The National Academies of
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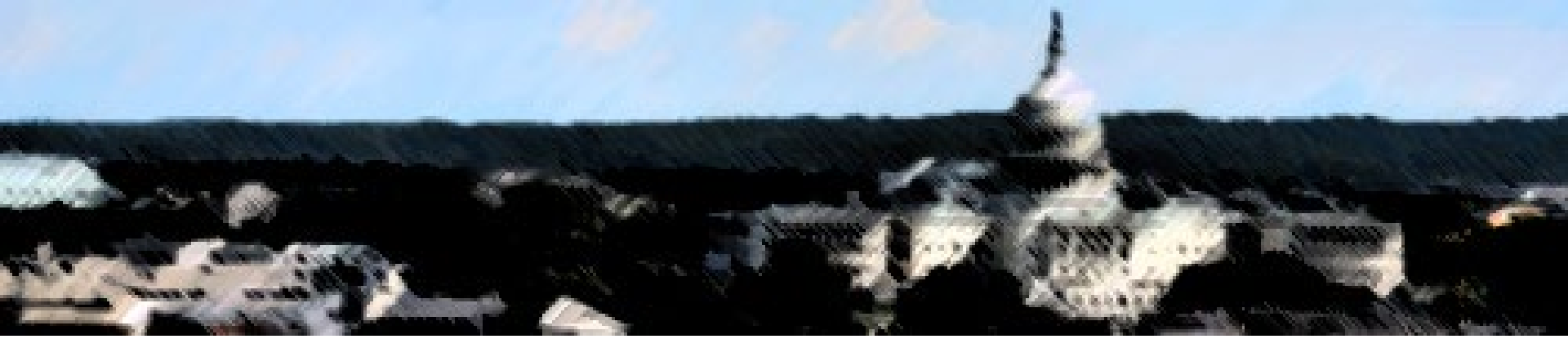
BOARD ON INFRASTRUCTURE AND THE CONSTRUCTED ENVIRONMENT

FEDERAL FACILITIES COUNCIL

reStructuring Federal Facility Asset Management

Cameron Oskvig, Director, Federal Facilities Council



Federal Facilities Council

Cooperative association of federal agencies
with the mission of identifying and advancing technologies, processes and management practices that improve the management, operations and evaluation of federal facilities throughout life cycle

Established in 1953
Sponsored by 24+ federal agencies
Large diversity by agency, mission, function, & culture

Sponsor Agencies

- Agricultural Research Service
- Department of the Air Force
  - —Office of the Civil Engineer
  - —Air National Guard
- Department of the Army
  - — ACSIM
  - —Army Corps of Engineers
- Department of Commerce:
  - —Office of Real Property Services Estate
  - —National Oceanic and Atmospheric Admin.
- Department of Energy
  - —Office of Acquisition & Property Management
  - —Office of Environmental Management
  - —Office of Science
  - —National Nuclear Security Administration
- Department of Health and Human Services
  - —Indian Health Service
  - —National Institutes of Health
- Department of Homeland Security
  - —Science & Technology Directorate
  - —Customs and Border Protection
  - —U.S. Coast Guard
- Department of Interior
- Department of the Navy
- Department of State
- Department of Veterans Affairs
- General Services Administration
- National Aeronautics & Space Administration
- Office of the Director of National Intelligence
- Smithsonian Institution
- Washington Headquarters Services (DOD)

FFC Focus Areas/Committees

FFC Oversight Committee

Senior representatives of sponsor agencies

Chair:
James Rispoli, PE

Vice-Chair:
George Lea, US Army Corps of Engineers

Sustainable Acquisition, Design & Construction

Addresses technical, administrative and policy issues associated with acquiring, planning, designing, and constructing federal facilities that are physically, socially, economically, and environmentally sustainable.

Sustainable Operations & Maintenance

Addresses technical, administrative, sustainability, and policy issues associated with the operation, maintenance, and repair of federal facilities.

Real Property Inventory, Planning, and Transactional Real Estate

Address technical, administrative, and financial issues associated with on data capturing, accounting, and reporting of federal real property, and the transactional, financial, and auditing aspects of real property

Cyber and Physical Security and Hazard Mitigation

Addresses issues, means, and methods to effectively protect federal facilities and the people using them from multiple hazards, both natural and manmade.

