

Deep Energy Retrofit of Buildings
September 15-16, 2016

Speakers List



Mr. Cameron Oskvig is a professional engineer with over 18 years' experience in the planning, design, construction, and management of constructed infrastructure. In 2014, Mr. Oskvig joined the National Academies of Sciences, Engineering, and Medicine as the director of the Federal Facilities Council (FFC) and the Board on Infrastructure and the Constructed Environment (BICE). In the role of FFC director, Mr. Oskvig supports the annual technical activity focused on identifying and advancing technologies, practices, and policy for the improvement of federal facilities, from planning through disposal. Before coming to the Academies, Mr. Oskvig, worked as a consultant for Booz Allen Hamilton, providing program-level asset management services to federal clients. His expertise is in facilities management, advanced data analytics, strategic asset management, portfolio decision analytics, economic business case analysis, and facility performance measurement.



Dr. Alexander Zhivov is a Senior Research Engineer at the US Army Engineer Research and Development Center, Construction Engineering Research Laboratory. He holds a Ph.D. degree in mechanical engineering from Central Research and Experimental Design Institute for Industrial Buildings, Moscow and the Research Institute for Labor Protection, Leningrad and an MBA degree from University of Illinois at Urbana-Champaign. Throughout his career, he has worked in research, engineering, and management in the areas of air movement in buildings, industrial ventilation, energy assessments and analysis of buildings and building communities, and building performance optimization. His current projects support the Army by promoting improved energy efficiencies, better strategic implementation of new building technologies and major building renovations, improved HVAC systems, renewable energy technologies, modernized heating plants, and energy master planning and modeling/analysis tools for installation operations. Dr. Zhivov has been an Operating Agent (project manager) for the International Energy Agency ECBCS Project Annex 46 "Holistic Assessment Toolkit on Energy Efficient Retrofit Measures for Government Buildings." Since 2012, Dr. Zhivov has been a co-operating agent for the IEA EBC Annex 61, "Development and Demonstration of Financial and Technical Concepts for Deep Energy Retrofits of Government/Public Buildings and Building Clusters." Dr. Zhivov has authored more than 200 technical publications and contributed to National and International Ventilation and Energy Guides and Standards.



Dr. Timothy D. Unruh is Program Manager for the US Department of Energy (DOE) Federal Energy Management Program (FEMP), which falls within the DOE Office of Energy Efficiency and Renewable Energy (EERE). He oversees the implementation of policy and actions that result in energy efficiency implementation, renewable energy adoption, and reductions in energy and water use in Federal government operations. Dr. Unruh was instrumental in guiding the department through a streamlining of the Super ESPC contractor selection process. Dr. Unruh is working to harmonize FEMP with the other research programs within the Office of Energy Efficiency and Renewable Energy where he believes that FEMP can become a strategic deployment program for developed technologies. This deployment in Federal Facilities will provide the leadership in energy efficiency that will encourage the private sector to also adopt the technology and grow an awareness of its potential. Dr.

Unruh has a doctorate, master's, and bachelor's degrees in electrical engineering from Wichita State University in Wichita, KS, USA.



Mr. Kevin Kampschroer is the Chief Sustainability Officer, Senior Climate Adaptation Official, and the Director of the Office of Federal High-Performance Green Buildings at the US General Services Administration (GSA). He has created the framework for which GSA responds to the challenges of greenhouse gas emissions reductions, and climate change (both mitigation and adaptation). His work on the American Recovery and Reinvestment Act's achieved the law's mandate to move GSA's Federal building inventory toward high-performance green buildings. He has also fostered a commitment to performance measurement and public reporting for all projects: to date they overwhelmingly (95%) exceed performance targets. He has devised a challenge for companies to dramatically

improve the government's ability to achieve deep retrofits through Energy Savings Performance contracts—which has doubled the amount of energy conservation from these contracts. His team manages the government's implementation of a comprehensive improvement in the training and certification of facility managers and personnel across the entire Federal government (Federal Buildings Personnel Training Act of 2010).



