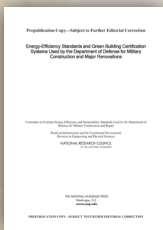


# BOARD ON INFRASTRUCTURE AND THE CONSTRUCTED ENVIRONMENT (BICE)

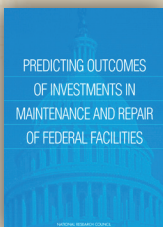
The BICE addresses questions of technology, science, and public policy applied to the relationship between the constructed and natural environments and their interaction with human activities. Focus areas include infrastructure investment and community building, facilities asset management, physical security and multi-hazard vulnerabilities, and building design and construction. The BICE brings together expertise from a wide range of scientific, engineering, and social science disciplines to address problems and issues in these areas.

## Selected Recent Reports



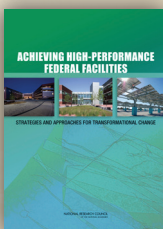
### **Energy-Efficiency Standards and Green Building Certification Systems Used by the Department of Defense for Military Construction and Major Renovations (2013)**

The U.S. Congress has an ongoing interest in ensuring that the 500,000 buildings and other structures owned and operated by the U.S. Department of Defense (DOD) are operated effectively in terms of cost and resource use. Section 2830 of the National Defense Authorization Act for fiscal year requires the Secretary of Defense to submit a report to the congressional defense committees on the energy-efficiency and sustainability standards used by DOD for military construction and major renovations of buildings. DOD's report must include a cost-benefit analysis, return on investment, and long-term payback for the building standards and green building certification systems. DOD's report to the congressional defense committees must also include a copy of DOD policy prescribing a comprehensive strategy for the pursuit of design and building standards across the department that include specific energy-efficiency standards and sustainable design attributes for military construction based on the cost-benefit analysis, return on investment, and demonstrated payback required for the aforementioned building standards and green building certification systems. This NRC report summarizes the recommendations for energy efficiency.



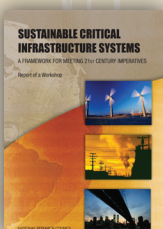
### **Predicting Outcomes of Investments in Maintenance and Repair of Federal Facilities (2012)**

This report identifies processes and practices for transforming the current portfolio of federal facilities into one that is more economically, physically, and environmentally sustainable. This report addresses ways to predict or quantify the outcomes that can be expected from a given level of maintenance and repair investments in federal facilities or facilities' systems, and what strategies, measures, and data should be in place to determine the actual outcomes of facilities maintenance and repair investments.



### **Achieving High-Performance Federal Facilities: Strategies and Approaches for Transformational Change (2011)**

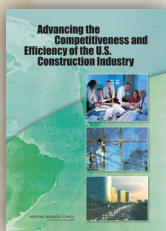
In 2010, General Services Administration's Office of Federal High-Performance Green Buildings asked the National Academies to appoint an ad hoc committee of experts to conduct a public workshop and prepare a report that identified strategies and approaches for achieving a range of objectives associated with high-performance green federal buildings. This report identifies examples of important initiatives taking place and available resources. The report explores how these examples could be used to help make sustainability the preferred choice at all levels of decision making.



### **Sustainable Critical Infrastructure Systems: A Framework for Meeting 21st Century Imperatives (2009)**

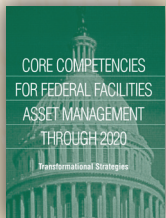
Many of the services Americans take for granted such as water, wastewater, power, transportation, and telecommunications, rely on aging infrastructure systems that are now in need of renovation after 50 to 100 years of use. Using the same processes, practices, technologies, and materials to meet developing needs will likely yield increasing instances of service disruptions, higher operating and repair costs, and the possibility of catastrophic, cascading failures. This report outlines a framework to ensure that ongoing activities, knowledge, and technologies can be aligned and leveraged to help meet multiple national objectives.





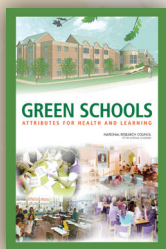
### **Advancing the Competitiveness and Efficiency of the U.S. Construction Industry (2009)**

Construction productivity—how well, how quickly, and at what cost buildings and infrastructure can be constructed—directly affects prices for homes and consumer goods and the robustness of the national economy. This report identifies five interrelated activities that could significantly improve the quality, timeliness, cost-effectiveness, and sustainability of construction projects, and recommends that the National Institute of Standards and Technology work with industry leaders to develop a collaborative strategy to fully implement and deploy the five activities.



### **Core Competencies for Federal Facilities Asset Management Through 2020: Transformational Strategies (2008)**

The *Core Competencies for Federal Facilities Asset Management Through 2020: Transformational Strategies* report served as the basis for the Federal Buildings Personnel Training Act of 2010.



### **Green Schools: Attributes for Health and Learning (2006)**

Evidence has accumulated that shows that the quality of indoor environments can affect the health and productivity of adults and children. One consequence is that a movement has emerged to promote the design of schools that have fewer adverse environmental effects. To examine the potential of such design for improving education, several private organizations requested a review and assessment of the health and productivity benefits of green schools. This report provides an analysis of the complexity of making such a determination and an assessment of the potential human health and performance benefits of improvements in the building envelope, indoor air quality, lighting, and acoustical quality. The report also presents an assessment of the overall building condition and student achievement and offers an analysis of and recommendations for planning and maintaining green schools including research considerations.

## **Member and Staff Rosters**

### **BICE Members**

**Chair:** David J. Nash, MELE Associates, Inc.  
**Adjo A. Amekudzi**, Georgia Institute of Technology  
**James Bagian**, University of Michigan  
**Hillary Brown**, New Civic Works  
**Ross B. Corotis**, University of Colorado  
**Jesus M. de la Garza**, Virginia Polytechnic Institute and State University  
**Arnold Fields**, U.S. Marine Corps (Retired)  
**Edward Gibson**, Arizona State University  
**Peter Marshall**, U.S. Navy (Retired)  
**James B. Porter, Jr.**, Sustainable Operation Solutions

**James Rispoli**, Project Time and Cost, Inc.  
**P. Lynn Scarlett**, Resources for the Future  
**Janice L. Tuchman**, Engineering News Record  
**James P. Whittaker**, Facility Engineering Associates

### **BICE Staff**

**Dennis Chamot**, Interim Director  
**Lynda Stanley**, Senior Program Officer  
**Monica Starnes**, Senior Program Officer  
**Kevin Lewis**, Senior Program Officer  
**Heather Lozowski**, Financial Manager  
**Ann Larrow**, Program Associate  
**Teri Thorowgood**, Administrative Coordinator

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National Research Council: [nationalacademies.org/nrc](http://nationalacademies.org/nrc)