

NIBS Leads the Way with New National Lifelines Organization

In today's world, essential services such as communications, fuel, water and wastewater, power and electricity, and transportation operate seamlessly in the background, supporting our daily lives. These services are not mere conveniences; they are the lifelines that uphold our society. Recent events, such as the wildfires in Maui and Hurricane Ian, have highlighted their critical importance, underscoring that they are the foundation upon which our modern world is built and functions.

Improving the Built Environment, NIBS' New Initiative on the Lifeline Infrastructure Hub

On May 21, the inaugural meeting of the advisory panel of the NIBS Lifeline Infrastructure Hub marked a groundbreaking moment, bringing together stakeholders dedicated to enhancing community resilience and recovery after disasters along with the Lifeline Advisory Panel (LAP), the governing body of the hub. Following this meeting, NIBS hosted a workshop attended by representatives from more than 35 organizations including the White House, Congress, federal agencies, lifeline companies, the engineering community, business, and academia to assess the nation's lifelines infrastructure resilience.

The workshop featured panel sessions from industry leaders, fostering an environment rich with enlightening

discussions and innovative ideas such as the emerging role of data-informed decision-making, risk-based design and planning, performance metrics, policy priorities, and the interdependence of lifelines at home and abroad.

On behalf of the [National Institute of Building Sciences](#), Dr. JQ Yuan welcomed everyone and shared the fact that lifelines have been lacking a single umbrella organization to set performance goals, facilitate the development of performance guidelines and standards and advocate for system enhancements for over 20 years.



Photo: The NIBS Lifeline Infrastructure Hub Advisory Panel at the National Press Club on May 21, 2024.

“The time is right for a national convening of experts to foster innovation and partnerships in the face of increasing threats.”

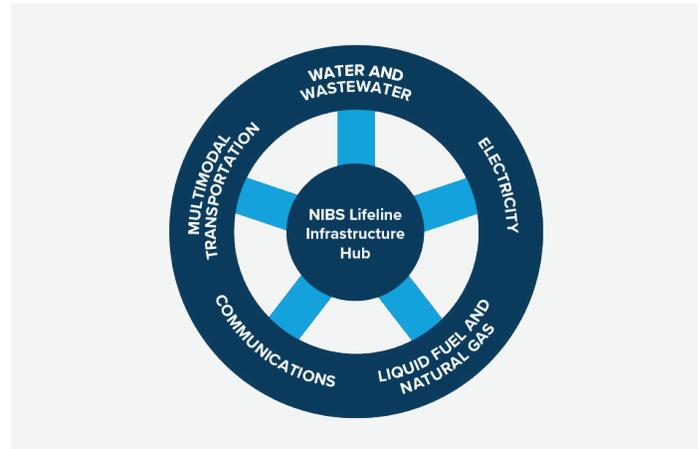
–Ron Eguchi, NIBS Lifeline Advisory Panel Chair

Bridging the Gaps: Urgent Needs, Challenges and Opportunities

The Lifelines Infrastructure Hub workshop began with a panel discussion on the nation’s gaps and possible solutions for the future advancement of lifeline infrastructure resiliency. The panel included Dr. Daniel Kaniewski, Multi-Hazard Mitigation Council (MMC) board member and Lifeline Executive Committee member, Managing Director with Marsh McLennan, and Former FEMA Deputy Administrator; Greg Soules, Building Seismic Safety Council’s (BSSC) NEHRP Provisions Update Committee and Functional Recovery Task Committee member, ASCE 7 Chair, and Senior Principal with CB&I; and Ronald T. Eguchi, Founding Chair of the Lifeline Advisory Panel and CEO and Co-Founder of ImageCat. Yumei Wang, Lifeline Infrastructure Special Advisor to NIBS, served as the workshop moderator.

Dr. Kaniewski emphasized the importance of lifelines, stating, “Today emergency managers prioritize strengthening lifelines before, and restoring them quickly following, disasters.” He noted how this is a shift from previous emergency management doctrine and proclaimed, “FEMA is now seen as the nation’s resilience agency.”

Greg Soules discussed the structural engineering industry paradigm shift from preventing collapse to designing for post-hazard re-occupancy or “functional recovery” and the need for lifeline infrastructure to follow this performance-based methodology. He highlighted the seismic design community’s role in promoting resilience for the entire built environment and called for a national organization to address the interdependent nature of lifelines.



