

Recommendations for the 45th President

The U.S. Congress established the National Institute of Building Sciences in 1974 to serve as an authoritative source of information on building science and technology.¹ In the beginning years, the Institute tackled many building-related problems, such as removing lead paint and asbestos; addressing mold and rot; and providing access for people with disabilities. More than four decades later, this non-profit, non-governmental organization still brings the public and private sectors together to find solutions to make buildings better, safer, more economical places to live, work, play and learn.

From seismic safety to building information modeling, members of the Institute's Councils and Committees—among them some of the most renowned experts in their respective fields—continue to address building-related issues. With those concerns in mind, the Institute offers the following recommendations to the Trump Administration:

Make Buildings More Resilient to Natural Disasters

Natural disasters can devastate communities. Hurricane Katrina, Super Storm Sandy, the Northridge (California) Earthquake, flooding along the Mississippi, California wildfires, the Joplin (Missouri) tornado; they all bring to mind death and destruction. Yet, in 2005, the Institute's Multihazard Mitigation Council did a study that found investing in buildings before a disaster occurs can reduce or even prevent future losses. In fact, based on a study of Federal Emergency Management Agency (FEMA) funding, every \$1 invested in mitigation resulted in \$4 in future savings.² Considering how much money the U.S. government spends on disaster cleanup after an event, investing in prevention makes a lot of sense.

Even though mitigation saves money in the long run, the challenge is getting federal and state governments to make that investment now. Even after a disaster occurs, funding for mitigation is low, especially when compared to post-disaster recovery funding. That is one of the reasons the Institute began developing a new strategy, called incentivization, to encourage investment in mitigation. The goal of incentivization is to bring private stakeholders, such as insurers, financiers and others, together with federal agencies, including the Department of Housing and Urban Development, Fannie Mae, the Small Business Administration, Department of Veterans Affairs, Department of Agriculture, Depart-

ment of the Treasury and Department of Homeland Security, to align existing programs aimed at homeowners and businesses. When their mortgage payment, tax rate or insurance premiums are lower as a result, property owners have a clear incentive to invest in making their buildings more resilient. The outcome is safer buildings, stronger communities, lower risk for insurers and financiers and a stronger, more stable tax base.

- **Fund Pre- and Post-Disaster Mitigation.** The federal government should invest more in mitigation programs prior to disasters to help reduce federal exposure for recovery after an event. The proposed deductible for FEMA's Public Assistance Program is one promising approach.
- **Support Cost-Effective Resilience through a Holistic Incentivization Approach.** Federal agencies should work with the private sector to implement an approach that uses incentives to encourage homeowners and businesses to invest in resilience.

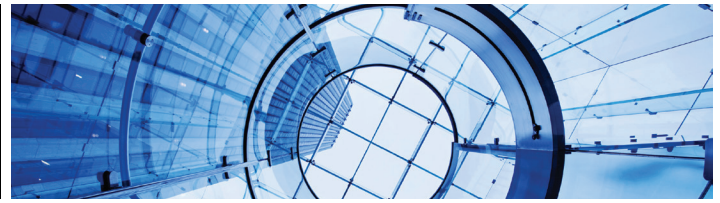
Protect Federal Investments

The nation needs functioning infrastructure to be able to deliver goods and services efficiently and support communities in serving and protecting its citizens. Yet the American Society of Civil Engineers has rated the nation's infrastructure at a D+.³ The time has come for the federal government to stop deferring maintenance and invest in the nation's

¹ Public Law 93-383, 12 USC 1701j-2

² Multihazard Mitigation Council. *Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities, Volume 1- Findings, Conclusions, and Recommendations.* National Institute of Building Sciences, 2005.

³See <http://www.infrastructurereportcard.org/>.



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infrastructure. Because money is limited for the design, construction, operation and maintenance of federal buildings, the Administration should support the efficient use of those limited federal dollars. To do otherwise is fiscally irresponsible and exposes the federal government to significant future expenditures to deliver the same level of service.

- **Require All Projects be Designed, Constructed and Operated on a Life-Cycle Basis.** If a project receives federal financing, requires federal approval or serves the public good, the federal agencies providing oversight should require it to be designed, constructed and operated on a life-cycle basis. This should be based on the anticipated useful life of the structure and identify and address all vulnerabilities that may impact its utility and function across its service life—including those due to changes in risk associated with extreme weather and security.
- **Require Adoption and Enforcement of Building Codes for all Federally Supported Communities.** If a state or locality receives federal funding or technical assistance associated with community development, infrastructure, public safety or community governance, the federal agencies providing oversight should require it to adopt and effectively enforce building codes that meet or exceed the latest model building codes.
- **Require Use of Updated Codes and Standards for All Federal Projects.** All federal projects should comply with the latest codes and standards and consider the potential risks the infrastructure may face in the future.
- **Maintain Strong Energy and Water Performance Goals for Federal Facilities.** Executive orders, legislation and other guidance addressing the design, construction, operation and maintenance of federal buildings should maintain energy- and water-efficiency goals; continue the retrofit of federal facilities to reduce operating expenses; design new buildings to limit long-term expenses; and continue and enhance utilization of Energy Savings Performance Contracts (ESPC) to unlock private capital.
- **Examine Use of Expanded Procurement Strategies to Facilitate Project Goals.** Federal agencies with buildings-related responsibility should examine the expansion of public-sector procurement strategies to better facilitate delivery and long-term operation of high-performance buildings, including design-build, early contractor involvement (ECI), performance contracting and design-build-operate-maintain (DBOM) contracting. This includes examining Federal Acquisition Regulation (FAR) and Defense Federal Acquisi-