Mr. Stephen Bonneau has been the Chief of Public Works Division for the IMCOM West Region and (is now) for the Central Region since February 2007. As Regional Public Works Functional Integrator, he provides Public Works (PW) support to the Region Director and staff, and technical support to the DPWs of the 20 Army Garrisons in the IMCOM Central Region. He has been the Public Works director at garrisons in Germany and Korea, and PW division chief for Engineering, Master Planning, and Operations and Maintenance. His USACE experience is as Readiness Program Manager at HQUSACE, and Project Manager in Honolulu and Far East Districts. His has an undergraduate degree is from USAMA, West Point, a Masters from USC, and Professional Engineer registration in Civil engineering.



Ms. Christine Harada is the Administration's Federal Chief Sustainability Officer at the White House Council on Environmental Quality. In this capacity, she is responsible for promoting environmental and energy sustainability across Federal Government operations. The Office of Federal Sustainability works collaboratively with the Executive Office of the President and each of the Federal agencies to implement the President's Executive Orders on Federal Sustainability and the GreenGov initiative.

Before her appointment, Christine served as the Associate Administrator for Government-wide Policy at the US General Services Administration, where she helped provide government-wide policies and guidance to enable the sustainable and efficient use of assets, effective acquisition leadership, identity management, and sound information management.

Previously, Christine worked at The Boston Consulting Group and Booz Allen Hamilton, where she was a consultant to Fortune 500 and public sector clients. During her tenure, she worked with corporate, not-for-profit and government entities on key strategic, operational, and organizational issues across a range of sectors, including health care, international relief and development, aerospace, and the federal government. She led major projects to generate performance improvements through process streamlining, enhanced customer service, improved deployment of technology, more effective marketing programs, and strengthened organizational effectiveness.



Mr. Wayne Stoppelmoor, Jr. is Industry Standards Manager – Energy Efficiency at Schneider Electric. He has been with Schneider Electric for 28 years, where he has also held positions in product engineering, intellectual property, and product certification. Wayne is a Certified Energy Manager and serves as a voting member of ASHRAE SSPC 90.1 (Energy Standard for Buildings Except Low-Rise Residential Buildings), ASHRAE 90.2 (Energy Efficient Design of Low-Rise Residential Buildings), ASHRAE 189.1 (Standard for the Design of High-Performance Green Buildings). He is the chair of ASHRAE SSPC 100 (Energy Efficiency in Existing Buildings) and ASHRAE SPC 214 (Standard for Measuring and Expressing Building Energy Performance in a Rating Program). He also actively participated in the ICC / IgCC Development Energy Working Group.



Mr. Mark Zimmermann is a former head of Empa's Building Science and Technology Lab and Swiss representative in the IEA buildings research program. He was Operating Agent of IEA ECB Annex 50 "Pre-fabricated Systems for Low Energy Renovation of Residential Buildings" project that he is presenting at this workshop. Mr. Zimmermann is well-known in the international research scene in the area of energy efficient buildings and passive houses. He has numerous publications and positions of trust in various research projects and organizations.



Cyrus Nasser is a manager in the US DOE's Federal Energy Management Program. He has over 35 years of experience in building and equipment energy efficiency standards, building codes, appliance and building legislatively mandated rulemaking, fleet petroleum conservation requirements, and FEMP special projects. He is the chair of the ASHRAE International Standards Advisory Committee (ISAC). He is also a member of ASHRAE's Standards Committee and a member of that committee's Planning, Policy, and Interpretations Subcommittee (PPIS), as well as past chair of that committee's Code Interaction Subcommittee (CIS). He has chaired many Technical Committees and Standard Project Committees, and has served as an ASHRAE Distinguished Lecturer. Mr. Nasser served as a Subtask B leader of the International Energy Agency's (IEA) Annex 46, "Holistic Assessment Tool-Kit on Energy Efficient Retrofit Measures for Government Buildings," and a Subtasks B and C co-leader of the Annex 61, "Business and Technical Concepts for Deep Energy Retrofits of Public Buildings." He is a member (subcommittee chair) of the International Standards Organization (ISO) Technical Committee 205, "Building Environmental Design." Mr Nasser holds a BS in Mechanical Engineering from Auburn University, MS in Mechanical Engineering from George Washington University and has completed Doctor of Science courses at George Washington University.



