Workshop on Next Steps in Estimating Facility Renewal Costs

WEDNESDAY, SEPTEMBER 10, 2025

8:00–8:55   **Breakfast**
If your institution does not permit complimentary meals, you are welcome to visit the NAS cafeteria on the lower level.

9:00–9:15   **Welcome and Housekeeping**
Dr. Sarah Slaughter (NAE and Workshop Chair)**
Dr. Kimberly Budil (Lawrence Livermore National Laboratory)**
Brittany Segundo (NASEM)

9:15–9:30   **Why We're Here and Why it Matters**
Jack Dempsey (Lindahl Reed, Strategies to Renew Federal Facilities committee member)
Pete Lufkin (Pomar Lane)

9:30–10:45   **Opening Plenary: Strategic and Mission Value of Facilities**
Functional adequacy, adaptability over time, repurposing for changes in use, benefits (e.g., operational efficiency, sustainment, risk management), local-level mission impacts.
*Moderated by **John Conger** (Conger Strategies and Solutions)*
Michael McAndrew (Former Department of Defense)
James McConnell (NNSA)

10:45–11:05   **Break**

11:05–12:20   **Session 1: The Boundaries of Renewal**
*Moderated by **Eric Dillinger** (Woolpert)*
Ellen Crews (Past Chair of Construction Specifications Institute)
Gary Walker (Seattle Children's)
Lucia Garsys (Siela Strategies)
Skip Vaughn (American University; Formerly NIST)

12:20–1:15   **Lunch Break**
If your institution does not permit complimentary meals, you are welcome to visit the NAS cafeteria on the lower level.

1:15–3:10   **Session 2: Methods for Estimating Renewal Costs**
Economic depreciation (including geometric), recapitalization, condition assessment/deferred maintenance, case studies.
*Moderated by Dr. **Anand Desai** (Clarivate)*
Jay Janke (DUSDI&E)

**indicates speaker is virtual

Pete Lufkin (Pomar Lane)

Gowri Srivinasan (LANL)**

Dan Sichel (Wellesley)

3:10–3:25   **Break**

3:25–4:15   **Session 2 continued: Methods for Estimating Renewal Costs**
Economic depreciation (including geometric), recapitalization, condition assessment/deferred maintenance, case studies.

*Moderated by **Peter Lufkin** (Pomar Lane)*

Dylan Schmerer (LLNL)

4:15–5:00   **Day 1 Debrief**
Committee members

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8:00–8:55   **Breakfast**
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9:00–9:10   **Welcome Back and Housekeeping**

Dr. Sarah Slaughter (NAE and Workshop Chair)**

9:10–10:40   **Session 3: Translating Theory to Practice**
Exploring a case study in state-of-the-art service life estimation, research on depreciation, user-oriented depreciation.
*Moderated by Dr. **Michael Eriksen** (Purdue University)*

Michael Ewert (JLL)**

Martine Combal (JLL)

Yann Palmore (JLL)

Peter Scanlon (JLL)**

Jim Barlow (JLL)

10:40–10:55   **Break**

10:55–12:25   **Session 4: Data Resources and Innovations**
Emerging data and analytics, such as the Army Corps of Engineers assessment database.
*Moderated by Dr. **Michael Grussing** (U.S. Army Corps of Engineers)*

Mark Arnone (Amazon Web Services)

Dr. Deniz Besiktepe (Purdue)

Dr. Louis Bartels (U.S. Army Corps of Engineers)

12:25–1:30   **Lunch Break**

If your institution does not permit complimentary meals, you are welcome to visit the NAS cafeteria on the lower level.