Workforce and Organizational Performance

Addresses processes and practices for developing and retaining a workforce with the core competencies, knowledge, skills, and abilities required to effectively manage federal facilities portfolios now and in the future.

2020 Topics

- **Practices for Facility Condition Assessment - Measuring Performance vs. Condition**

  Investigation of the costs and value for various methods of condition assessment. This would include engineered assessments, surveyed assessments or combination and evaluation of in-house versus contracted. The examination may also include review of tools supporting condition assessment such as CMMS, SMS, cost estimation, etc.

- **Digitization and Technology Adoption in Facilities Planning and Management**

  Issues like artificial intelligence, business intelligence, machine learning, internet of things, etc. are all very hard to process. Not only understanding these technologies, but how to adopt, apply and incorporate these technologies within the context of managing a facilities organization where it will ultimately create value for the organization is daunting for facilities managers. What are the "Advantages to Digitizing Federal Facilities?"

- **Messaging the Risk to Lack of Investment in Facilities and Actions that Can Improve Sustainability and Bring Down Lifecycle Costs**

  How do we get help in communicating and developing recognition in the risk to unsustainable investment in the maintenance, repair, and recapitalization of critical infrastructure? The key is in messaging…

- **Comparison of Facilities Cost Data**

  In addition to commercially available cost data, such as RS Means, what other facilities cost data have been developed by federal agencies in support of their facilities management such as for condition assessment, maintenance planning, and capital project planning.

Other 2020 Topics

- Facilities during and after COVID-19
- Skilled facilities workforce supply chain
- Technology adoption in construction and facility management
- Cataloguing of agency real property authorities
- Communicating America's infrastructure investment for building better
- Energy Master Planning for Resilient Public Communities
- Managing cyber Security of operational technology
- Managing Critical Infrastructure Risk
- O&M planning for Scientific Facilities and Goals

Board on Infrastructure and the Constructed Environment

"advises the executive and legislative branches of government, other governmental and private sector …organizations, and the general public on questions of technology, science, and public policy applied and their relationships between the constructed and natural environment."

Established in 1946 as the Building Research Advisory Board

The National Academies of
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BICE Vision Statement

Promoting research and strategic thinking that inspire society and foster built environments that enhance life quality and sustainable communities

BICE Members

Chair:

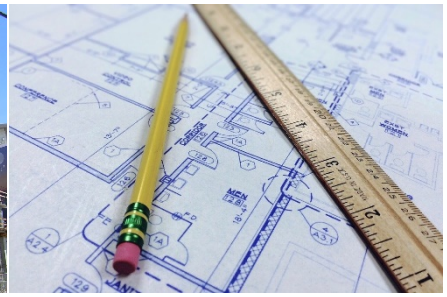
Thomas Bostick [NAE], RIDGE-LANE Limited Partners

Members:

Stephen Ayers, The Ayers Group
Sanjiv Gokale, Vanderbilt University
David Haun, Haun Consulting
Chris Poland [NAE], Chris D Poland Consulting Engineer
James Rispoli, North Carolina State, Chair of the FFC
Dorothy Robyn, Boston University Institute for Sustainable Energy
Sharon Wood, University of Texas
David Goodyear [NAE], ret. SVP Chief Bridge Engineer, Ty Lin
Andrew Persily, National Institute of Standards and Technology

BICE Communities

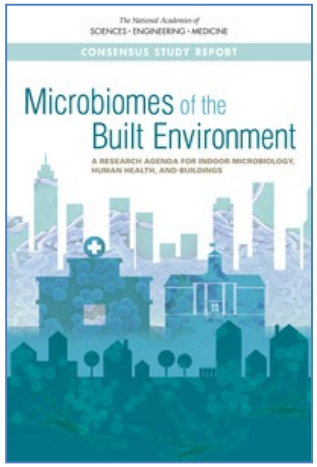


- Managers and Executives involved with all aspects of Federal Real Property Ownership (GSA, NAVFAC, Army Corps, DOE, VA, DOI, NASA, DHS, Commerce… ~24 agencies)
- GAO, CBO
- Professional Societies Interested in Engineering Design and Management of Buildings (e.g. AIA, ASCE, IFMA)
- Architects, Civil Engineers, Asset and Facility Managers, Capital Planners, Construction Professionals, Building Systems Engineers
- Codes and Standards making bodies
- Congressional committees and staff

