

Statement of the American Society of Civil Engineering

to the

**Subcommittee on Research and Technology
of the
Committee on Science, Space, and Technology
U.S. House of Representatives**

for the hearing

**From Risk to Resilience: Reauthorizing the National
Earthquake and Windstorm Hazards Reduction Programs**

January 30, 2024

The American Society of Civil Engineers (ASCE) appreciates the opportunity to submit a statement to the House Committee Science, Space and Technology's Subcommittee on Research and Technology regarding the hearing *From Risk to Resilience: Reauthorizing the National Earthquake and Windstorm Hazards Reduction Programs*. We wish to express our appreciation to Chairman Collins and Ranking Member Stevens and the members of the Subcommittee for the leadership you have shown in ensuring that these two important programs are kept on track.

Founded in 1852, ASCE is the country's oldest civil engineering organization. Representing more than 150,000 civil engineers from private practice, government, industry, and academia, it is ASCE's objective to advance the science and profession of engineering to enhance the welfare of humanity. ASCE is a prominent stakeholder in efforts toward hazards mitigation and the protection of public health, safety, and welfare. ASCE develops and maintains standards, supports the funding of professional guideline-writing organizations, and works with governments at all levels to assist in mitigating the impacts of natural and human induced hazards.

For more than 45 years, the **National Earthquake Hazard Reduction Program (NEHRP)** has sponsored extensive research addressing all facets of earthquake science and engineering including characterizing the prevalent seismic hazards threatening the nation, monitoring programs to determine the frequency and severity of strong shaking, sponsoring the on-going development of hundreds of design guides and standards for buildings, and assisting states with preparedness and mitigation activities. Its fundamental strength rests in its longevity, continuous funding, and the cooperative efforts of the four NEHRP agencies; the National Institute of Standards and Technology (NIST), the United States Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), and the National Science Foundation (NSF). ASCE, as a consumer of this information, can say without reservation that the program is a success, fulfills a critical need, and has made great strides in advancing the science and engineering related to earthquakes. The nation is significantly better prepared to deal with the impact of strong earthquakes because of the NEHRP.

Although NEHRP is most well-known for its research programs, it is also the source of hundreds of technologies, maps, techniques, and standards that are used by design professionals every day for hazard mitigation. For example, the ASCE-7 standards define the national approach for seismic design of buildings and other structures. The procedures defined in ASCE-7 rely on seismic data developed by the USGS on a cyclical basis, which is funded by NEHRP.

ASCE was encouraged by the development and approval of the *FY22-29 Strategic Plan for the National Earthquake Hazards Reduction Program* (also referred to as the FY22-29 NEHRP Strategic Plan). The FY22-29 NEHRP Strategic Plan is ambitious, engages the complementary expertise of the NEHRP agencies, and should form a roadmap for the program going forward.

ASCE would also like to flag the Government Accountability Office (GAO) report [GAO-22-105016](#) - Earthquakes: Opportunities Exist to Further Assess Risk, Build Resilience, and Communicate Research was incorporated input from ASCE into a series of recommendations to including that NEHRP agencies conduct a national assessment to identify progress and remaining gaps in earthquake resilience; develop strategies to better communicate research priorities; and follow leading practices to identify and leverage resources.

ASCE has commended Senators Alex Padilla (D-CA) and Lisa Murkowski (R-AL), who introduced bipartisan legislation to reauthorize the National Earthquake Hazards Reduction Program (NEHRP) through Fiscal Year 2028. The NEHRP Reauthorization Act of 2024, S. 3606, is bipartisan legislation that takes sensible steps to reauthorize NEHRP. ASCE urges the House to work with the Senate to move forward with reauthorization and to add the National Wind Impact Reduction Program (NWIRP) to this effort.