1:30–2:30   **Session 5: Making it Matter**

*Moderated by **Craig Crutchfield** (Former U.S. Office of Management and Budget)*

Cash Fitzpatrick (NNSA)

David Haun (Former U.S. Office of Management and Budget)

Jack Dempsey (Lindahl Reed)

2:30–4:15   **Session 6: Implications, Insights, and Impact**
Discussion of takeaways between committee members and town-hall session with audience.
*Facilitated by **Cameron Oskvig** (NASEM)*

4:15–4:30   **Concluding Remarks**

Lawrence Livermore National Laboratory

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MEETING ADJOURNED

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PANELIST BIOS

Mark Arnone is national security professional with over 17 years of public service experience in the Legislative Branch and at the Departments of Defense (DoD) and Energy (DOE). Prior to joining amazon Web Services (AWS), Mark served at DoD as senior advisor to the Vice Chairman of the Joint Chiefs of Staff (VCJCS), Gen. John E. Hyten (USAF, ret.) and Admiral Christopher W. Grady respectively. Mark advised the VCJCS on nuclear deterrence, National Laboratory, military requirements, technology, and appropriations and acquisition matters. In Congress, Mark served as a Professional Staff Member (PSM) with the House Appropriations Committee, Subcommittee on Energy and Water Development. As PSM, he managed oversight of $20 billion in annual appropriations for DOE and the National Nuclear Security Administration (NNSA). This included high performance computing, fusion, quantum, artificial intelligence, and research development programs at Los Alamos, Sandia, and Lawrence Livermore National Laboratories and plants and sites. While at the DOE, Mark served as Chief of Staff for the Office of Defense Programs—DOE's largest program office with $7 billion in annual appropriations. In this role, Mark led teams responsible for business operations, human capital management, and security/logistics while advising military and civilian leadership. He also previously served as NNSA's Acting Director for Congressional Affairs where he worked with Congress to increase NNSA funding and authorities. This included securing congressional approval for the renewal of the United States/United Kingdom Mutual Defense Agreement. Mark's prior experience includes serving on the staff of U.S. Senator Frank R. Lautenberg (NJ) and the Secretary of Homeland Security.

Jim Barlow is a Solutions Architect at JLL Technologies. Jim is responsible for helping clients leverage their use of technologies and solutions. He works closely with clients to understand their current and future requirements and then produces Solution Designs and Roadmaps to match these requirements. Jim is responsible for regularly connecting with clients to ensure JLLT's solutions and teams are meeting customer success metrics. He regularly attends QBRs / business review meetings, keeping customers current with ongoing and future development of their specific solutions. Jim joined JLLT in April 2020. Previously, he worked at The Smithsonian Institution where he served as Solution Architect, expanding their IBM TRIRIGA implementation to 30+ applications. He has also provided business transformation services through several large consulting firms. Jim was an early adopter of facilities management technologies, with 25+ years of experience ranging from custom development, process transformation, software configuration, and business analytics. He has led some of the industry's largest business transformation projects spanning both commercial and public sectors. These clients include five-Fortune 100 companies, most of the Legislative Branch of the U.S. Government, two state governments, 11 federal civilian agencies, and two defense agencies. He brings a unique blend of domain experience with an understanding of core business needs and has the technical expertise to define, lead, and manage performance of enterprise-tier system implementations. Jim has an extensive business process and software background including portfolio, lease management, space and CAD management, assets, readings, demand and preventive maintenance, capital planning, and builder tools.

Dr. **Louis (Buddy) Bartels** (P.E.) is a Senior Research Civil Engineer and Principal Investigator at the U.S. Army Corps of Engineers' Construction Engineering Research Laboratory (CERL). With over 15 years of experience at CERL, Buddy specializes in infrastructure asset management, lifecycle optimization, and predictive analytics for building facilities. He leads the Facility Investment Analytics (FIA) project, a cutting-edge tool that integrates data-driven algorithms to optimize maintenance, repair, and modernization planning for military installations. Buddy holds a Ph.D. in Civil Engineering from the University of Illinois at Urbana-Champaign, where his research focused on developing algorithms to predict facility component failures. A licensed Professional Engineer in Tennessee, he has authored numerous publications in the ASCE Journal of Performance of Constructed Facilities, advancing the field of infrastructure endurance and risk-based optimization. Before joining CERL, Buddy served as a Civil Engineer for the Bureau of Indian Affairs and the Department of the Army, as well as an officer in the U.S. Army's 101st Airborne Division. His expertise and leadership continue to drive innovation in sustainable infrastructure management.