Ronald Eguchi outlined the way forward, building on the previous efforts of the now defunct American Lifelines Alliance (ALA) and introducing the Lifeline Infrastructure Hub. He emphasized the need for a national convening of experts to foster innovation and partnerships in an industry long defined by aging techniques and practices. Eguchi also discussed the role of emerging technologies in enhancing societal awareness and strategy.

Collaboration and Driving Innovation Through Public-Private Partnerships

The second panel discussed the need for more public-private partnerships within the context of lifeline infrastructure. Speakers included Madhu Beriwal, National Infrastructure Advisory Council and Chair of IEM; Derrick Hiebert, Assistant Administrator, Hazard Mitigation Directorate, FEMA; Jason Averill, Deputy Director, Engineering Laboratory, NIST; Dr. Ken Hudnut, Southern California Edison; and Moderator, Dr. Sissy Nikolaou, LAP Vice Chair, NIST.

Beriwal kicked off the panel discussing the President’s National Infrastructure Advisory Council (NIAC) and its

“A top priority is the need for a national framework to support functional recovery of critical infrastructure and improve the performance and coordination across multiple lifeline infrastructure systems to enhance community resilience.”

– Jason Averill, Deputy Director, Engineering Laboratory, NIST

recommendations on cross-sector infrastructure topics, including electrification, water security, disaster response, and resilience. Berival emphasized that the industry’s gaps could be best represented by the territory of Puerto Rico’s repeated issues with significant storms, hurricanes, and the electrical grid’s exposure to outages, which further exposed other weaknesses of other lifeline sectors. The interdependency of all lifeline sectors is one of the most critical fulcrum points that can elevate any singular event to one that is felt for generations.

Hiebert detailed the importance of public-private partnerships regarding FEMA programs, including the Building Resilient Infrastructure and Communities (BRIC) grant program. After encouraging engagements with community partners that are “future-focused” in their mitigation projects, he emphasized pre-disaster investments the agency is offering to highly vulnerable communities prior to a significant event, such as Community Disaster Resilience Zones. Mr. Hiebert also noted that how FEMA prioritizes and uses mitigation project funds to reduce future disaster loss depends on a partnership with private investment and diverse stakeholders, given their ownership of lifeline assets. He closed by prefacing upcoming announcements on more diverse mitigation funding types becoming available and asked guests to consider returns on investment as reducing insurance costs, critical infrastructure damage ‘and’ human capital loss. Only together can the nation truly turn perceived weaknesses within the system into resilient strengths.

Averill discussed the need for mutually understood metrics to evaluate and design lifeline systems. As complicated of a task as that is with the segmentation of each sector, he provided a framework with examples from NIST’s Center of Excellence and its work with risk equivalence goals. A new generation of codes and standards would be born out of that effort, and with a feedback loop informing those codes and standards, it would center around comprehensive and achievable metrics (e.g., based on the [NIST-FEMA recommendation](#) for a national functional recovery framework for buildings and lifelines). Cross-sector collaboration would be a key component of that feedback loop. An example of such successful effort was that of the Fire Codes with cross disciplinary work at the NIST Fire Lab in the previous two decades and lessons from fire-induced disasters.

Dr. Hudnut discussed some of the current initiatives taking place within the private sector.

A key takeaway from some of Southern California Edison’s recent forays into seismic resilient design and operations introduced the idea of “risk concentration points.” In an ideal situation, funding can be distributed among all areas, but with limited funding, the need to fund against the most risk and what would have the best return on investment (ROI) takes center stage. Where a hazard line such as a fault line or a coastline intersects with a lifeline, a point of strong risk concentration exists, presenting an opportunity for strategic investment in risk reduction.



“Enhancing our lifeline infrastructure not only protects people and supports our economy, it is also a national security priority. With our nation’s generational investment in critical infrastructure, we need to act now, and NIBS lifeline infrastructure hub is a timely and needed effort.”

- Caitlin A. Durkovich (National Security Council, White House)

Southern California Edison (SCE) identifies such specific risk concentration points within its jurisdiction and prioritizes new capital projects aimed at hardening those specific locations. Examples include major transportation hubs, such as ports, interstates, and arterial networks and high risk points at critical facilities that are powered by SCE. These include hospitals, fire stations, police stations, and emergency operation centers.

Identifying and mitigating prioritized seismic and other risk mitigation needs remains a main tenet of what makes lifeline infrastructure so critical. The sharing of ideas and best strategic investment practices offers a way forward for organizations and entities coming to grips with a cascade of funding needs.

Lifelines: A Top Priority for National Security and Community Protection.

