

**Invitation for Public Comment on the List of Candidates for
the Environmental Protection Agency's Science Advisory Board
Environmental Economics Advisory Committee**

September 18, 2017

The U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Staff Office announced in a Federal Register Notice on June 27, 2017 (82 FR 29077 - 29078) that it was inviting nominations of experts to be considered for the Administrator's appointment to the Science Advisory Board (SAB) Environmental Economics Advisory Committee (EEAC). The SAB provides independent advice and peer review to EPA's Administrator on the scientific and technical aspects of environmental issues. The SAB Staff Office sought nominations of experts to serve on the SAB EEAC with demonstrated expertise in environmental economics. The SAB Staff Office received nominations for the attached 19 candidates based on their expertise, willingness and ability to serve. We hereby invite public comments on the attached List of Candidates for appointment to the SAB EEAC for consideration by the SAB Staff Office. Comments should be submitted to Dr. Holly Stallworth at Stallworth.holly@epa.gov (202-564-2073) no later than October 9, 2017. E-mail is the preferred mode of receipt. Please be advised that public comments are subject to release under the Freedom of Information Act.

**2017 Candidates for the EPA Science Advisory Board
Environmental Economics Advisory Committee**

Banzhaf, Spencer

Georgia State University

Professor H. Spencer Banzhaf is Professor of Economics at Georgia State University. He received his PhD in economics from Duke University in 2001. Banzhaf's research focuses on the interactions between local environmental amenities, local real estate markets, and the demographic composition and structure of cities. In particular, he has studied the way these social mechanisms interact to drive the correlations between pollution and poor households, as described by the "Environmental Justice" movement. More generally, Dr. Banzhaf uses tools from these models to gain insights into people's values for the natural environment and for other public goods that are not traded in markets. Whenever people pay more for a house because it is in a cleaner, safer community with good schools, they reveal something about their values for a clean environment, safety, and education. Dr. Banzhaf has applied such models to the design of environmental policies and to "green accounting" (that is, to reforming GDP and similar statistics so they account for the environment). In related work, he has suggested ways to measure and construct indexes of ecosystem services. Dr. Banzhaf's work has been published in journals such as the American Economic Review, International Economic Review, Journal of Environmental Economics and Management, Journal of Urban Economics, and History of Political Economy. Prior to joining Georgia State in 2006, Dr. Banzhaf was a fellow at Resources for the Future. He is a Research Associate in the National Bureau of Economic Research (NBER) and a Senior Fellow at the Property and Environment Research Center (PERC).

Belzer, Richard

Independent consultant

Since 2001, Dr. Richard Belzer has been an independent consultant in regulation, risk, economics and information quality. Previously he was a visiting professor of public policy at Washington University in St. Louis and staff economist in the Office of Information and Regulatory Affairs in the Office of Management and Budget. He received his Ph.D. in public policy from Harvard University (1989), Master's in Public Policy

(MPP) from the John F. Kennedy School of Government (now Harvard Kennedy School) (1982), and MS and BS degrees in agricultural economics from the University of California at Davis (1979, 1980). Current original research areas include the analysis of variability in pulmonary function testing; the development of objective economic indicators to identify adverse human health effects; the improved use of human health risk assessments into benefit-cost analysis; the analysis of environmental justice ranking schemes; the analysis of patent law and examination practices; estimation of potential cost reductions state Medicaid programs from the substitution of electronic for tobacco cigarettes; and the economic value of subjective quality information in U.S. wine markets. Recent consulting projects have included benefit-cost analyses of California's proposed drinking water standards for hexavalent chromium and 1,2,3-trichloropropane; and the critique of predicted human health impacts and monetized risks attributable to air emissions from new facilities designed to achieve federal regulatory standards. Dr. Belzer is a regular contributor to scholarly professions through journal peer review and service to professional societies. He was elected Treasurer of the Society for Risk Analysis (1998, 2000) and elected Secretary-Treasurer of the Society for Benefit-Cost Analysis (2008, 2010). He earned multiple awards for exemplary performance at OMB, given the SRA's Distinguished Service Award (2003), and named a Fellow of the Cecil and Ida Green Center for the Study of Science and Society (1995). He has not received any grants from EPA, any other government agency, or any private entity. He has conducted independent research on behalf of clients or through self-funding. Some projects are jointly funded. His clients include: Council of Producers & Distributors of Biotechnology, R Street Institute, Exxon Mobil Biomedical Sciences, Inc., American Chemistry Council and the California Manufacturing Technology Association.