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Dr. **Deniz Besiktepe** is an assistant professor in the School of Construction Management Technology at Purdue University Polytechnic Institute. After graduating from architecture school in 2003 and thirteen years of construction and facilities management experience, she received her Ph.D. in Civil Engineering, focusing on Construction Engineering and Management at Colorado State University. Dr. Besiktepe's research interests include facilities management (FM) and built environment, building maintenance, digital twins, condition assessment, decision-making models, and implementing technology and data-driven techniques in the FM area. In addition to her FM research, she has ongoing research efforts in construction management and FM education, workforce development, large language models, and sustainability. She is serving as a PI and Co-PI in research projects funded by National Science Foundation, Department of Housing and Urban Development, ELECTRI International, and Indiana Department of Transportation.

Dr. **Kimberly Budil** sets the strategic vision for Lawrence Livermore National Laboratory and exercises broad delegated powers to ensure successful execution of programs and operations to enhance national security through application of cutting edge science and technology and to maintain an outstanding and multidisciplinary workforce. She leads the development and implementation of the Laboratory's scientific vision, goals and objectives and serves as the Laboratory's highest-level liaison with the Department of Energy, National Nuclear Security Administration, the Lawrence Livermore National Security, LLC (LLNS) Board of Governors, the University of California and other government, public and private organizations. Budil leads a workforce of more than 8,700 employees and manages an annual operating budget of approximately $3 billion. Along with the directors of Los Alamos and Sandia national laboratories, she shares the responsibility of providing the United States government with an annual institutional assessment of the safety, security, and effectiveness of the U.S. nuclear weapons stockpile and enterprise. She is the 13th director of the Laboratory and serves as president of LLNS. Budil has held roles of increasing management responsibility at the Laboratory, most recently serving as principal associate director for Weapons and Complex Integration. Budil served as a detailee twice in Washington, D.C and was Vice President for National Labs at theUniversity of California Office of the President. Shecurrently serves on several boards and participates innumerous professional and community outreach activities. Budil holds a Ph.D. in engineering and applied science from the University of California, Davis, where she was a Hertz Fellow, and a B.S. in physics from the University of Illinois at Chicago.

Martine Combal is Senior Vice President in the Public Institutions Government and Education Advisory practice and the East Coast regional lead. She joined JLL in January 2017 to support a broad range of clients, including several federal agencies and municipalities. Ms. Combal is currently supporting the U.S. Architect of the Capitol on a Facilities Master Plan and the New York Power Authority on a office acquisition, as well as realty support analysis for the Public Buildings Reform Board. She also has experience with supporting universities to optimize their real estate and structure mixed-use public-private partnerships, such as George Mason University's FUSE project in Arlington, VA. Ms. Combal has extensive knowledge and experience with portfolio optimization, as well as entitlements and strategic public sector acquisitions real property dispositions. Her experience includes negotiating disposition agreements, covenants, leases, and ground leases. Ms. Combal also has extensive experience with the District of Columbia and federal affordable housing programs. Ms. Combal has over 20 years of real estate and urban development experience. Prior to joining JLL, Ms. Combal served as Deputy Director of Real Estate in the District of Columbia Office of the Deputy Mayor for Planning and Economic Development. Previous to that role, she was the Walter Reed Local Redevelopment Authority Director managing the redevelopment of the former Walter Reed Army Medical Center, which will realize 3.1 million square feet of new development and 15 acres of open space. Earlier in Ms. Combal's career in DC Government, she was also the Manager of the Property Acquisition and Disposition Division at the District of Columbia Department of Housing and Community Development where she directed the District's efforts during the 2008 foreclosure crisis to stabilize key.

Ellen Crews is a Fellow and former Chairmen of the Constructions Specifications Institute (CSI), the federal government's construction document standard for the built environment, utilized to for new construction, renewal,

and modernization of federal real property. CSI's MasterFormat® forms the basis and document of record for almost every real property investment within the United States. She is also a past member of ASTM E06 with roles in the development of numerous building performance standards. She has developed design and construction guidelines, standards, and documents across the Department of Defense, Department of Energy, Department of Interior, and Department of State, and numerous public and private sector organizations with a focus on improving the performance of real property and reducing the total cost of ownership. Ellen holds numerous professional designations and registrations in the areas of construction documents, performance standards, facilities, and asset management. She is currently a senior consultant with Woolpert.