Created by Congress in 2004 and modeled after NEHRP, **the National Windstorm Impact Reduction Program (NWIRP)** coordinates windstorm related research activities at the National Oceanographic and Atmospheric Administration (NOAA), NSF, NIST, and FEMA. NWIRP has made strides in increasing the understanding of the impact of wind on structures. This includes significant improvements in hurricane forecasts and increased tornado warning times; advancements in the science of wind mapping to inform engineering-based design standards; improved coordination practices and research support for post windstorm investigations; and implementation of post windstorm research-based recommendations into codes, standards, and practices. However, despite the best efforts of the agencies involved, NWIRP has not received the funding needed to reach its potential.

ASCE was instrumental in the creation of NWIRP in 2004 by Public Law 108-360 and collaborated with stakeholders in the community to help craft an effective program. Windstorms are among the most devastating natural hazards. Each year, the United States suffers tremendous losses as a result of windstorms. Hurricanes, tornadoes, and other windstorms cause death and injury, business interruption, and property damage in all 50 states and all U.S. territories. As urban growth continues and people move to coastal areas, the trend towards larger impacts and increasing costs will continue unless an effective wind hazard reduction plan is funded and implemented.

ASCE believes that NWIRP should, and has, focused its efforts to achieve the following goals:

- Improve the understanding of windstorms and their impacts.
- Develop innovative and cost-effective materials, designs, and construction methods to provide enhanced windstorm protection.
- Develop cost-effective retrofit schemes with existing construction to improve individual and community resilience.
- Improve emergency management planning.

- Develop and enhance innovative codes and standards for wind-resistant construction.
- Implement programs for assuring increased compliance of codes and standards.
- Develop new design concepts and emergency response protocols to minimize secondary impacts such as disruption of utilities and wildfires as a result of windstorms.
- Improve regional risk assessments, especially involving the consideration of multiple hazards, lifeline interdependencies, and ripple effects.
- Collect and archive wind and relevant infrastructure data.
- Develop improved hazardous weather warnings with longer lead-time, fewer false alarms, and more accurate prediction of affected areas.
- Conduct public education on wind hazards and methods for hazard reduction.
- Train the next generation of technical experts and enhance the knowledge of design and construction professionals.

Last year, the U.S. experienced 28 separate billion-dollar weather disasters according to NOAA. This surpasses 2020 — which had 22 events — for the highest number of billion-dollar disasters in the U.S. on record. The total cost for these 28 disasters was \$92.9 billion.

Both programs provide the needed research to better understand the impact of earthquakes and wind hazards. These research results are widely shared and inform the development of standards, such as [ASCE-7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures \(ASCE/SEI 7-22\)](#), and other accepted consensus-based standards. Updated research on wind speeds and impacts is critical to ensure our building standards are current and strengthen resilience. The wind program has yet to receive any funding to update this data.

In 2022, the National Institute of Building Sciences found that every \$1 spent on hazard mitigation saves the nation \$6 in future disaster costs. Research efforts at NEHRP and NWIRP have the potential to introduce new understanding, technologies, materials, and processes that, when incorporated into standards and building codes, increase that savings.

The [2021 Report Card for America's Infrastructure](#) recommends advancements in resilience across all infrastructure categories as one of the three key solutions for raising the nation's infrastructure grades. ASCE has repeatedly urged Congress to identify and adopt policy solutions that can enhance the resilience of our nation's infrastructure. NEHRP and NWIRP are two existing programs that offer a cost-effective and proven track record of doing that. Reauthorization is critical to continue that important work. Work has begun on the 2025 report card and resilience will remain and likely be an enhanced recommendation to ensure an infrastructure that can support the nation in the future.

NEHRP and NWIRP both have and should continue to make Americans safer and our nation more secure, resilient, and financially stronger through research in engineering,

earth, climate, and behavioral sciences, and public policy. Thank you for the opportunity to share our views with the Subcommittee regarding the National Earthquake Hazards Reduction Program and the National Windstorm Impact Reduction Program. We thank the Subcommittee for its leadership, and we urge Congress to move quickly to reauthorize these critical programs.

ASCE stands ready to provide any assistance that we can. If you need additional information, please contact Martin Hight, ASCE's Senior Manager of Government Relations at mhight@asce.org or 202-789-7843.