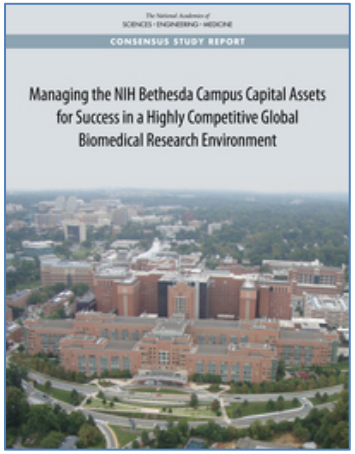
Board on Infrastructure and the Constructed Environment (BICE)

Focuses on the technology, science, and public policy and their relationships between the constructed, natural, and social environments



Recent studies:

- *Microbiomes of the Built Environment: A Research Agenda for Indoor Microbiology, Human Health, and Buildings*
- *Assessing the Capital Infrastructure Needs of the National Institutes of Health*
  - *+$550M in extra appropriations*
- *Facilities Staffing Requirements for the Veterans Health Administration–Resource Planning and Methodology for the Future*

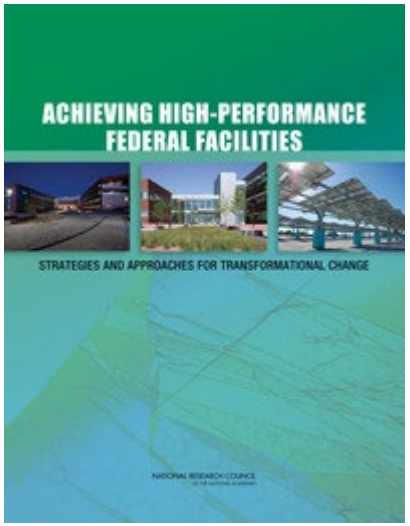


Current BICE Consensus Studies

- A Strategy for the Business Case for Renewal of Federal Facilities
  - FFC Sponsored
- A Review Project Management at DOE's Environmental Management Program
  - NDAA; Multiple GAO reports issued regarding DOE-EM
- Review of Methods for Setting Building and Equipment Performance Standards
  - Peer review of analytical methods employed by DOE-EERA in setting "standards regulations"

Past Consensus Studies

- Climate Change, the Indoor Environment, and Health (2011)
- Energy-Efficiency Standards and Green Building Certification Systems Used by the Department of Defense for Military Construction and Major Renovations (2013)
- Achieving High-Performance Federal Facilities: Strategies and Approaches for Transformational Change (2011)
- Sustainable Critical Infrastructure Systems: A Framework for Meeting 21st Century Imperatives: Report of a Workshop (2009)
- Green Schools: Attributes for Health and Learning (2007)
- Green Healthcare Institutions: Health, Environment, and Economics: Workshop Summary (2007)



Impacts

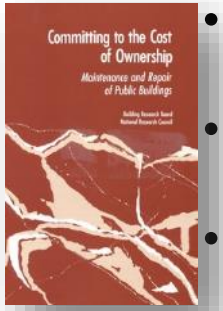
- Review of infrastructure **strategies**, and facility operations practices (project and/or construction management, cost estimation and capital planning, and facility management)
- Guidance on budget preparation and policy making at the federal level for real property
- Recommendations and adoption of performance and design standards
- Advice for infrastructure related research or policy (e.g. NIST, EPA, GSA, DOI, DOE, VA, USACE, National Laboratories)
- Workforce development and training for facilities operations and maintenance
- Support for policies decisions regarding how design and operations affect occupants, users, or economics

Natural and technological hazards impacts

- Assessment of the need for a large-scale test facility for extreme winds
- Developing research agendas for fire and earthquake engineering
- Program assessment for blast mitigation and physical security

BICE Work with the Federal Facilities Council

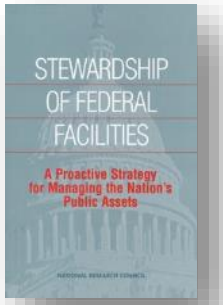
Series of reports on best practices for procuring federal facilities as well as re-investing in the enormous capital stock owned by the Federal government. Reports have guided budget preparation and policy making at the federal level.