James "Jack" Dempsey is Senior Director at Lindahl Reed and Publisher of the AMP Newsletter. He is also the proprietor of the Asset Management Partnership, LLC, which specializes in the advancement, development, and implementation of asset management and digital transformation solutions for asset owners and the asset management professionals that support them. Jack has over 30 years' experience as an asset manager for the built environment; his first 20 years as an Officer and Civil Engineer in the Coast Guard and then later as a Director, Advisor, and Consultant at Definitive Logic, Jacobs, and CDM Smith. In this later capacity he specialized in the development and implementation of technology-enabled asset management solutions for both public and private clients. Jack is also an active thought leader and board member on the national and international stages serving as a member of the US National Academy of Science, Engineering, and Medicine's (NASEM) Board on Infrastructure and the Constructed Environment and as a member and recent convenor of the ISO Technical Committee (TC) 251 for Asset Management representing the United States internationally through an ANSI authorized, ASTM sponsored Technical Advisory Group (US TAG). In addition, Jack remains active in the industry as a Fellow with the Institute of Asset Management (IAM); a Board Member and Senior Fellow at the Asset Leadership Network (ALN); and as a licensed Professional Engineer. He is a licensed Professional Engineer having a bachelor of science in civil engineering from the US Coast Guard Academy, and two masters of science degrees, one in construction management from the University of Washington and one in civil engineering from the University of Illinois.

Michael Ewert, LL.M., is the Senior Managing Director of Global Head of JLLT Advisory. He is an accomplished strategist who blends technology and realestate expertise to drive innovation and business-centric solutions. Ewert is recognized for navigating complex turnarounds and shaping adaptable business models by balancing strategic insight and execution.

Mr. **Cash Fitzpatrick** is the Director of Programming, Analysis, and Evaluation for NNSA (organization code NA-MB-90). In this role, he oversees a range of analytical and policy functional areas including programmatic cost estimating, analyses of alternatives, enterprise modeling, and planning studies for the agency. Cash previously worked for the Office of Cost Policy and Analysis for Defense Programs, DOE's Renewable Energy programs, and the Office of Cost Analysis for the DOE-CFO. Cash holds a BS and a Master's degree in Environmental Engineering from Cal Poly and Massachusetts Institute of Technology, respectively.

Lucia Garsys is a distinguished urban planning professional and Fellow of the American Institute of Certified Planners (FAICP), celebrated for her visionary leadership, expertise in infrastructure, and transformative contributions to both public policy and community development. Her roles in public government range from introducing transparent, modern planning principles in emerging democracies across Eastern Europe to managing a billion-dollar cradle-to-grave capital and operating program. She has a distinctive aptitude for structuring complex public-private partnerships using instruments like pre-paid impact fees, tax increment financing, and private debt tied to future development. Lucia was inducted into the AICP College of Fellows—one of the highest honors in the planning profession—testament to her enduring contributions over 35+ years, her ability to navigate both high-level policy and detailed technical issues, and her talent for building consensus among varied stakeholders. Lucia serves in leadership and advisory positions for the Urban Land Institute and served on the Board for the Infrastructure and

the Built Environment, as well as its working committees. She holds a Masters in Urban and Regional Planning (MURP) from the University of Illinois at Urbana-Champaign.

David Haun had a distinguished 35 year career in the Federal Government, 33 years at the Office of Management and Budget. As Deputy Associate Director, he advised White House and Office of Management and Budget (OMB) officials on policy, program performance and budget issues for the Departments of Homeland Security, Transportation, Justice and the General Services Administration. After retiring in September 2015, David Haun joined Grant Thornton as a Director in its Public Sector practice. He served in both the Security and Defense Business Unit and the Strategy and Performance Improvement Service Line, lending his considerable public sector experience to benefit government agencies of all types. In April 2018, David Haun formed Haun Consulting Inc. He has consulted with the Administrative Office of the US Courts and other Federal government and private sector clients. David also teaches budget and policy seminars with the Government Affairs Institute at Georgetown University. Skilled problem solver, innovative thinker and exceptional leader and mentor, Mr. Haun has expert knowledge of Federal policies, programs and budget processes and is sought out by Federal agency leadership, Congressional staff, and private sector clients.

