates that only 32 percent of disaster-prone jurisdictions have adopted disaster-resistant building codes. That means that close to 70 percent of

disaster-prone jurisdictions are at greater risk of damage, damage for which the federal government will often be called upon to pay. The federal government must require state and local jurisdictions to use the latest model building codes when building with federal money, either pre- or post-disaster. Enforcing requirements to adopt and comply with the most recent model codes would save the federal Treasury substantial funds and spare local communities unnecessary damage.

Notably, virtually none of the current model codes, however, yet incorporate consideration of the future risk of climate change. Rather, they rely on historical risk to determine the extremes which structures should withstand. The nation urgently needs model codes that account for the future risk from climate change impacts over the life of a structure. Estimates for when the building code organizations will have developed such codes range to as long as decade. The nation cannot afford to wait that long. As those model codes are in the process of development, the federal government should create its own climate-resilient code for two of the most damaging impacts from climate change—wildfire and flood. Those codes would apply to construction where federal taxpayer dollars are used.

The federal government already has experience with creating climate-resilient codes. Because no model code for climate-exacerbated flooding exists in the United States, the Obama administration, in the wake of Superstorm Sandy and based on the recommendation of the Hurricane Sandy Rebuilding Task Force, developed the first national flood standard, the Federal Flood Risk Management Standard (FFRMS). The FFRMS required that where federal taxpayer money was used to build structures in or near flood plains, those structures had to be elevated to avoid future climate-exacerbated flooding. Ten days before Hurricane Harvey poured approximately four feet of rain on the Houston area causing record flooding, President Trump rescinded the order creating the FFRMS. With the FFRMS, the federal government proved it was capable of producing such standards quickly and efficiently. The nation needs to take advantage of that capacity.

#### *Risk Assessment in Land-Use Decisions*

Just as building codes reduce risk, restricting new development in at-risk areas reduces risk. The federal government should not use taxpayer dollars to support new development in high risk areas. Doing so contributes to the moral hazard that those making the decisions to allow development in risky areas do not bear the risk of those decisions.

There is abundant evidence that people are moving into high risk areas. People like to live along our coasts—40 percent of Americans now live in a coastal county—and alongside rivers and streams. These areas face growing flooding risks from climate change, be it more intense storms bringing higher storm surge, sea-level rise, or extreme precipitation, or all of the above. For example, in the state of New Jersey, developers have built almost three times as much housing in coastal flood areas as in less risky areas since 2009. Yet the seas are rising. An estimated 360,000 homes are at risk of permanent inundation by 2050 and 3.4 million homes nationwide could face regular inundation by 2100. People also like to live near forests and grasslands, or what is known as the Wildland-Urban-Interface (WUI), areas. Although living in the WUI often carries a higher fire risk, it is the fastest growing land-use type in the United States. For example, the state of California has more people and property located in the WUI than all the other states combined. It has close to 4.5 million homes and 11 million people in the WUI. Yet, according to the state's own climate assessment, the areas burned by wildfire are expected to grow by 77% by 2100.

The federal government has already acted, albeit in a limited way, to restrict federal subsidies for development in risky areas. In the 1970s and 1980s, Congress realized that the federal government's support of development on high-risk coastal barriers did not make economic sense. The Coastal Barrier Resources Act of 1982 (CBRA) makes certain areas ineligible for federal investments and financial assistance which would encourage development in designated areas. This means that those who want to live and invest in those areas bear the full cost of development and rebuilding after a disaster. According to one Department of Interior Study from 2002, the estimated savings to the federal government would reach almost \$1.3 billion from 1983 to 2010. This legislation could serve as a model for restricting support for new development in other at-risk

area in the United States. At a minimum, the federal government should not provide financial support for new development in at-risk areas.

To help communities better understand their risks and to guide decisions by the federal government as to which areas are safe to invest in, the federal government needs to provide comprehensive risk maps that include future risk from climate change. That means an immediate concerted effort to create flood and wildfire maps that are updated on a regular basis. Having clear assessments of risk readily available should improve local decision-making and better protect federal investments. Where areas are at high risk from climate impacts like wildfire and flooding, the federal government should restrict its investment in new development in those areas and post-disaster assistance. Where states have already invested in mapping, the federal government can adopt those maps where appropriate.

#### *Technical assistance*

The federal government has enormous amounts of data and information regarding climate change risk. Yet those resources are not often easily understood or even accessible to local decision-makers on the ground. As one part-time mayor of a small town in Alabama, which faces risks of coastal erosion from sea-level rise and more intense hurricanes, lamented in 2014, “I don’t have a big planning staff, grant writers, or any resources. So how can I even know the size of the threats we are facing—and what can I do to protect the people of my town?” This mayor is not alone. Communities across the nation need help deciding how best to prepare for climate impacts. Doing so has the potential to save enormous amounts of money. According to a recently updated study conducted by NIBS, investment in risk mitigation can save an average of \$6 in damage for every \$1 spent in risk reduction.

The federal government urgently needs to increase its technical assistance to local decision-makers. In 2015, the GAO concluded that the federal government’s network of climate data remains so disjointed that “decision-makers are vastly underserved.” Although decision-making tools and databases rest on numerous federal government websites, it is hard to imagine how busy local officials can make sense of them without guidance as to their merits and applicability. Similarly, the federal government supports various information hubs, including NOAA, the Department of Agriculture, the Department of the Interior, and the Federal Emergency Management Administration. This approach serves various constituencies but fails to provide a customer-centric approach. Those that wish to take advantage of the information must wade through the differing formats, locations, and approaches that each individual agency has chosen to pursue. As the GAO recently noted, because of this uncoordinated approach, “federal, states, local, and private sector decision-makers may be unaware that climate information exists or may be unable to use what is available.”

As the National Mitigation Strategy recommends, the government “should support nonfederal partners by providing guidance, useable tools, and resources.” The lack of readily available authoritative and actionable information has meant that in many locations and settings, adaptation efforts are stalling. Making climate information easy to obtain and understood would accelerate the updating of codes, the revising of zoning maps, improve engineering and architectural design, and speed revision of cost/benefit analysis. In the absence of current federal leadership in this area, attempts have been made by other entities to fill the void, including a civil-society-based network for assessing, sharing, and supporting applications of climate science called Science for Climate Action Network (SCAN) (for which I serve as an advisor). However, these efforts alone cannot possibly address the increasing demands for actionable information from across the nation. This should be a core function of the federal government.

One immediate step toward accomplishing this goal is to develop a system for providing technical assistance. Such assistance could help guide state and local governments, businesses, and individuals, through the maze of federal programs and information centers already available. Such a system could also aid identification of ways to combine funding sources and navigate differing program requirements. Assisting decision-makers with on-the-ground choices will save not only them, but also the federal government, from substantial damage and

leave the nation safer. Federal assistance in this area can yield substantial savings in post-disaster recovery costs if better decisions about where and how to build are made pre-disaster.

In the longer term, the federal government needs to develop comprehensive climate services to support local planning and investment.