Insurance Institute for Business & Home Safety

Where building safety research leads to real-world solutions.

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Before the U.S. House of Representatives
Subcommittees on Research and on Technology

RE: H.R. 1786, Reauthorization of the National Windstorm Impact Reduction Program
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Members of the Subcommittees on Research and on Technology, thank you for the opportunity to speak with you today in support of reauthorizing the National Windstorm Impact Reduction Program (NWIRP).

The Insurance Institute for Business & Home Safety (IBHS) is a 501(c)(3) organization, wholly supported by the property (re)insurance industry. IBHS conducts objective, scientific research to identify and promote effective actions that strengthen homes, businesses, and communities against natural disasters and other causes of loss. IBHS does this by identifying and advocating improved property design, construction, strengthening, maintenance, repair, and preparation practices.

The centerpiece of our research program is the IBHS Research Center in Chester County, South Carolina. It is the only laboratory of its kind in the world. Using a 105-fan array and other specialized equipment, IBHS engineers can recreate a variety of highly realistic wind, rain, fire and hail events. Other test facilities use scaled-down models or pieces of buildings. Only IBHS can look at entire structures as a system. The ability to mimic Mother Nature in a controlled, repeatable way allows IBHS to demonstrate the effectiveness, affordability and financial value of stronger building codes and better-built structures; identify effective solutions to building vulnerabilities; strengthen the relationship between theoretical and real building performance; and validate/improve current scientific bases for designing and installing building products and systems. Our goal is to translate the results of this research into better public policy and market-based approaches to mitigation, in order to provide the most cost-effective protection possible across America.

The IBHS Research Center represents a tangible $40 million initial investment, and a continuing multi-million annual commitment, by insurers to facilitate the research and outreach outlined above. Our members have done this in part because wind hazard research as it applies to building performance has been underfunded for decades. While various federal agencies are able to allocate significant resources to research about weather hazards, very little has been specifically directed toward understanding how the characteristics of different types of windstorms affect the real-world performance of building components, connections, and systems.

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Ultimately, if we are to reduce wind losses across the nation, it is not sufficient to limit our efforts to better forecasting—although that has certainly been and continues to be tremendously effective in reducing deaths and injuries. Rather, we must reduce the vulnerability of homes and businesses to wind-related hazards, whether it is wind-driven wildfire and embers, hail damage, wind-driven water, or simply the forces of the wind that work to rip buildings apart. Existing buildings and structures must be strengthened and designers must be able to create new buildings and structures that can achieve specific performance goals. Federal funding of research enabling performance-based design for seismic risks is helping to make that a reality with respect to earthquakes. Similar investments are needed to support development of performance-based design tools for wind risks.

A recent study by the Center for American Progress estimates that, from 2011 to 2013, the federal government spent $136 billion total on disaster recovery and relief (much of it attributable to wind events), which adds up to nearly $400 per American household per year. While every year brings unique weather and other disaster scenarios, the number of extreme weather events causing a billion dollars or more in damage, and the total cost of those events, has been steadily increasing for the past three decades. This is attributable not only to patterns of extreme weather, but also demographic trends that put people and property closer together, and too often in harm's way. IBHS strongly agrees with the FEMA Mitigation Framework, which emphasizes that it is critical to identify new ways to "stop increasing the trajectory of our risk and start taking steps to reduce it." H.R 1786 is one such initiative.

IBHS and the NWIRP

As a research organization dedicated to mitigation, IBHS has long been supportive of the NWIRP. We recognize that our research and guidance must be corroborated and expanded on by others in order to gain broader acceptance in the marketplace. A coordinated, well-funded federal research program is needed to pull together meteorological information about the hazards; wind engineering expertise that defines the connection between the wind storm characteristics and loads imposed on buildings and structures; structural engineering expertise that develops efficient systems to handle these loads and load effects in new buildings and to strengthen existing buildings; and national coordinated efforts to promote mitigation. The NWIRP is a key initiative addressing this critical need, and it should be both strengthened as outlined below and funded with appropriations. We provided testimony during hearings that led to its initial authorization as well as the effort to reauthorize the program in 2008, and we appreciate the opportunity to be here today.

IBHS' mission is closely aligned with the goals set forth in H.R. 1786:

- improving the understanding of windstorms and their impacts;
- developing and encouraging the implementation of cost-effective mitigation measures to reduce those impacts;
- implementation of windstorm risk reduction measures by federal, state, and local governments, as well as national standards and model building code organizations, architects, and engineers;
- development of performance-based engineering tools, along with wind-related model building codes, voluntary standards, and construction best practices;
- coordination of federal post-windstorm investigations; and
- ultimately achieving measurable reductions in the loss of life and property from windstorms.