Jay Janke retired as Deputy Director of Installations Requirements and Management, Office of the Secretary of Defense. Here, Jay was responsible for producing the first-ever Defense Installations Strategic Plan and developing models for forecasting funding requirements for Defense facilities. After retiring, Jay spent five years consulting with several government agencies - to include Coast Guard, Agriculture, State, Defense, and others - concerning funding needs for facilities. After retiring again, Jay spent five years as President of Bay Colony Homeowners Association, where he put into practice some of the theories developed during his career. Prior to his work in the Office of the Secretary of Defense, Jay spent 20 years as an Air Force civilian, first in Air Force Studies and Analysis and then in Air Force Civil Engineering. Jay is a veteran of the US Army.

Peter S. Lufkin is currently managing partner with Pomar Lane, where he focuses on the development of real property cost and risk models. Lufkin has had a long-term consulting relationship with NNSA and LLNL and continues to provide support in evaluating facility cost models. He previously was the founder and chief executive officer of Whitestone Research. Specializing in cost data products and consulting for capital planning, Whitestone was acquired by CBRE in 2013. His 25 years of experience includes development of the Department of Defense Facility Cost Models and the CostLab facility cost simulation system used by many large commercial property owners and government agencies. Lufkin also directed the development of the RISKSCAN capital prioritization tool and BRICKBITS, a residential cost website. He has authored over 90 technical reports and papers and has published in Public Works Management & Policy, Military Engineer, and Facilities Manager. He was also the publisher of the Whitestone Facility Cost References (North American and International editions) from 1995 to 2015. Lufkin did his undergraduate work at the University of California, Berkeley, and has a master's degree in politics and economics from the University of California, Santa Barbara.

Mr. **Michael McAndrew** retired from Department of Defense's (DoD) Senior Executive Service in December 2024 where he served as the Deputy Assistant Secretary of Defense for Infrastructure Modernization and Resilience (DASD(IM&R)). In this capacity, he provided executive leadership on all matters pertaining to the Department of Defense's (DoD) physical infrastructure, to include development and execution of policies, guidance, and procedures for construction, operations, maintenance and repair of DoD's worldwide facilities to enhance and preserve warfighting capabilities and to provide safe working and living conditions for our military personnel and families. His responsibilities also included all matters related to real property maintenance; facility operations; and host-nation programs related to facility construction and management. He performed similar duties under different titles since July 2008. Prior to 2008, Mr. McAndrew served as the Deputy Director, Base Realignment and Closure Directorate, responsible for policy development and oversight of analysis supporting the 2005 Base Realignment and Closure (BRAC) round. He also previously served within the Office of the Secretary of Defense as the Deputy

Director for Housing and Energy and the Assistant Director of Housing, responsible for DoD-wide policy development and issues related to the operation and ownership of government and private-sector housing for military use; and as the Assistant Director for Base Closure and Utilization, responsible for developing policy and procedures for the Department's 1993 and 1995 BRAC rounds.

James McConnell is the Associate Principal Deputy Administrator, a position he has held since December 2021. He is a member of NNSA's executive leadership team, providing advice to the Administrator and Principal Deputy Administrator on programmatic and policy issues. Previously, Mr. McConnell was Associate Administrator for Safety, Infrastructure and Operations, where he was responsible for overall NNSA safety activities, operations, infrastructure, capital planning, packaging and transportation, nuclear materials integration and sustainment & environmental programs for the National Security Enterprise. In addition, he was NNSA's Central Technical Authority responsible for safety policy and interpretation throughout NNSA. Before that, Mr. McConnell was the Deputy Associate Administrator for Infrastructure and Operations. He held several positions within NNSA's Office of Defense Programs, including Assistant Deputy Administrator for Nuclear Safety and Operations. Mr. McConnell was NNSA's first Chief of Defense Nuclear Safety. In that position, he established the office and its functions. Prior to joining NNSA, Mr. McConnell held several senior staff positions at the Defense Nuclear Facilities Safety Board including Deputy Technical Director, Group Leader for the Nuclear Weapons Program, and Site Representative at the Pantex Plant. A former U.S. Navy submarine officer, Mr. McConnell holds a bachelor's degree in electrical engineering from the U.S. Naval Academy and master's degrees in engineering from the Catholic University of America and George Washington University.