Mrs. Kirsten Englund Thomsen is MSc (CivEng) from the Technical University of Denmark (DTU). In the years 1981-98, she worked at the Institute for Building and Energy, DTU, the last 5 years as an associate research professor. From February 1998, she has been at the Danish Building Research Institute, SBI at Aalborg University Copenhagen in the Department of Energy and Environment as a senior researcher. The key research qualifications are in the fields of low energy buildings, energy savings in buildings, electricity consumption, demonstration projects, highly insulating glazing, renewable energy, and building energy analyses. Furthermore, she has worked with analyses of multidimensional thermal fields, e.g., investigations of thermal bridges in windows and foundation constructions. She is involved in developing methods for energy requirements in Danish building legislation and certification schemes. She has been a teacher for many years at the Technical University of Denmark and at Aalborg University Copenhagen, a teacher of energy consultants, a subtask leader of different EU projects, in which time she has acquired experience in collaboration in EU international projects and with Eastern Europe, and has served as peer reviewer for several international journals and conferences. She has participated in several national and international projects in relation to the implementation of the Energy Performance of Buildings Directive (EPBD). She also participates in many EU and IEA projects e.g., IEA Task 47 "Renovation of Non-Residential Buildings towards sustainable standards," IEA EBC Annex 61 "Development and Demonstration of Financial and Technical Concepts for Deep Energy Retrofits of Government/Public Buildings and Building Clusters," and in the EU EIE project "Concerted Action EPBD." From 2007, she has served as core theme leader of "Certification"; from 2011, core theme leader of "Cost Optimum Procedures"; and from 2015, core theme leader of the theme "Technologies" in CA4 EPBD.



Mrs. Kinga Porst Hydras serves as an energy and water efficiency expert in the General Services Administration (GSA) Office of Federal High Performance Green Buildings. Her focus areas are submetering, energy conservation programs, renewable energy, and indoor environmental quality. She works on improving the use of Energy Savings Performance Contracts (ESPC) in the Federal Government and achieving deep energy retrofits in existing buildings.



Mr. Jay Tulley has been the energy manager for the Directorate of Public Works at the US Army Garrison, Presidio of Monterey since 2010. In this role, he has overseen the energy and water programs, with savings at the Presidio of over \$2.5 million and total energy intensity reductions of 37% during that time. Based on programmatic success over the past 5 years, including specific initiatives in retro-commissioning and targeted energy conservation at their barracks, the Presidio of Monterey energy team received the Secretary of the Army Energy Award in 2013, 2014, 2015, and 2016 and the DOE Federal Energy Management Program (FEMP) award in 2015. Mr. Tulley is a licensed professional engineer in the state of California.



Mr. Mark "Dusty" Wheeler is a senior solution development engineer with Honeywell's federal systems group. He has nearly 20 years' experience in the analysis, development, and implementation of energy projects. His role also includes the development of process methods used to increase the quality, accuracy, and measured performance of Energy Performance Projects. His academic background is in the modeling and optimization of thermal energy systems. He is a member of ASHRAE guideline committee GPC1.2, "Existing Building Commissioning" and TC 7.6, "Building Energy Performance." He also serves on the NEBB standards committees for commissioning of both new and existing buildings. As a result, he has played a significant role in a number of published industry Guidelines and Standards. As a professional engineer, Dusty has also achieved certifications as a Building Energy Modeling Professional (BEMP), Certified Energy Manager® (CEM®), Certified Measurement & Verification Professional® (CMVP®) and Qualified Commissioning Professional (QCP).