tion Regulation (DFAR) requirements and Office of Management and Budget (OMB) and Congressional Budget Office (CBO) scoring methodologies.

- **Enhance the Federal Buildings Workforce through Certifications and Ongoing Education.** To enhance the performance of federal facilities, the Administration should accelerate the implementation of the Federal Buildings Personnel Training Act (FBPTA) across federal agencies. The FBPTA requires all building-related federal employees and contractors working in federal facilities to become certified and take ongoing education and training. It also directs the General Services Administration (GSA) to develop criteria for facility contractors. The DOE Better Buildings Workforce Guidelines facilitate this advancement and recognized certifications should be required in relevant federal contracts.
- **Examine Opportunities to Consolidate Federal Design and Construction Guidance.** To help streamline federal construction projects, the Administration should bring federal agency representatives together to discuss potential consolidation of their design and construction guidance into a single set of government-wide requirements that agencies with specific needs may amend. Increasing consistency across agencies would support the private sector's ability to compete for federal projects; make updates and the development of supplementary guidance documents easier to achieve; reduce costs; and provide for greater oversight. The Institute's recent work with GSA on *P100: Facility Standards for the Public Buildings Service* may serve as a good starting point.

Facilitate Government's Relationship with the Private Sector

Among nations around the world, the United States is unique in the way it develops standards, enforces building regulations and engages the private sector to improve the built environment. The U.S. private sector has a long history of standards development that allows all stakeholders, including the private sector and federal agencies, to contribute. Through this system, the United States has developed state-of-the-art standards that support innovation, meet the needs of business and allow industry to compete internationally. The National Technology Transfer and Advancement Act (NTTAA)⁴ and OMB Circular A-119 formally codified this relationship and how federal criteria and regulations should rely on these consensus-developed standards. Maintaining this public-private model is essential to support innovation and global competitiveness.

⁴Public Law 104-113, 15 USC 3701.



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While the private sector is responsible for most standards development, federal agencies oversee many other activities within the built environment. Enhancing coordination and collaboration across agencies would assist the private sector in growing the economy and creating jobs. To do this would require a concerted effort from the Administration to coordinate and evaluate how existing policies interact and how new policies can consider the impacts on all high-performance attributes.

The United States is a global leader in new technologies and the nation's existing building stock represents generations of growth and investment. Yet, many of the existing buildings in this country have not been maintained or renovated to meet current needs. Community and social infrastructure across the country, including schools, libraries, hospitals and emergency management facilities, in particular, are in need of renovations. By taking a coordinated, holistic approach to these retrofits, federal, state and local governments, in concert with the private sector, can achieve multiple high-performance goals at once, preserving existing (potentially historic) architecture by making it functional, cost-effective, accessible, safe, secure and sustainable. Such an approach utilizes the nation's technological and economic capacity; reduces exposure to future risks and liabilities; provides jobs; and limits government spending for new facilities.

- **Strengthen Federal Engagement in the Development of Standards and Codes.** The Administration should champion the private sector's development of state-of-the-art, consensus-based standards and codes and encourage the engagement and contributions of all stakeholders, including federal agencies.
- **Establish a Strategic Approach to Buildings Policies.** The Administration should establish an Interagency Buildings Working Group to assure consistency across federal policies and programs; streamline approaches to regulatory and grant programs; reduce confusion within the private sector; and facilitate development of a strategic approach to building-related policy.
- **Implement Policies Focused on Updating Existing Buildings and Achieving Measured Results.** The Administration should establish policies and incentives (including technical support, grants and tax credits/deductions) that support the renovation and retrofit of the nation's building stock;

focus on actual performance and the measurement and verification of intended results; and look holistically across high-performance building attributes.⁵

- **Update Important Community Facilities to Meet National Priorities.** The Administration should support the renovation of community and social infrastructure, including schools, libraries, hospitals and emergency management facilities.

Support Businesses and Homeowners

In order to remain strong and prosperous, the United States needs businesses and citizens that generate economic activity. One way the federal government can play a significant role in supporting businesses and homeowners is by directing the limited capital resources available to go toward revenue-generating activities, not be locked into inefficient and wasteful practices.

