Evaluation of ARPA-E’s Mission and Goals

Committee

Gary Marchant

Chair

Gary Marchant, Ph.D., J.D., M.P.P., is Regents’ Professor and Faculty Director of the Center for Law, Science & Innovation at the Sandra Day O’Connor College of Law, Arizona State University (ASU). Professor Marchant’s research interests include the governance of emerging technologies such as genomics, biotechnology, nanotechnology, artificial intelligence, neuroscience and blockchain. Prior to joining ASU in 1999, Professor Marchant was a partner at the Washington, D.C., office of Kirkland & Ellis. He has authored more than 200 articles, books and book chapters on various issues relating to emerging technologies. He has served on six previous National Academies of Science, Engineering and Medicine (NASEM) consensus committees, and has been elected as a lifetime member of the American Law Institute and a Fellow of the American Association for the Advancement of Science. He also chairs the IEEE Working Group (P2863) to create a governance standard for entities that develop or use artificial intelligence.

Héctor D. Abruña

Member

Héctor D. Abruña, Émile M. Chamot Professor of Chemistry at Cornell University, is Director of the Center for Alkaline Based Energy Solutions (CABES), the Energy Materials Center at Cornell (emc2) and the Abruña Energy Initiative. He is also a Senior Technical Partner with GVP Climate, LLP. After a brief stay at the University of Puerto Rico, he joined Cornell in 1983. He was Chair of the Department of Chemistry and Chemical Biology from 2004-2008. His research is focused on the development and operando characterization of energy materials for fuel cells, electrolyzers, and batteries. He is a member of the National Academy of Sciences (2018), the American Academy of Arts and Sciences (2007), Fellow of the American Association for the Advancement of Science (2007), Fellow of the Electrochemical Society (2013) and the International Society of Electrochemistry (2019). He received the Faraday Medal of the Royal Society in 2011, the Gold Medal of the International Society of Electrochemistry (2017), the A. J. Bard Award of the Electrochemical Society (2019), the Frumkin Medal of the International Society of Electrochemistry (2019) and the American Chemical Society Award in Analytical Chemistry (2021). Most recently, he received the Global Energy Award for 2024. He completed his graduate studies with Royce W. Murray and Thomas J. Meyer at the University of North Carolina at Chapel Hill in 1980 and was a postdoctoral research associate (1980-81) with A. J. Bard at the University of Texas at Austin.

Anuradha M. Annaswamy

Member

Anuradha Annaswamy is the Founder and Director of the Active-Adaptive Control Laboratory in the Department of Mechanical Engineering at MIT. She previously held faculty positions at Yale, Boston University, and MIT. Her research interests span adaptive control theory and its applications to aerospace, automotive, propulsion, and energy systems as well as cyber-physical systems such as Smart Grids, Smart Cities, and Smart Infrastructures. She has received best paper awards (Axelby, 1986; CSM, 2010; IFAC Annual Reviews in Control, 2021-23), Distinguished Member and Distinguished Lecturer awards from the IEEE Control Systems Society (CSS), and a Presidential Young Investigator award from NSF, 1991-97. She is a Fellow of IEEE and the International Federation of Automatic Control and recipient of the Distinguished Alumni Award from Indian Institute of Science for 2021. She is the author of a graduate textbook on adaptive control, co-editor of two vision documents on smart grids and two editions of the Impact of Control Technology report, and editor for a number of journals, including IEEE Open Journal of Control Systems, IEEE Access, the IFAC Annual Reviews in Control, and Asian Journal of Control. She served as the President of CSS in 2020. Currently, Dr. Annaswamy serves as President-elect of the American Automatic Control Council and a Faculty Lead in the Electric Power Systems workstream in the MIT Future Energy Systems Center, and she will begin an appointment as Editor in Chief of IEEE Control Systems magazine in January 2025. Dr. Annaswamy received her Ph.D. in Electrical Engineering from Yale University in 1985. She has co-authored two National Academies consensus reports: The Future of Electric Power in the United States (2021) and The Role of Net Metering in the Evolving Electricity System (2023).

Dedric Carter

Member

Dedric A. Carter currently serves as Vice Chancellor for Innovation, Entrepreneurship, and Economic Development and Chief Innovation Officer at the University of North Carolina at Chapel Hill. He joined UNC following a decade at Washington University in St. Louis where he was the inaugural Vice Chancellor for Innovation and Chief Commercialization Officer, in addition to roles as Associate Provost and Associate Vice Chancellor, and Associate Dean of Engineering. Dr. Carter’s faculty appointments have been in McKelvey Engineering (Mckelvey School), Business (Olin School), School of Medicine (WUSM), and UNC’s Department of Applied Physical Sciences in the College of Arts and Sciences. He was assistant dean of engineering at MIT and helped start a venture-backed company in mobile and wireless systems. Dr. Carter was architect of the National Science Foundation (NSF) I-Corps program while serving as Senior Advisor to the Director of NSF. Additionally, he served as the Chairman of the Missouri Technology Corporation, a public private partnership funding companies and infrastructure in Missouri, where he chaired the development of a 10-year plan for advancing innovation. Dr. Carter is a member of the MIT Corporation and is a Fellow of the Academy of Sciences, St. Louis. He has an undergraduate and graduate degree in Electrical Engineering and Computer Science from MIT, a PhD in information systems from Nova Southeastern University, and an MBA from MIT Sloan.