Dr. Berthold Kaufman, a physicist by training, began his career in the field of solar thermal plant development and consulting. He has worked as a senior research scientist at the Passive House Institute since 2000, conducting research on the thermal properties of buildings, their energy consumption, and thermal flows for planning purposes as well as the on design of highly insulated windows and compact heat pump systems. Dr. Kaufman regularly consults architects and construction contractors on Passive House design for both new builds and retrofits and also serves as an expert on questions of Passive House economics and financial analysis. In addition to his consulting work and numerous research publications, Dr. Kaufman frequently holds technical Passive House seminars, lectures, and speeches for international audiences.



Dr. Richard J. Liesen joined the US Army Corps of Engineers Construction Engineering Research Laboratory (CERL) in June 2009. He is currently a Co-PI and senior developer for the "N2P Tool" and works on other building energy efficiency research projects. He is also the Energy Modeling Lead for the Automated Construction of Expeditionary Structures program, which is developing the capability for the US Army to print custom-designed expeditionary structures on-demand, in the field, using locally available materials. Before his association with CERL, Dr. Liesen worked at Owens Corning at the Science & Technology Center in Granville, OH, after which he was the R&D Leader of the Building Science group. Before Owens Corning Dr. Liesen was the Associate Director of the Building Systems

Laboratory at the University of Illinois. Dr. Liesen was on the original development team for the "EnergyPlus," whole building energy simulation program



Mr. Paul Bertram is Director, Environment and Sustainability/ Government of Kingspan Panels. He is a Fellow of the Construction Specifications Institute and a Past Institute President His focus is on envelope energy efficiency strategies with Pathways to NZE for a low carbon world. His current work includes Government Affairs where he drives advocacy for resilient and reliable building energy efficiency reductions on demand side energy. He serves on the Board of Directors for the Business Council of Sustainable Energy and was part of their delegation at the 21st Conference of the Parties (COP21) of the UN Framework Convention on Climate Change representing Kingspan. In January 2016, he was named to the Board of Directors of the National Institute of Building Sciences.



Mr. Shawn Torbert is the NYC Commercial Specifications Manager at ROXUL USA. His career in sustainable building began in 2007, when he became VP of New Business Development at Greenable, Inc., Philadelphia’s first “green building” material supplier. Since then he has maintained a strong focus on sustainable building materials and high performance/low energy building technologies and design. In 2009, Shawn founded his own independent manufacturer’s representative firm, TORUS 5, to introduce new high performance commercial building products to the US architectural community and construction markets. At TORUS 5, he specialized in rainscreen façade systems and development, code compliance

strategies and consulting, passive daylighting products, moisture management products, BIPV glass, and vapor permeable air barrier materials. In 2012, Shawn became the NYC Façade Application Specialist at Trespa North America before moving to ROXUL in 2014. Shawn is a graduate of Lehigh University, LEED AP, Certified Passive House Designer, and currently serves on the Board of Directors at New York Passive House (NYPH). He is also co-founder of the NYPH New Jersey Committee.



Ms. Alejandra Nieto, M.B.Sc., is a Building Science Specialist for the Energy Design Centre at ROXUL® Inc. She is a graduate from the Master of Building Science program at Ryerson University; with a background in construction science and management, and architectural technology from George Brown College. Her role as a building science specialist includes providing expertise in the design and research of durable and energy efficient building enclosures systems, conducting analyses in heat and moisture transfer, and managing research projects.



Mr. Chris Mathis has spent the past 35 years focusing on how buildings and building products perform – from energy efficiency to long-term durability and sustainability. Today, Chris and his consulting team focus on working with clients leveraging the knowledge and experience he has gained to improve buildings, building products, and the codes and standards that govern them.