Bernthal, Frederick

Universities Research Association

Dr. Fred Bernthal was President of Universities Research Association (URA) for 17 years and now serves as Senior Advisor to the Board of Trustees. The URA consortium has for 50 years been contractor to the U.S. Department of Energy (DOE) for management of Fermi National Accelerator Laboratory. URA is also part of the three-member Honeywell-led team recently awarded the DOE contract for management of Sandia National Laboratories. From 1990-94, Dr. Bernthal was Deputy Director of the National Science Foundation, where he was for one year acting Director and a member of the National Science Board. From 1988-90, he was Assistant Secretary of State for Oceans, Environment and Science, where he chaired the 50-nation Response Strategies Working Group of the U.N. Intergovernmental Panel on Climate Change and led negotiations for the 1990 US-USSR Agreement for Cooperation in Basic Sciences. He also spearheaded initiatives which banned the export of U.S. hazardous wastes and prohibited the import of elephant ivory. From 1983-88 he was a Member of the U.S. Nuclear Regulatory Commission, where he gained approval for the Commission's first Advanced Reactor Policy Statement. In the wake of the Chernobyl disaster, he led a delegation to the Soviet Union where in 1987 he negotiated and signed the first U.S.-USSR nuclear safety protocol. From 1970-80, he was a professor of chemistry and physics at Michigan State University and was granted tenure. In 1978 he joined the staff of U.S. Senator Howard Baker as a Congressional Science Fellow, and he served as Chief Legislative Assistant to Majority Leader Baker from 1980-83. Dr. Bernthal holds a B.S. in chemistry from Valparaiso University and a Ph.D. in nuclear chemistry from the University of California at Berkeley. He did postdoctoral study at Yale University and was a NATO Senior Scientist Fellow at the Niels Bohr Institute in Copenhagen in 1977. He was a director of PPL Corporation for 18 years, and subsequently of the PPL spin-off Talen Energy Corporation, until Talen was sold in late 2016. From 2001-2008 he was a director of the Society for Science and the Public. The author of more than 40 peer-reviewed scientific publications, he is a Fellow of the American Physical Society and of the American Association for the Advancement of Science.

Bezdek, Roger

MISI

Dr. Roger Bezdek is the founder and president of MISI – a Washington, D.C.-based economic, energy, and environmental research firm. He is also the co-founder of Cavendish Energy, which has developed a patented technology for producing hydrogen from aluminum in a sustainable, controllable, and scalable process. He has served as Corporate Director, Corporate President and CEO, University Professor, Research Director in ERDA/DOE, Research Director in the U.S. Treasury Department, Senior Advisor in the Office of the Secretary of the Treasury, U.S. energy and environmental delegate to the European Community and to NATO, and as a participant in the U.S. State Department AMPART program. He has served on various National Academies of Science energy and environmental committees. Dr. Bezdek received his Ph.D. in Economics from the University of Illinois (Urbana), is an internationally recognized expert in environmental and energy analysis

and forecasting, and testifies frequently before the Federal, state, and city governments. He is the author of six books and over 300 articles in scientific and technical journals, has made over 100 conference presentations, and serves as an editorial board member and peer-reviewer for professional publications. He is the recipient of numerous honors and awards and is listed in Marquis Who's Who. He has served as U.S. representative to international organizations on energy and environmental issues, and lectures frequently on economic and energy issues, economic forecasting, and environmental topics. He is the Washington editor of World Oil magazine. Dr. Bezdek's recent funding sources include U.S. Department of Energy, National Energy Technology Laboratory, OnLocation, Inc., U.S. National Highway Transportation and Safety Administration, Shook, Hardy & Bacon, UN Environment Program, City of Moreau, New York, City of Northport, New York, U.S. Department of Defense (Air Force & Marine Corps), Nuclear Energy Institute, Marstel-Day, Shenhua Science and Technology, Uppsala University, Gulf Publishing Company, Georgetown Climate Center and the National Black Chamber of Commerce.