The third panel of the workshop was greeted with the attendance of critical policy leaders within the industry. Caitlin A. Durkovich, Deputy Homeland Security Advisor, National Security Council; Lauren Gros, House Transportation and Infrastructure Committee; Dr. Natalie Enclade, Executive Director, Build Strong America; and Moderator Dr. Daniel Kaniewski discussed the urgency and significance of lifeline infrastructure from a national security perspective, both foreign and domestic.

Dr. Kaniewski opened the session noting how Durkovich’s participation, as the senior resilience official at the White House, was significant: “With her long experience in the homeland security and national security domains, at both DHS and the White House, she understands how strengthening lifeline infrastructure makes the nation more resilient.”

Durkovich kicked off the panel with an announcement and review of **“National Security Memorandum/NSM-22,”** a whole-of-government effort to protect a generational investment in

Pictured, from left: Dr. Dan Kaniewski (Moderator) and Speakers Caitlin A. Durkovich (National Security Council, White House), Lauren Gros (House Transportation and Infrastructure Committee), and Natalie Enclade (Executive Director, Build Strong America).



critical infrastructure that this administration has made. Not only did Durkovich highlight the importance of this memo as a call to action, but she also offered the perspective that lifeline infrastructure has far-reaching impacts that underscore its importance to U.S. national security.

As stated in the NSM-222, “The United States also faces an era of strategic competition with nation-state actors who target American critical infrastructure and tolerate or enable malicious actions conducted by non-state actors.” The need to secure the nation’s infrastructure from man-made events is directly tied to its need to be more resilient from natural ones. She also stated the federal government “views the private sector as our first line of defense and that the Federal government is here to support their risk mitigation efforts further,” highlighting the need for public-private partnerships.

Gros then moved on to detailing current efforts within the legislative branch with a discussion on current efforts to

“Lifeline infrastructure is complicated and complex,” said NIBS Interim President & CEO Stephen T. Ayers. “This needs to be a national collaboration across sectors and address multiple hazards. We invite all to join and support this important effort.”

reauthorize NEHRP and a shared need for a renewed look at modernizing infrastructure, regardless of political affiliation. Strategic messaging was the key takeaway, emphasizing the importance of communicating the value of investment and its compounding benefits to the American people.

Finally, Dr. Enclade offered her input on being an advocate for resilience and providing a voice to hazards not traditionally included but now elevated, such as wildfires.

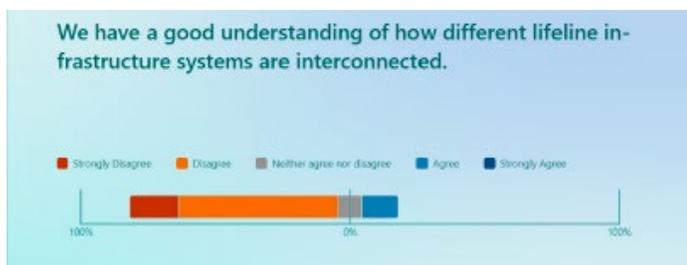


Figure: The Interactive Poll Statement: “ We have a good understanding of how different lifeline infrastructure systems are interconnected”. This statement represented a divergent moment with the attendees present and was the topic of many follow-up questions.

NIBS Invitation to Collaborate

The workshop also engaged attendees through interactive survey questions, revealing a consensus on the importance of lifeline infrastructure but highlighting divergent views on understanding interdependencies and prioritizing investments. The divergence in thinking highlights a significant industry gap: the isolation of lifeline disciplines has hindered the creation of cohesive performance standards. The Lifeline Infrastructure Hub is poised to address this challenge by fostering crucial

relationships and bridging the communication divide, thereby establishing the necessary standards and collaboration essential for industry advancement.

Lifeline infrastructure has always been crucial to civilization, with the United States’ efficiency and longevity reflecting the hard work of industries and universities. However, it’s time to rethink and innovate, much like the New Deal’s transformative projects and initiatives such as the Interstate Highway System and the Apollo Program. We need a similar large-scale effort now for a resilient future. Establishing a national lifelines organization is essential to unite stakeholders, modernize infrastructure, and develop cohesive performance standards. As the world faces significant changes, collective action is imperative to meet these challenges.

Next Steps

1. Based on the stakeholder feedback, the LAP will identify a set of priorities across technical (such as data-informed decision-making, risk-based design and planning, performance metrics, interdependency), policy (such as the White House National Security Memorandum -22), outreach (webinars, workshop, and industry surveys).
2. The LAP will engage lifeline stakeholders to form task group and subcommittees.
3. Stay engaged by signing up here. <https://www.nibs.org/lifelineshub/subscribe>