Chris received his undergraduate degree in Physics from the University of North Carolina at Asheville. He received a Master of Science in Architecture Studies from MIT, where his work centered on energy use in buildings. He has served since as a Scientist in the Insulation Technology Laboratory at the Owings-Corning Fiberglas Technical Center, as the Director of the Thermal Testing Laboratory for the NAHB Research Center, and as the Director of Marketing for Architectural Testing, Inc., a private laboratory specializing in the performance of buildings and building products. Chris is an active participant in Standards and Code development at ASHRAE, NFRC, ASTM, and the International Code Council. He currently chairs the Built Advisory Committee, and ASTM’s E06.51.11, which addresses window installation standards.



Mr. Mark Lawton is a Vice President in the Building Science Division of Morrison Hershfield, a multi-specialty engineering firm with offices across North America. He is a professional engineer with over 30 years of experience in building performance assessment, forensic investigation, testing, and design. Currently a resident of Vancouver, BC, Mark’s career has included projects in all kinds of climate regimes from the arctic to the tropics. He is widely published on building science issues including: durability and performance of building enclosure assemblies, moisture control, Indoor Air Quality, ventilation, and managing the health impacts of mold in buildings. Mark has presented to many professional and lay audiences on building science issues.



Mr. Wagdy Anis, FAIA, LEED-AP is a Principal with Anis Building Enclosure Consulting in Waltham, MA. He consults regularly to building owners, architects, contractors, product manufacturers, and the legal profession regarding the design and performance of the building enclosure and lectures extensively on building science and commissioning the building enclosure. He is a board member and past chairman of the Building Enclosure Technology and Environment Council (BETEC), a council of the National Institute of Building Sciences, (NIBS), and a recipient of the Institute's honor award. He has been instrumental in establishing 30 Building Enclosure Councils around the country. He is board member emeritus of the Air Barrier Association of America (ABAA) and serves as chairman of the Energy Advisory Committee in MA. He is technical editor of the building enclosure design edition of JNIBS, the Journal of the National Institute of Building Sciences.



Mr. Nicholas Alexander is a Senior Construction Representative in the Rocky Mountain Area, Omaha District of the US Army Corps of Engineers. He holds a Bachelor of Science in Construction Management and is a Certified Passive House Consultant from the Passive House Institute US. Nicholas is a Subject Matter Expert for the US Army Corps of Engineers in the design, construction and testing of air barrier systems and High Performance Building Envelope aspects for DoD buildings. Nicholas has nearly 10 years of extensive field experience on over 80 buildings of various wall types and building user functions for both Army and Air Force facilities with regard to air barrier systems and other building envelope aspects. In addition to this experience, Nicholas is a technical expert for the High Performance Building Envelope ReCX. He has participated in various research projects with ERDC/ CERL on thermal bridging and is a co-author of the ASHRAE research publication Window Related Thermal Bridges. Nicholas is also co-author and principal contributor to the EP 415-1-261, *Quality Assurance Representative Guide*, Volume 6, "Building Envelopes" as well as Unified Facilities Guide Specifications for Air Barrier Systems and the Air Barrier related content in the Unified Facilities Criteria for Architecture and IEA Deep Energy Retrofit ANNEX 61 documents. Nicholas is an instructor for the unique USACE Prospect course on Air Barriers and Building Pressure Testing and has given various presentations to construction industry associations and design entities. He has also authored construction industry publications on air barrier systems and high performance building envelope aspects of modern building construction.



Mr. Peter Spafford is the Director of the Quality Assurance Program for Building Professionals and the Air Barrier Association of America. He has been involved in energy conservation and the building performance industry for 26 years. Peter has been an instructor in building science and building envelope performance for the past 25 years and has taught hundreds of installers, building officials, and contractors across the country. Peter became the national training manager for Building Professionals and oversaw the delivery and facilitation of upwards of 50 training programs a year, and has coordinated 50 – 70 project managers and instructors in delivering 6-week to 6-month term training programs in energy efficiency and building envelope performance. Peter has also spent a tremendous amount of time in the field performing 3rd party inspections on behalf of government, quality assurance providers, utilities, and warranty programs. He has been involved in both the development and compliance aspects of the program for a number of initiatives in both the residential and commercial building markets.