Yann Palmore is an Engagement Manager at JLLT Advisory. In this role he serves as an experienced program executive and technical consultant with over 25 years of experience incorporating technology within the built environment to drive operational transformation.

Peter Scanlon works at JLLT Advisory.

Dylan Schmerer is a Technical Facility Analyst at Lawrence Livermore National Laboratory. He studied Economics, Finance, and Data Science at the University of California in Santa Barbara (BA) and Los Angeles (MA). In support of strategic infrastructure planning, budgeting, and communications, Dylan models facility lifecycle costs and equipment risk profiles.

Dan Sichel is the Stanford Calderwood Professor of Economics Emeritus at Wellesley College, transitioning to emeritus status in 2024. He joined the Wellesley faculty in 2012 following many years at the Federal Reserve Board in Washington, D.C. As a Senior Associate Director at the Fed, Dan was part of the management team that guided and oversaw the analytic support provided to the Federal Reserve Board and the Federal Open Market Committee. He also was the staff economist for the Chair of the Airline Stabilization Board established after the terrorist attacks on September 11, 2001. Dan joined the Federal Reserve in 1988 after earning a Ph.D. in Economics at Princeton University. He remained at the Fed until 1993, when he joined the Brookings Institution as a Research Associate. In 1995, Dan was appointed the Deputy Assistant Secretary for Macroeconomic Policy at the U.S. Treasury Department and then returned to the Fed in 1996. He received a bachelor's degree in economics and a master's degree in public policy from the University of Michigan in 1983. Dan's research interests are in economic measurement, economic growth, and technological change. He has published extensively in these areas, including several widely-cited papers on the relationship between information technology and economic growth, the contributions of intangible capital to economic growth, and measurement issues related to high-tech capital goods.

Gowri Srinivasan has worked at Los Alamos National Lab for over 20 years. Prior to that, she worked in industry as a Supply Chain Management consultant. She currently serves as Branch Director in the X Computational Physics Division at LANL. Gowri is the Verification & Validation Program Manager and Artificial Intelligence

coordinator under the Advanced Scientific Computing (ASC) program. She has diverse research and leadership experience spanning the Laboratory's core missions in the Weapons Program and Global Security, the LDRD Program, and external scientific collaborations. Gowri has a PhD in Applied Mathematics from the University of New Mexico.

Skip Vaughn is the Assistant Vice President Facilities at American University with responsibility for approximately 4.5M GSF of facilities and associated infrastructure across 90 acres. He has over 30 years of experience in the built environment, with more than 20 years in design and construction and over 10 years in campus facilities management. Skip's career includes 14 years in the U.S. Coast Guard, 6 years of experience in the private sector as a general contractor and construction manager, and over 18 years of experience working with three federal agencies in the Washington, D.C. area. Skip has served leadership roles in numerous national-level trade organizations, and a member of ISO TC267 Facility Management Standards organization Previous roles include Director, Office of Facilities and Property Management, National Institute of Standards and Technology (NIST), Project Executive, Architect of the Capital, Senior Project Manager GSA.

Gary Walker PE, CHFM, is a highly accomplished Operations Executive with over 30 years of experience in facilities and asset management, 15 years specializing in healthcare environments. He is the Vice President of Facilities and Capital Projects at Seattle Children's Hospital, where he directs a multi-group organization with a $100M operating budget and a $200M annual capital spend. He is currently spearheading a comprehensive asset management system implementation across 3 million square feet and leading the master-planning for a multi-billion-dollar second campus. Prior roles include Executive Director at Stanford Health Care, where he developed a facility operations management system for a network supporting over 12,000 workers and led the operational transition and activation of the 1-million-square-foot New Stanford Hospital. His focus on operational discipline resulted in nine consecutive years of Joint Commission licensing survey compliance with zero non-conformances and a 30% operational cost reduction through strategic workflow redesign. His extensive background also includes leadership roles at the Department of Energy National Ignition Facility and General Motors Proving Ground. Gary holds a B.S. in Mechanical Engineering from the University of Illinois, Urbana-Champaign and is a licensed Professional Engineer in California, Michigan, and Washington, a Certified Facility Manager, Certified Healthcare Facility Manager, and member of the Institute of Asset Management.