We are particularly pleased to see the focus on windstorm research this morning. Given the broad geographic threat of windstorms and the percentage of our population at risk, the frequency of events, and the tremendous toll taken by windstorms, the federal focus on wind-related research is much less than it should be. As of last week, there have been 370 preliminary tornado reports, and 3305 preliminary severe wind reports in 2013. In the past five years, there were over 7500 tornadoes reported, and over 75,000

high wind reports, along with 17 tropical cyclones making landfall in the U.S. Andrew, Katrina, and Sandy—as well as Tuscaloosa, Joplin, and Moore—are among the more salient reminders of the destructive power of wind, but less infamous wind disasters also have wreaked havoc on families and communities throughout the U.S.

In order to provide better coordination of federal windstorm research efforts, we believe that the reauthorizing legislation should designate a lead agency for the NWIRP. We are supportive of designating the National Institute of Standards and Technology (NIST) as the lead agency because the heart of the program, if it is to be successful, is pre-event mitigation including retrofitting existing buildings and structures or improving the hazard resistance of new buildings and structures through stronger building codes and standards; adequate enforcement, training and education; improved methods for evaluating the hazard resistance of materials, components and systems; and improved methods for assessing the costs and benefits of all these activities. We also support funding and research roles for the Federal Emergency Management Agency (FEMA), the National Oceanic and Atmospheric Administration (NOAA), and the National Science Foundation (NSF). Additionally, consideration might be given to a role for the Department of Housing and Urban Development (HUD), because of its role in promoting affordable housing and in the establishment of standards for manufactured housing.

IBHS has worked in partnership with all of the proposed NWIRP agencies. We have worked on wildfire issues of common interest and on development and adoption of building code provisions with NIST. We have partnered with FEMA and DHS on developing mitigation guidance, launching mitigation initiatives, and conducting post-disaster assessments to understand the benefits of mitigation. We have worked with university partners to help deploy instruments that have provided NOAA with high-fidelity near-surface wind data and support the idea of a university consortium that brings many instrument platforms together to provide the most complete description possible of hurricane winds near the earth's surface where they affect buildings and structures (Digital Hurricane Consortium). We have provided in-kind support for a number of NSF funded university research programs and also performed critical wind validation activities at our Research Center with high-quality, full-scale data available from NSF and NIST funded research programs at Texas Tech University.

Mitigation Matters

Given its important societal benefits, mitigation is a public health objective, economic imperative and humanitarian obligation. Every region of our country is vulnerable to one or more potentially devastating natural hazards; this is why improving disaster mitigation, preparedness, response, and recovery must be a national priority.

- Mitigation encourages personal responsibility by providing the tools that people need to protect themselves and their families from harm. In this regard, there are well-documented physical and property protection measures that homeowners and businesses should take to reduce damage and dislocation from almost every type of natural disaster. In addition, all Americans should have a disaster essentials kit, as well as an emergency evacuation plan that includes food, water, communications tools, and other supplies in sufficient quantity to last for at least three days.

- Mitigation is a sound fiscal strategy for private property owners and all levels of government, almost always resulting in significant long-term savings, including reduced public sector response and recovery costs. According to a study conducted by the National Institute for Building Sciences' Multi-hazard Mitigation Council, every dollar spent by FEMA on hazard mitigation grants reduced post-disaster relief costs by $3.65—a savings for all taxpayers, regardless of where they live.

- Mitigation trades off an investment today against future losses. This creates a greater sense of inter-generational equity and a way to avoid the need for future Americans to pay for damage that could have been reduced or avoided entirely through cost-effective property protection measures taken now.

- Mitigation is a sound business strategy that protects the physical plant of commercial facilities and the bottom line of the employers who occupy them, as well as their employees, suppliers, and customers.

- Mitigation is particularly important for vulnerable populations, including the elderly, people with disabilities, those living in poverty, and those with limited English language skills. Such individuals often live in housing that is less able to withstand natural forces, and they may lack necessary resources for quickly evacuating in the face of imminent harm.

- Mitigation protects the environment by reducing the massive amounts of post-disaster debris that can overwhelm landfills and lessening the release of carbon dioxide and other greenhouse gases generated when buildings burn in wildfires.

- Mitigation enhances community resiliency by protecting property, improving disaster planning and response, and creating a culture that is focused on long-term economic health and social welfare. While everyone wants their home to escape damage, few would want to live in the last house standing in a community destroyed by natural disaster. That is why comprehensive, community-wide property mitigation efforts are critical to maintaining community vitality.

Insurance and Mitigation

Along with stronger, safer building, we believe that mitigation leads to a stronger, safer insurance system. Among the insurance-related benefits of mitigation are: a reduction in the frequency and severity of weather-related claims; a downward shift in the loss exceedance curve; better management of losses in rare but severe events; more efficient capital deployment; healthier private insurance markets; and less stress on residual markets.