Iain Cockburn

Member

Iain Cockburn is currently a professor at Boston University. He was previously associate professor at the University of British Columbia. His research interests include economics of technical change, intellectual property, entrepreneurship, and management of technology-based enterprises. Dr. Cockburn is also a research associate of the National Bureau of Economic Research. He is a member of the Conference for Research on Income and Wealth. He received his PhD in Economics from Harvard University.

Marcius Extavour

Member

Marcius Extavour, Senior Partner at Ode, is a communicator and creative technologist who builds and deploys climate and energy solutions, and helps others do the same. After building the breakthrough innovation practice in Climate & Energy at XPRIZE as Chief Scientist and Executive VP, he established the TIME Climate 100 at TIME. He has held roles at the U.S. Senate Committee on Energy & Natural Resources, Ontario Power Generation, Nortel Networks, and the University of Toronto, where he earned a PhD in quantum physics after studying engineering science. He serves as Board Member at 1% for the Planet, Carbon180, Carbon Removal Canada, and MaRS, and previously served on the Board on Energy and Environmental Systems at the U.S. National Academies of Sciences. His work has been featured at CNBC, CNN, The Atlantic, PBS, and TVO. Marcius is a native of Toronto, and lives in Northern California with his family.

Karen I. Goldberg

Member

Karen Goldberg is the inaugural Director of the Vagelos Institute of Energy Science and Technology and Vagelos Professor of Energy Research at the University of Pennsylvania. She serves on the National Renewable Energy Laboratory's Materials, Chemical and Computational Sciences Technical Review Panel and Pacific Northwest National Laboratory's Institute for Integrated Catalysis Advisory Committee. Prior to moving to the University of Pennsylvania, Professor Goldberg was a chemistry faculty member at Illinois State University (1989-1995) and at University of Washington (1995-2017). She served as Director of the first National Science Foundation-funded Phase II Center for Chemical Innovation (CCI), the Center for Enabling New Technologies through Catalysis (CENTC) from 2007-17. Professor Goldberg received her A.B. degree from Barnard College of Columbia University in New York City. As an undergraduate, she pursued research projects with Professor Roald Hoffmann at Cornell University, Professor Stephen Lippard at Columbia University, and Drs. Tom Graedel and Steven Bertz at AT&T Laboratories. She earned her Ph.D. in Chemistry University of California at Berkeley working with Professor Robert Bergman and carried out postdoctoral studies with Professor Bruce Bursten at The Ohio State University. Professor Goldberg is a Fellow of the American Chemical Society and the American Association of the Advancement of Science, and a member of the American Academy of Arts and Sciences and the National Academy of Sciences.

Joshua Krieger

Member

Joshua Krieger is an Associate Professor of Business Administration in the Entrepreneurial Management Unit. His research focuses on R&D strategy and the economics of innovation. His work examines project selection, R&D competition, and how firms adjust their R&D portfolios in response to new information and resources. He has taught the first-year course, the Entrepreneurial Manager, and currently teaches a second-year elective course: Tough Tech Ventures, which examines the development, commercialization and financing of cutting-edge science and technology. Dr. Krieger has a BA in economics and government from Cornell University. He received his PhD at the MIT Sloan School of Management, where he was a recipient of the Kauffman Dissertation Fellowship in Entrepreneurship Research, and a National Bureau of Economics Research Predoctoral Fellow in the International Network on the Value of Medical Research. Prior to his doctoral studies, he worked in economic and litigation consulting at Cornerstone Research in Boston.

Eric Landree

Member

Eric Landree is a Senior Engineer and the Associate Director of RAND’s Homeland Security Research Division. He also was previously the Associate Program Director for RAND’s National Security Research Division Cyber and Intelligence Policy Center. Prior to that, Dr. Landree was the Associate Research Department Director for RAND’s Engineering and Applied Sciences Department. His research experience and expertise are in the areas of program evaluation, intelligence policy, and assessing national security threats related to emerging technologies. Prior to joining RAND, Dr. Landree was an American Association for the Advancement of Science's Defense Science & Technology Policy Fellow in the Department of Defense Office of the Director, Defense Research and Engineering. In 1998 he joined the National Institute of Standards and Technology as a National Research Council Postdoctoral Fellow. He earned his Ph.D. in materials science and engineering from Northwestern University and a Bachelor of Science degree in physics from Allegheny College. He also served as a committee member on the previous National Academies Committee on Evaluation of ARPA-E Goals and Mission in 2015.