Mr. William B. Rose is Senior Research Architect at Indoor Climate Research and Training, a part of the University of Illinois at Urbana-Champaign. His research focus is building performance, particularly the heat and moisture performance of building envelopes. For 12 years, he was the Handbook Chair for the ASHRAE Handbook chapters on building envelopes. In 2005, he authored *Water in Buildings*, published by Wiley & Sons. He participated in IEA Annex 24 on Heat, Air, and Moisture Transfer in Insulated Building Parts. His current research is with the US Department of Energy to study the impacts of enhanced management of indoor air flows on IAQ. Mr. Rose is an ASHRAE Fellow.



Mr. Paul Johnson is a Leader Building Technology Studio of SmithGroupJJR. With over 40 years of experience in architecture and construction, Paul Johnson brings a broad understanding of what it means to complete a high-level, quality driven building retrofit, renovation, or repurposing. Over the years, Paul has been involved in various architecture, building enclosure, and construction projects touching all phases of project development from concept through building completion and acceptance. As a specialist in building exterior enclosures and design and construction quality assurance for exterior enclosures, he performs peer review consulting within his own firm, and for owners, contractors, and other associates of design and construction teams. He has been instrumental in delivering innovative and high performing building systems solutions to a range of clients and building types for both new and existing facilities.



Mr. Brian Clark is a mechanical engineer at the US Army Corps of Engineers Construction Engineering Research Laboratory (CERL). Before joining CERL, Brian focused on RCx, HVAC controls, and energy efficiency research and development projects working as a DPW engineer at Presidio of Monterey and Fort Irwin Army installations. His work on energy management at Army facilities won several awards including the Secretary of Army Energy and Federal Energy Management Program Awards. He has authored multiple publications through the PW Digest. The focus of his Masters was Sustainable Systems Engineering. Brian has also served as a USACE design branch engineer, Department of Energy-funded industrial energy auditor, and forward-deployed Army vehicle mechanic.



Mr. Rüdiger Lohse holds an industrial engineer degree and leads the department of Energy Services at the regional energy agency KEA in Karlsruhe, Germany. He also is managing director of the Contracting Competence Center BW. His specific expertise is energy efficiency and renewable energies in buildings and communities, and the business and financing models for the implementation. Together with Dr. Zhivov, he leads the IEA Annex 61 and other European research projects on this topics.



Hon. Katherine Hammack's career has focused on energy and sustainability advisory services. Specifically, she has worked on the evaluation of energy conservation projects, including ventilation upgrades, room air distribution, indoor air quality, lighting efficiency, cogeneration, sustainable design, solar energy, and building operations. In January 2010, President of the United States Barack Obama nominated Hammack to be Assistant Secretary of the Army (Installations, Energy and Environment), and after Senate confirmation, she was sworn into office on June 28, 2010.



Ms. Margaret Simmons is a Counsel at the US Army Engineering and Support Center, Huntsville. Ms. Margaret Simmons began working for the US Army Corps of Engineers in April 1985. She started as a real estate attorney with the Nashville District. In 1991, Margaret left the Nashville District when she was selected to be the primary environmental attorney and Labor Counselor in Office of Counsel at the Huntsville Division (which became the US Army Engineering and Support Center, Huntsville in 1995). In 1993, she began to work on the Shared Energy Savings Program, which was transitioning to Energy Savings Performance Contracts. She was involved with the award of the first set of nationwide contracts to do ESPC in 1995/1996. In addition, she had responsibility for other contracts and fiscal law matters. In July 2003, Margaret was selected as the Counsel for Huntsville Center. As Counsel, she is responsible for providing all legal services required to support execution of Huntsville Center missions, which span the globe. The Center's programs range from demining in Afghanistan to destruction of munitions in Iraq to purchase of barracks furniture for Soldiers worldwide. Margaret received her Bachelor of Science in Education from the University of Tennessee, (UT) Knoxville, in 1977. She received her Doctor of Jurisprudence Degree from UT Knoxville in 1980, and was admitted to the Tennessee bar in 1980. She worked in private practice in Knoxville, Tenn., for 5 years until she joined the Corps.