Innovative, U.S.-based companies are developing new technologies and advancing existing technologies to provide homeowners and businesses with cost-effective ways to improve occupant health and productivity, thereby lowering capital and operations funds and assuring the long-term availability of resources. The companies that develop and produce these products also offer significant technical and manufacturing careers. Overly restrictive trade policies may limit the ability for such manufacturers to develop and, ultimately, sell new products.

The federal government hosts several voluntary programs that utilize federal technical expertise and convene industry stakeholders. Such expertise and convening power is available in few organizations outside government. These federal programs, though relatively inexpensive to run, are highly valued because they provide private-sector cost savings and result in additional capital for businesses and reduced expenses for homeowners.

- **Reduce Energy Waste and Associated Costs for Businesses and Homeowners.** The Administration should help homeowners and small business owners by investing federal expertise and resources to increase energy productivity. This would help to reduce operating expenses; minimize the uncertainty of energy and water prices and availability; facilitate domestic energy security; and free up capital for investment in jobs and equipment, allowing businesses, owners and employees to expand and grow.

⁵ The Energy Independence and Security Act (EISA) of 2007 (Title IV, Energy Savings in Buildings and Industry, Section 401, Definitions), definition of a "high performance building" is as follows: A building that integrates and optimizes on a life-cycle basis all major high-performance building attributes, including energy conservation, environment, safety, security, durability, cost-benefit, productivity, functionality and operational considerations.



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- **Support Innovation and Job Creation through High-Performance Building Technology Products.** The Administration should expand federal financial and technical support for research, development and manufacturing of U.S.-based energy-efficiency, renewable-energy and smart-building products and systems. Homeowners and businesses benefit from lower costs and improved occupant health and productivity, while businesses reduce spending unnecessary capital and operations funds and assure the long-term availability of resources.
- **Assist the Private Sector in Reducing Energy and Water Costs and Remaining Competitive.** The Administration should maintain federally driven, voluntary programs, such as the ENERGY STAR program, WaterSense and the Department of Energy Better Buildings program, that utilize federal technical expertise and convening power to support private-sector cost savings.

Establish and Maintain a Skilled Workforce

Over the past several years, almost all sectors of the industry have reported a growing shortage of skilled construction workers—within multiple building disciplines and trades, and across states and regions—with dramatic worker shortages in key industry trades. Surveys about the code official workforce and other building-related disciplines have revealed similar challenges. Experienced workers are retiring, leaving or have left the industry without sufficient young people in the pipeline to replace them. Many parts of the industry are struggling to obtain new recruits. One reason may be because high school counselors and parents define a four-year college degree as a measure of success, so they do not encourage students to get training or enter the building trades as a career. Yet, a skilled workforce is necessary to support advanced manufacturing and the construction and operation of high-performance buildings and infrastructure.

Invest in Skilled Workers that Facilitate Achievement of High-Performance Buildings and Infrastructure. The Administration and agencies, including the Department of Labor and Department of Education, should expand the availability of vocational and technical training through expansion of the Perkins Student Loan Program; support federal grants to develop new and innovative delivery models that reflect current skills needs; and support public-private development of a public service announcement campaign highlighting the importance of skilled workers, the career potential and the available training programs.

Use Data Effectively to Create and Maintain Value

Today, the building industry has an unprecedented amount of building information at its disposal. The availability of this expanding pool of building data offers significant opportunities as well as challenges. Building information is generated throughout the design, construction and operations process. Unlocking the value residing in that information requires an effective information management process to allow its use by different parties at different points in the building life cycle for different uses.

Being able to collect and analyze data across the building life cycle can help building owners evaluate building performance, develop cost-benefit analysis and establish feedback loops to help advance the industry. However, to work effectively, there needs to be interoperability criteria for that data. The effective and efficient use of data across a building's life cycle relies on the interoperability of information contained within a building information model (BIM). The Institute developed the *National BIM Standard-United States*[™] (NBIMS-US[™]) and the *National BIM Guide for Owners* to help building owners achieve interoperability. Such standards should be the basis for consistent government-wide policy for design, construction and operation of federal buildings and infrastructure.

Implement Policies that Unlock the Value in Building Data.

Federal agencies should incorporate requirements for information interoperability throughout the building life cycle into their contracts and, to the extent practicable, provide building-level data in an accessible format to national, regional and local data sets.

Conclusion

In addition to these recommendations, the Institute, through its Consultative Council, produces an annual *Moving Forward* report of findings and recommendations to the President and Congress that reflects the collective wisdom from leading organizations that represent the breadth of the building industry. Past reports expand on many issues identified here and are available at www.nibs.org/cc.

As you execute your duties as President, the Institute remains available as an authoritative source of innovative solutions for the built environment. We look forward to continuing to address the needs of the nation and assuring the built environment assists communities, citizens and businesses in meeting their economic, social and safety goals.