Kathryn A. McCarthy

Member

Kathryn McCarthy joined the Oak Ridge National Laboratory as Director of the US ITER Project after three years as VP for Science and Technology and Laboratory Director for the Canadian Nuclear Laboratories. She held a variety of roles at Idaho National Laboratory, including Director of Domestic Programs, Director of the Light Water Reactor Sustainability Program Technical Integration Office, National Technical Director for the Systems Analysis Campaign for DOE-NE’s Fuel Cycle R&D Program, and research lead in the Fusion Safety Program. She is member of the National Academy of Engineering and a fellow of the American Nuclear Society (ANS). Her awards include the Fusion Power Associates Leadership Award in 2022, an ANS Presidential citation in 2015 for “Leadership and guidance of the Light Water Reactor Sustainability effort…,” and in 2007 for “outstanding service to the ANS,” the 2000 ANS Women’s Achievement Award, 1996 International Thermonuclear Experimental Reactor U.S. Home Team Leadership Award, and the 1994 David Rose Award for Excellence in Fusion Engineering. She served on the Committee on the Prospects for Inertial Fusion Energy in 2013, and the Committee on the Key Goals and Innovation Needed for a U.S. Fusion Pilot Plant in 2021. She received her Ph.D. in Nuclear Engineering from the University of California, Los Angeles.

Lara Pierpoint

Member

Lara Pierpoint serves as the Managing Director of Trellis Climate, which is an impact-first catalytic capital program established at Prime Coalition. The program is dedicated to expediting the implementation of first-of-a-kind (FOAK) climate projects. Prior to her current role, she held positions as co-CEO and founding member of Actuate, Director of Technology Strategy at Exelon, and Director of the Office of Energy Supply Security in the U.S. DOE Office of Policy and Systems Analysis. Dr. Pierpoint is passionate about technologies that meaningfully reduce emissions and contribute to a cleaner environment. As the Managing Director of Trellis Climate, she is demonstrating systems innovation and catalytic investment approaches that will speed the commercialization, deployment, and scale-up of climate change mitigation infrastructure. Dr. Pierpoint received her PhD from MIT in Engineering Systems, studying the deployment of advanced technologies for nuclear waste recycling, and she holds dual master's degrees from MIT in nuclear engineering and technology policy. She completed her B.S. in physics at UCLA.

Jacquelyn Pless

Member

Jacquelyn Pless is the Fred Kayne (1960) Career Development Professor of Entrepreneurship and an Assistant Professor in the Technological Innovation, Entrepreneurship, Strategic Management group at the MIT Sloan School of Management. Prior to being in academia, she held various positions in the public and private sectors. She worked in the Pennsylvania House of Representatives and National Conference of State Legislatures supporting state and tribal governments on energy policy issues, was a research economist at the National Renewable Energy Laboratory and was the Head of Analytics for a boutique consulting firm helping companies manage their reorganizations. Her research is in the areas of innovation, energy, environmental, and public economics. Most of her work studies the effects of policies, regulation, and investment on innovation for social progress – innovation that protects people and the planet – with a focus on energy and environmental innovation. Dr. Pless was recently named a Top 40-Under-40 MBA Professor by Poets & Quants. She is also an Honorary Research Associate with the University of Oxford, a Research Affiliate of CESifo, and an Invited Researcher with J-PAL’s Science for Progress Initiative. She has PhD and MS degrees in Mineral and Energy Economics from the Colorado School of Mines as well as a BA in Economics and Political Science from the University of Vermont, Honors College.

Karma Sawyer

Member

Dr. Karma Sawyer is the Director of the Electricity Infrastructure and Buildings Division at Pacific Northwest National Laboratory. She is responsible for a strategy to tackle the nation's most important energy efficiency, clean energy, and electricity infrastructure challenges. The Division consists of 400+ staff members in eight technical groups in electrical and mechanical engineering, data sciences, cybersecurity and policy that provide innovative solutions to federal clients. Prior to joining PNNL, Dr. Sawyer served as the Program Manager for Emerging Technologies in the Department of Energy's Building Technologies Office. Under her leadership, the Program's activities are projected to avoid an ~315 metric tonnes of CO2 and cut building energy costs by $94 billion through 2035. From 2010-2013, she served as Assistant Program Director and Fellow at ARPA-E. She holds a Ph.D. in Chemistry from the University of California, Berkeley and a B.S. in Chemistry from Syracuse University. She is a member of the 2024-2026 cohort of the New Voices in Science, Engineering and Medicine at the National Academies and was a named a Distinguished Gilbreth Speaker by the National Academy of Engineering in 2023. She lives with her husband and two children and is a proud advocate for disability rights.