IBHS is proud of the role that the property insurers and reinsurers play in advancing risk mitigation through their membership in the Institute and their financial support for the construction of our Research Center. As a building science institute, and due to antitrust concerns, IBHS does not have access to, and cannot compile, a list of market-based discounts offered by specific insurers. The quickest way for individual property owners to find out if their residential or commercial building qualifies for an incentive (for example, by meeting the designation requirements of IBHS' hazard-specific FORTIFIED Home retrofit program) is to ask their insurance agent or company. Not all companies offer discounts, and some may offer larger or different incentives than others, so it also pays to shop around.

A few states (Alabama, Louisiana, Mississippi, North Carolina, and South Carolina) have developed legislative or regulatory discount frameworks for homes built or retrofitted to the aforementioned FORTFIED standards. In these states, IBHS has worked with insurance regulators and insurance companies to make sure that the discount programs work as they were intended upon enactment, and actually facilitate risk-based pricing, which can serve both to encourage effective mitigation and discourage unsound development in disaster-prone areas.

In addition to discounts, insurance incentives related to mitigation may include a positive decision by an underwriter to provide coverage in the voluntary, rather than through the residual, market, lower deductibles, or more favorable coverage terms relating to post-disaster claims payments. Again, these are business decisions made by individual insurers, and IBHS neither influences such decisions nor

specifically tracks them. That said, IBHS research helps our member companies to better understand structural vulnerability and the role that mitigation plays in reducing it, as well as what mitigation features to look for when inspecting a residential or commercial building.

In a truly resilient society, mitigation incentives would extend beyond the insurance industry to others who benefit from reduced loss costs at the individual property owner or community level—e.g., mortgage lenders, landlords, community developers, and municipal bond underwriters. Although IBHS promotes this concept when speaking to these external audiences, we are not aware of any non-insurer, private sector mitigation incentives that are being offered at this time.

Mitigation Research Priorities

The property insurance industry's research priorities for wind mitigation are directly in line with policyholders' interests—less physical destruction, less economic loss, less societal displacement, fewer injuries and deaths. Breaking the cycle of destruction so that residential and commercial structures do not have to be put back together again and again will benefit building owners, occupants, communities, and insurers.

The coordinated focus and resources provided by the NWIRP can accelerate the progress of the research and focus it in ways that are of particular value to researchers, practitioners, and the public. As Congress looks towards reauthorization of the NWIRP, we would suggest that it concentrate efforts in four areas.

- The first is enhanced understanding of events, including better definition of parameters that are important to the design and performance of the built environment. Because hurricanes develop more slowly than tornadoes or straight-line windstorms, scientists have had more opportunity to study when/how/why they form and change, and to take actual measurements during the storm itself. The NWIRP could allocate additional resources to improve the ability to forecast tracks and intensities of hurricanes, as well as to study and describe storm characteristics such as wind turbulence, gust structure, and wind-driven rain. In addition, there is some promising new technology that is allowing the research community to gain more insights into tornadoes and thunderstorms, which is critical to monitoring storms likely to produce damaging winds and improving warnings. These efforts should continue, along with better definition of the wind field near the ground surface.

- The second area is research directed at better understanding and modeling of the interaction of the events with the built environment. We currently rely on aerial and satellite photography, as well as on-the-ground post-disaster investigations and statistical studies to assess damage. These types of assessments miss the progression of damage and the cause and effect relationships between initial failures and subsequent damage. The IBHS Research Center and other new facilities that are capable of full-scale testing of building components or sections of buildings are beginning to shed some light on cause and effects, but more research is urgently needed in this area. Additional research also could include the influence of hurricane wind characteristics and water droplet size distributions on wind loads and water intrusion, respectively. For tornadoes, it would include the influence of the wind field characteristics on wind loads and a better understanding of the required strength of components and connections to resist these loads and effects.

- The third area is research aimed at improving building codes, developing effective mitigation measures and analysis tools to improve design efficiency, and assessing the benefits of mitigation measures or design requirements on both component and system performance. This research also should target the resilience of transportation and lifeline systems as they are essential to the quick recovery of individuals and communities.

- Finally, we suggest a focus on reviewing current test methods, standards, and analytical tools for rating wind resistance in light of recent observations from post-event assessments. Much private industry research and development related to wind hazards has focused on meeting existing test standards so that products can obtain product approvals necessary to allow their use in building construction. The goal should be to make sure that high wind-rated products perform as expected and do not simply meet arbitrary thresholds that bear little relation to actual events.

Thank you for the opportunity to offer our comments on the critical role of mitigation research and the importance of NWIRP reauthorization. We urge you to move forward on this important legislation that will help to harness advancements in windstorm science to improve our nation's safety, sustainability, and resilience.