COMMITTEE BIOS

Dr. **Sarah Slaughter** (Chair) is the founder and CEO/President of the Built Environment Coalition, a research and education nonprofit focused on community resilience and sustainability. She currently advises government agencies on strategies for improving resilience and sustainability. Previously, Dr. Slaughter was a Visiting Lecturer in the MIT Department of Urban Studies and Planning, the Associate Director for Buildings and Infrastructure in the MIT Energy Initiative (MITEI), and was co-founder and faculty head of the Sustainability Initiative in the MIT Sloan School of Management. Dr. Slaughter was founder and CEO of MOCA Systems, Inc., a software-enabled construction program management company based on the construction simulation software system Dr. Slaughter developed in her MIT research. Before founding MOCA, Dr. Slaughter was a MIT professor in the Department of Civil and Environmental Engineering, and earlier, was a professor of Civil and Environmental Engineering at Lehigh University. She received her Doctorate, Master, and Bachelor degrees from the Massachusetts Institute of Technology. Dr. Slaughter currently an elected member of the National Academy of Engineering, and the National Academy of Construction. She currently serves as the Co-Chair of the Resilient America Roundtable in the National Academies of Science, Engineering, and Medicine (NASEM). Dr. Slaughter previously served on the Green Building

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Advisory Committee (GBAC) to advise the U.S. General Services Administration and the Federal government on the sustainability transformation of the federal portfolio of built facilities.

John Conger is President of Conger Strategies and Solutions, Director Emeritus of the Center for Climate and Security, Senior Advisor to the Council on Strategic Risks, and a Senior Advisor at WestExec Advisors. Formerly, Mr. Conger served in senior positions at the Department of Defense, including Principal Deputy Under Secretary of Defense (Comptroller), with oversight of the DoD budget, and Acting Assistant Secretary of Defense (Energy, Installations and Environment). In the latter role, Mr. Conger oversaw a portfolio that included management of nearly a trillion dollars of real property, base closure, environmental management, energy resilience and climate change. Previously, Mr. Conger spent more than a decade on Capitol Hill in multiple personal office and committee staff roles. He has a B.S. and an M.S. in Aeronautics and Astronautics from the Massachusetts Institute of Technology and an M.A. in Science, Technology and Public Policy from the George Washington University.

Craig Crutchfield served for over 30 years in the Executive Office of the President across six Administrations. As a civil servant in the Office of Management and Budget (OMB), he focused on natural resource issues related to the Department of the Interior (DOI), including national parks, public lands, conservation, and tribal relations. Federal facilities became a particular focus, given the number and variety of assets managed by DOI. Craig worked on an OMB team to prepare the 1997 Capital Programming Guide, which was incorporated into OMB Circular A-11 to provide government-wide guidance on planning, budgeting, acquisition and management of capital assets. He continued to work with other OMB offices to refine this guidance to address such issues as establishing a baseline inventory, instituting regular condition assessments, and setting performance measures. Since retiring in 2021, Craig has done some consulting and much traveling.

Anand Desai is a Principal at Clarivate and Professor of Public Policy Emeritus at John Glenn College of Public Affairs, Ohio State University. His current research interests include developing strategic approaches to policymaking and evaluation of investments in scientific research, development, and innovation. Before joining Clarivate, he was on loan to the US National Science Foundation (NSF) where he served as the Chief Evaluation Officer. As the inaugural head of the Evaluation and Assessment Capability section, his responsibilities included assessing how NSF's investments expand the science and engineering knowledgebase, strengthen the science, technology, engineering, and mathematics workforce, and support the science and engineering research infrastructure. Dr. Desai's research has focused on use-inspired theory and applications of mathematical modeling to evaluative inquiry, facility depreciation and renewal, performance measurement, complex systems analyses and data visualization. At Ohio State University he taught statistics, mathematical modeling, evaluation, and simulation for public policy analysis. He studied mathematics, mathematical statistics, operations research, and policy analysis at universities in India, the United Kingdom, and the United States.