Kelly Sims Gallagher

Member

Kelly Sims Gallagher is Dean and Professor of Energy and Environmental Policy at The Fletcher School, Tufts University. She directs the Climate Policy Lab and the Center for International Environment and Resource Policy at Fletcher. The Climate Policy Lab is dedicated to identifying which climate policies work, which don't, and why in countries around the world, with particular emphasis on major emerging economies including China, India, Ethiopia, South Africa, Indonesia, Mexico, and Brazil. Gallagher served in the second term of Obama Administration as a Senior Policy Advisor in The White House Office of Science and Technology Policy, and as Senior China Advisor in the Special Envoy for Climate Change office at the U.S. State Department. Gallagher is a non-resident scholar at the Carnegie Endowment for International Peace. She is a member of the board of the Belfer Center for Science and International Affairs at Harvard University where she is also faculty affiliate in the Science, Technology, and Public Policy program. She serves on National Academies of Science, Engineering, and Medicine's Committee on Deep Decarbonization. She also serves on the board of Energy Foundation China. She is a member of the Council on Foreign Relations. She is the author of Titans of the Climate (The MIT Press 2018), The Global Diffusion of Clean Energy Technologies: Lessons from China (MIT Press 2014), China Shifts Gears: Automakers, Oil, Pollution, and Development (The MIT Press 2006), and dozens of other publications.

Varun Sivaram

Member

Dr. Varun Sivaram is Senior Fellow at the Council on Foreign Relations and CEO and Founder of Emerald AI. One of the world's foremost authorities on energy technologies, Dr. Sivaram was formerly the Chief Strategy and Innovation Officer at Orsted A/S (NASDAQ: DOGEF), a $20 billion Fortune 500 Global energy firm where he led a team of 200, and he previously served as Chief Technology Officer of India's largest clean energy company, ReNew Power (NASDAQ: RNW). He also served as a senior U.S. diplomat as Managing Director for Clean Energy at the U.S. State Department, where he created the First Movers Coalition. Dr. Sivaram is a senior advisor to Aventurine Partners and Everview Partners and a board member of the Atlantic Council. He is the author of three books, including the bestselling Taming the Sun on the future of solar energy. TIME Magazine named Dr. Sivaram to its TIME100 Next list and the TIME100 Climate list, MIT Technology Review named him one of the top 35 innovators under 35, and the World Economic Forum named him a Young Global Leader. A Rhodes and Truman Scholar, he holds a PhD in condensed matter physics from Oxford University and undergraduate degrees from Stanford University.

David G. Victor

Member

David Victor is a professor of innovation and public policy at the School of Global Policy and Strategy at UC San Diego. He is a director of the campus-wide Deep Decarbonization Initiative, which focuses on real world strategies for bringing the world to nearly zero emissions of warming gases. Victor is also an adjunct professor in Climate, Atmospheric Science & Physical Oceanography at the Scripps Institution of Oceanography and a professor (by courtesy) in Mechanical and Aerospace Engineering. He is co-Chair of The Brookings Institution's Initiative on Energy and Climate and the World Economic Forum's Global Future Council on the Future of the Energy Transition. Victor serves on the advisory councils for the National Renewable Energy Laboratory, Electric Power Research Institute, and startup companies ENX and Project Canary. Prior to joining the faculty at UC San Diego, Victor was a professor at Stanford Law School where he taught energy and environmental law.

John C. Wall

Member

John Wall has more than 40 years of professional experience in internal combustion engine efficiency, fuels and emissions, and in global engineering organization development. He served as Cummins Chief Technical Officer, retiring in 2015. As he progressed from research and product engineering into engineering leadership, he remained directly involved in the most critical technology programs for low emissions and alternative fuels and with developing environmental and energy policy with EPA, CARB and DOE. Prior to joining Cummins in 1986, he led Diesel and Aviation Fuels Research for Chevron. His interests today are in technology and product development for deep decarbonization of future transportation and advanced space propulsion. He is a member of NAE, an SAE Fellow, and has been recognized with the CARB Haagen-Smit Clean Air Award and EPA Thomas W. Zosel Individual Achievement Award for career accomplishments in internal combustion engine emission control. He is currently Chair of the Board of Achates Power, a Board member of Ad Astra Rocket Company, an advisor to the Activate clean tech incubator, to the International Council on Clean Transportation, to the Institute of Transportation Studies at UC-Davis and is a Board Advisor of ClearFlame Engine Technologies. Dr. Wall received his SB, SM and ScD degrees in Mechanical Engineering from MIT.