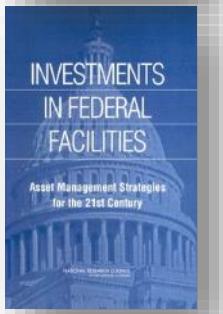


- ***Committing to the Cost of Ownership*** – 1990, M&R resourced at 2-4% of portfolio replacement value
- ***Stewardship of Federal Facilities*** – 1998, framework for strategic planning
- ***Outsourcing Mgt for Acquisition*** – 2000, guidance for outsourcing while maintaining oversight and management capabilities

- ***Asset Mgt Strategies for 21st Century*** – 2004, application of private best practice to Federal assets
- ***Core Competencies for Federal Facilities Asset Mgt*** – 2008, evolution of managerial skill sets

- ***Predicting Outcomes of Investments in M&R of Federal Facilities*** - 2012
- ***A Strategy for Applying the Business Case for Renewal of Federal Facilities*** –2020





Federal Facilities Asset Management

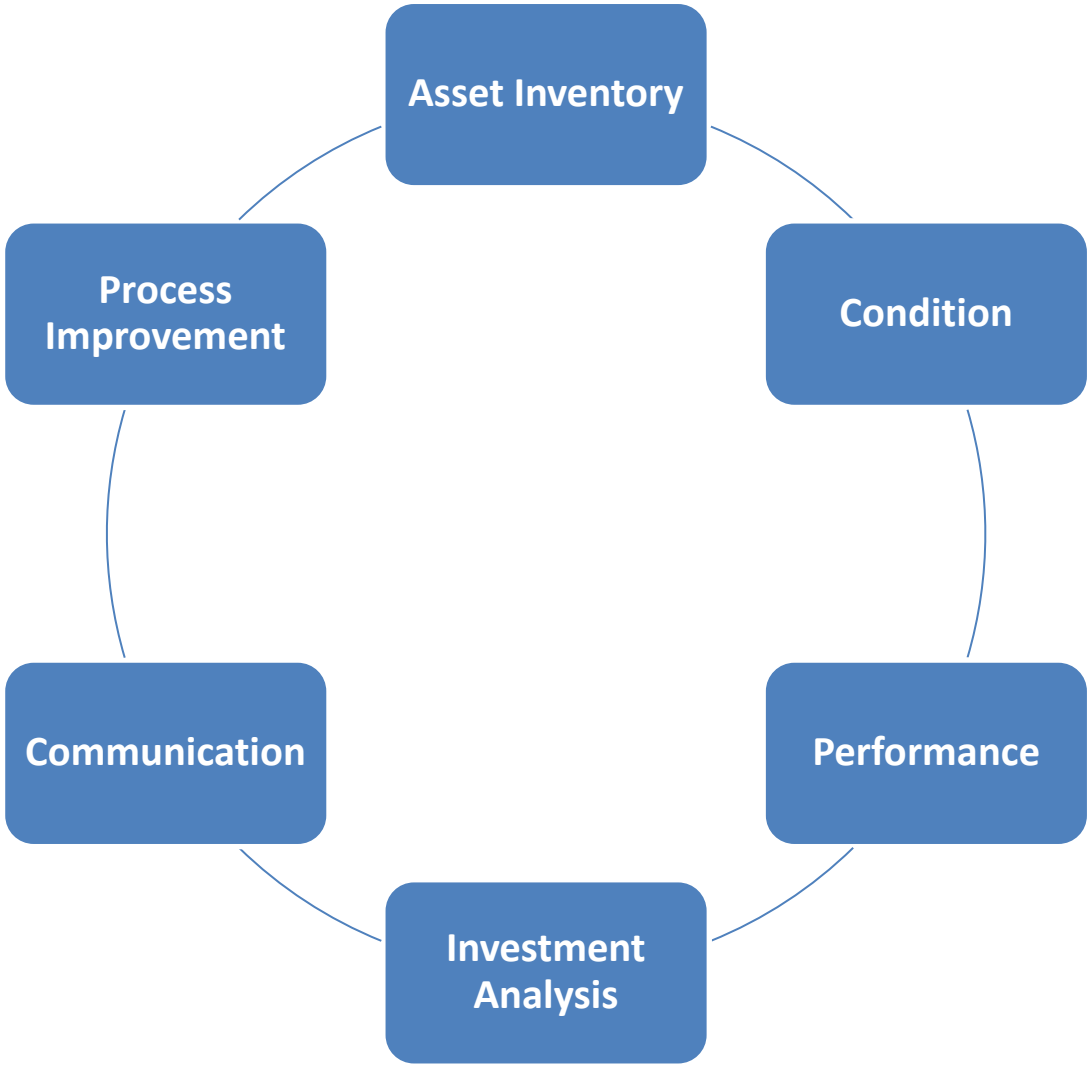
- **This is a journey**
  - Asset management objectives will vary by agency and over time within an agency
  - Agencies want to be good stewards of money
  - Various levels of maturity in different program areas