Eric Dillinger is the Managing Director for Consulting Services at Woolpert, Inc., one of the world's largest Architecture, Engineering, and Geospatial (AEG) firms with responsibility for global consulting activities. Mr. Dillinger currently leads the Performance Management and Measurement Working Group (WG) for the International Standards Organization (ISO) TC 267 Facilities Management. His previous experience includes developing funding forecasting methodologies for public and private sector clients, including Value Based Budgeting© and the Strategic Asset Investment Model© (Strategic AIM), public-private-partnership strategies for public sector organizations and the integration of organizational performance objectives into funding prioritization methodologies ranging from O&M 20/20 for USACE Civil Works to the prioritization strategies for the Department of Defense. Mr. Dillinger is a member of ISO TC 267, the International Facility Management Association (IFMA) and a founding member of the IFMA Airport Facilities Council, recipient of the American Airlines Chairman's Award in 2000, IFMA Chairman's Award in 2015, originator of the term Return on Perception™, and contributor to A Practical Guide to Neural Networks (1991), Preventive Maintenance for Higher Education Facilities: A Planning & Budgeting Tool for Facilities Professionals, (1992), and Urban Design and the Bottom Line: Optimizing the Return on Perception, (2008). Prior

relevant work with the National Academies of Science, Engineering, and Medicine include Technical Assessment of the Capital Facility Needs of the National Institute of Standards and Technology, (2023), Investments in Federal Facilities; Asset Management Strategies or the 21st Century, (2004), and Stewardship of Federal Facilities, (1998).

Michael Eriksen is a Professor of Economics and Director of the Dean V. White Real Estate Finance Program at Purdue University. Dr. Eriksen research focuses on how government policies affect how individuals live and businesses operate. His research has appeared in the top academic journals in economics, finance, and real estate, and been referenced in the New York Times, NPR's Frontline, US Congressional testimony, and the Economic Report of the US President. He is on the editorial board of the Journal of Housing Economics and a fellow of the Weimer School for Advanced Studies in Real Estate and Land Economics. Dr. Eriksen received his Ph.D. in Economics from Syracuse University.

Dr. **Mike Grussing** is a research civil engineer at the US Army's Engineer Research and Development Center - Construction Engineering Research Laboratory. His research focuses on condition assessment, degradation modeling, and asset management processes for building facilities and supporting infrastructure systems. He leads the research, modeling and engineering development of various decision support tools collectively called the Sustainment Management System, used by the Department of Defense and other Federal agencies to assess and quantify current condition, forecast future condition, measure key performance indicators, and identify sustainment, restoration, and modernization investment requirements for over 2 billion square feet of facilities and other infrastructure. Dr. Grussing earned his B.S., M.S., and Ph.D. in Civil Engineering all from the University of Illinois at Urbana-Champaign. He is a member of the Society of American Military Engineers and a licensed Professional Engineer in the State of Illinois.

Peter S. Lufkin is currently managing partner with Pomar Lane, where he focuses on the development of real property cost and risk models. Lufkin has had a long-term consulting relationship with NNSA and LLNL and continues to provide support in evaluating facility cost models. He previously was the founder and chief executive officer of Whitestone Research. Specializing in cost data products and consulting for capital planning, Whitestone was acquired by CBRE in 2013. His 25 years of experience includes development of the Department of Defense Facility Cost Models and the CostLab facility cost simulation system used by many large commercial property owners and government agencies. Lufkin also directed the development of the RISKSCAN capital prioritization tool and BRICKBITS, a residential cost website. He has authored over 90 technical reports and papers and has published in Public Works Management & Policy, Military Engineer, and Facilities Manager. He was also the publisher of the Whitestone Facility Cost References (North American and International editions) from 1995 to 2015. Lufkin did his undergraduate work at the University of California, Berkeley, and has a master's degree in politics and economics from the University of California, Santa Barbara.