Mrs. Sharon Conger has worked for GSA since 1989. Sharon began in the Public Buildings Service as a Realty Specialist/Contracting Officer. Sharon has spent 7 years as a Business Center Manager providing oversight of daily operations as well as ARRA implementation for the Colorado Service Center. Sharon's GSA experience encompasses a wide range of GSA activities including: property management, acquisition/contracting, asset management, real estate acquisition, project management, and financial management. In 2012, Sharon moved into her current role as the National Program Manager for ESPCs in GSA's Central Office Facilities Management Division. Sharon graduated with honors from Colorado State University with a dual degree in Business Administration and Psychology. She lives in Colorado with her husband and has two daughters.



Mr. Randall Smidt is a Staff Engineer in the Facilities Policy Division, Operations Directorate, Office of the Assistant Chief of Staff for Installation Management (Headquarters) of the US Department of the Army, where he manages the Army's Energy Savings Performance Contracting and Utility Energy Services Contracting programs. He holds a Bachelor's of Science degree in Mechanical Engineering from Virginia Tech and has 27 years of experience in energy engineering, working as a consultant to utilities, Energy Service Companies, and federal clients before becoming the energy manager at Fort Belvoir and later moving to Army Headquarters



Mr. Ryan M. Colker is Director of the Consultative Council and Presidential Advisor at the National Institute of Building Sciences where he is responsible for leading the development of findings and recommendations on behalf of the entire building community and transmitting those recommendations to Congress and the Administration. He also serves as staff director of the Council on Finance, Insurance, and Real Estate; the National Council of Governments on Building Codes and Standards; the Off-Site Construction Council; and the Sustainable Building Industry Council. Before joining the Institute, he served as Manager of Government Affairs for the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE), where he contributed to the development of a robust government affairs program. While at ASHRAE, he assisted in the formation of the High-Performance Building Congressional Caucus and contributed to the development and piloting of the

Building Energy Quotient, ASHRAE's building energy labeling program. Previously, Colker served as the Program Director of the Renewable Natural Resources Foundation, where he was the lead staff member in charge of interdisciplinary programs for a 14-member consortium of natural resource professional and scientific organizations. He is a graduate of the George Washington University Law School with a Juris Doctor, and holds a Bachelor of Arts, with honors, in environmental policy from the University of Florida.



Ms. Maria Fields leads development efforts for Joule's Energy Reduction Asset (ERA) Fund, a first-in-kind fund targeting \$100 million in energy efficiency and demand management project finance. In addition to managing investor relations with family offices, endowments, and institutional investors, Fields pursues market opportunities in Distributed Energy Resources broadly, including energy efficiency, demand response, storage, and microgrids. Fields works closely with Joule's key partners, providing counsel and business strategy solutions to address their specific needs.

Before joining Joule Assets, Fields led smart grid programs for Northern Westchester Energy Action Consortium (a precursor of Sustainable Westchester), creating innovative energy procurement models and community microgrids, to address common interest energy issues. Earlier in her career, Fields held leadership roles in strategy, business development, and venture capital across a range of industries, including aerospace, biotech, medical devices, and non-profits. Fields earned a Master of Business Administration degree with high honors from Columbia University. She also holds Bachelor of Science in Mechanical Engineering and Bachelor of Fine Arts degrees, both from Lehigh University.