- **Business Case for Asset Management**
  - Can't afford to not do it
  - Economic and performance improvement benefits
    - Proactive Planning
    - Cost-effective maintenance strategies to prolong the assets' useful life
  - Risk Management

Federal Facilities Asset Management

- Communication (roles, needs, and expectations of stakeholders)
  - (1) audience identification,
  - (2) message design,
  - (3) message delivery, and
  - (4) data
- Factors that shape communication
  - Infrastructure conditions
  - Funding levels
  - Mission requirements
  - Policy
  - Political considerations

Federal Facilities Asset Management



Federal Facilities Asset Management

- **Asset Inventory**
  - Data management FRPP
  - What level of detail / taxonomy / how to measurement of SF
  - Location (horizontal and vertical)
  - As-built / BIM / Electronic maintenance manuals
  - PRV / CRV
- **Condition**
  - Methodologies for condition assessment
  - Cost estimation
  - Operations and Maintenance required

Federal Facilities Asset Management

- **Performance**
  - Criticality / MDI
  - Actual Cost
  - Function
  - Utilization
  - Mission impact
  - Health and Safety
  - User / Occupant impact (productivity, health)
  - Other risk (climate, cyber, man-made)
  - Enterprise Management
  - Energy Management

Federal Facilities Asset Management

- **Investment Analysis**
  - Maintenance Strategies - Do nothing/Minimum, Maintain, Rehabilitate, Renew, Dispose; Reliability based
  - Optimum investment point for investment
  - Goals for organization tied to capital planning / master planning; Prioritization methodologies of capital projects

- **Communication of results**
  - Sustainment Management models
  - Degradation
  - Budget dependent scenarios

Federal Facilities Asset Management

- **Process improvement**
  - Expanding or enhance inventory;
  - Calibrating the default asset models;
  - Developing new asset models, if needed;
  - Including other agency programs;
  - Developing or enhance data management program (e.g. mapping, real time performance)
  - Asset management plan documents
  - Adding objectives and measures based on stakeholder feedback;
  - Evaluating the use of other agency-supported software that may offer additional analysis and machine learning
  - Real property business processes
  - Technology adoption

Federal Facilities Asset Management

- **Benefits**
  - Financial
    - Financial savings across the life-cycle,
    - Managed and lessened user disruption
    - Optimize resources
    - Improved sustainability, and resilience
  - Manage Risk
    - Understanding of risk exposure levels and distribution, and the ability to manage
    - A process to measure and manage involuntary risk exposure across the entire asset class
    - Fewer impacts to mission and damages to assets
  - Decision Support
    - Enhancement of data-driven decisions that support agency and executive objectives
    - Reduce expenses and optimize investments for assets at any point in the asset life-cycle
    - Reduced adverse economic impacts to users, private enterprise, and communities
    - Reduce broader economic impacts associated with asset failures
    - Support sustainability and resilience goals