Mrs. Cara Carmichael is a Manager of Buildings Practice at Rocky Mountain Institute. Cara has almost 2 decades of direct experience on deep energy retrofits and net zero energy buildings, creating lighthouse projects, strategic programs, and thought leadership to advance the building industry. Her approach, rooted in energy efficiency is based on an integrative, cross-disciplinary foundation, stemming from her background in both architecture and engineering. Her passion lies with net zero energy buildings, campuses and portfolios and studying the role buildings play in the larger energy landscape and changing climate. She has been at RMI for over 11 years, in which time she has developed net zero energy roadmaps for international portfolios of buildings and orchestrated the engineering and business case for deep retrofits. For the past 6 years, she has led an effort working with GSA on their National Deep Energy Retrofit program, which more than doubled typical energy savings delivered through performance contracting. She also served as the project manager for RMI's new Innovation Center, a net zero energy office and convening center in Basalt Colorado that used Integrated Project Delivery (IPD).



Mr. Scott Foster is Managing Director at Bostonia Partners, LLC responsible for originating, structuring, and financing federal energy and infrastructure projects. Mr. Foster has over 20 years of experience in federal project finance, and over the course of his career, he has completed over \$5 billion of financings covering all asset classes essential to the US Government. Marquee projects spearheaded by Mr. Foster include: commercial-scale biomass cogeneration for DOE's Savannah River Site, biomass gasification for Oak Ridge National Laboratory (ORNL), renewable Energy Services Agreement (ESA) to lower the cost of power for the US Coast Guard in Puerto Rico, renewable ESA to reduce energy costs for the US Army in Texas, financing for submarine Fiber Optic System for US Army Kwajalein Atoll (USAKA), and financing for DOE's ORNL Titan Cray supercomputer project.

Before joining Bostonia Partners, Mr. Foster was Senior Vice President and Managing Director of the Federal Business Unit at Hannon Armstrong Sustainable Infrastructure (HASI), where he directed the origination and financing of energy efficiency projects, renewable energy investments, information technology and telecommunication programs, transportation, modular buildings, and other federal government projects. Before HASI, Mr. Foster was Vice President of Vendor Financial Services at GE Capital. Mr. Foster holds a Bachelor of Arts degree and a Masters of Business Administration from Marymount University, and is a Certified Public Accountant. Mr. Foster also served in the US Navy/Naval Security Group, Minnesota Army Reserve National Guard, and the Virginia Army Reserve National Guard.



Ms. Natasha Shah is a Vice President at NORESKO responsible for Federal business development activities. One of the largest energy services companies in the United States, NORESKO uses design-build, performance-based contracting vehicles and asset monetization solutions to deliver energy and maintenance cost savings and infrastructure upgrades to existing facilities. Ms. Shah has 18 years of experience in the development and execution of energy efficiency and renewable energy solutions, including implementation of over \$400 million in energy performance contracting projects. She has led the implementation of strategic business plans, has directed recovery and development initiatives for underachieving businesses, and is active in several industry trade organizations, including serving as the Board Chair of NAESCO. Ms. Shah holds a

Bachelor of Science in Biomechanical Engineering from Louisiana State University.



Mr. George Lea is the Chief Military Programs Branch, Engineering and Construction of the US Army Corps of Engineers. George has nearly 30 years' experience in the acquisition, planning, design, construction and operation of facilities. Mr. Lea holds a Bachelor of Science in Civil Engineering degree from Bucknell University and a Masters Certificate in Management from Darden Business School, University of Virginia. His works include, power stations, utility plants, mechanical systems, (chemical, biological and radiation protection), utility tunnels, administration buildings, operations centers, and maintenance shops, parking garages, roads, elevators, escalators and more.



Mr. John Shonder is the Director of the Department of Energy's Sustainability Performance Office (SPO), which monitors and ensures the Department's compliance with executive orders and legislation related to sustainability. A member of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), John currently serves as chair of the Society's Research Activities Subcommittee, and is past chair and vice chair of a number of ASHRAE Technical Committees. He is a co-author of ASHRAE's Guideline 14-2014, *Measurement of Energy, Demand, and Water Savings*, and is the author and co-author of more than 30 technical papers and reports on a variety of topics related to improving the sustainability of federal sites.