Cherry, Todd

Appalachian State University

Dr. Todd L. Cherry is Professor of Economics at Appalachian State University and senior research fellow at CICERO - Center for International Climate and Environmental Research Oslo. He received his Ph.D. from the University of Wyoming in 1999. Previous concurrent appointments include the Rasmuson Chair of Economics at the University of Alaska-Anchorage, a faculty fellow in the energy and environment program at the Institute for Emerging Issues program at North Carolina State University, and the Harlan E. Boyles Professor at Appalachian State University. He served on the technical advisory committee for the Mountain Resource North Carolina Legislative Commission. He currently serves as an Associate Editor for Resource and Energy Economics and on the Editorial Board of Journal of Environmental Economics and Management. Dr. Cherry's research focuses on issues at the intersection of behavioral science, environmental management and public policy. His work has employed experimental and survey methods to explore the development of renewable energy, the design of policy and institutions, the architecture of international agreements to manage global public goods, the public opposition to effective policies, and the general behavioral underpinnings that affect the efficacy of public policy. Dr. Cherry's research has been funded by federal agencies, such as the U.S. Internal Revenue Service, U.S. Office of Naval Research, and the Norwegian Research Council, and state agencies, such as the North Carolina State Energy Office and the North Carolina Rural Economic Development Center.

Crago, Christine

University of Massachusetts Amherst

Dr. Christine L. Crago is an Assistant Professor at the University of Massachusetts Amherst, with a joint appointment in the Department of Resource Economics and the Commonwealth Honors College. She holds degrees from the University of Illinois Urbana-Champaign (PhD, Agricultural and Consumer Economics), Michigan State University (MS, Agricultural Economics), and the University of the Philippines Los Banos (BS, Economics). Dr. Crago was a Postdoctoral Scholar at the Energy Biosciences Institute, and was a participant in the International Institute for Applied Systems Analysis Young Scientist summer program. Her research focuses on policy analysis related to energy, agriculture and the environment. Current research examines drivers of growth in solar PV capacity, evaluates effectiveness of incentives for energy conservation using field experiments, and examines optimal taxes for carbon and its co-pollutants. Ongoing projects also include research related to fertilizer use and water quality in the US, and the impact of fertilizer subsidies on agricultural productivity in Nepal. Dr. Crago's past work focused on the environmental and economic impacts of biofuel policies in the US, Brazil, and India. Her research has been published in the Journal of Environmental Economics and Management, American Journal of Agricultural Economics, and Energy Policy. Her current research is funded by the US Department of Agriculture and the Massachusetts Department of Energy Resources.

Dayaratna, Kevin

The Heritage Foundation

Kevin D. Dayaratna, Ph.D is Senior Statistician and Research Programmer in The Heritage Foundation's Center for Data Analysis (CDA). He is also an adjunct professor of Mathematics and Data Science at the George Washington University. An applied statistician, he has researched and published on the use of high-powered statistical models in public policy, medical outcomes, business, economics, and even professional sports. In terms of policy specifically, Dayaratna has published statistical work on energy, climate, tax, health

care, welfare, and labor policy. Regarding climate policy, Dr. Dayaratna has published extensively on the social cost of carbon, both at The Heritage Foundation and in the peer-reviewed literature. He has also testified on the topic twice in front of Congress. Dr. Dayaratna's work on energy policy has been referenced by the Trump Administration. Dr. Dayaratna did his undergraduate work at the University of California, Berkeley, majoring in applied mathematics with a specialty in mathematical physics. He also holds two masters degrees from the University of Maryland, one in business and management and the other in mathematical statistics. In 2014, Dayaratna completed his Ph.D. in mathematical statistics from the University of Maryland with specialties in Bayesian modeling and statistical computing.

Garnache, Cloe

Michigan State University

Dr. Cloé Garnache is an Assistant Professor of Environmental and Natural Resource Economics in the department of Agricultural, Food, and Resource Economics at Michigan State University (MSU) and is a member of the MSU Water Science Network. She received her Ph.D. from the University of California at Davis and M.S. in both Energy and Environmental Economics and Life Sciences from AgroParisTech (Paris, France). Dr. Garnache has received grants from the USDA National Institute of Food and Agriculture, the USDA Economic Research Service, and the USDA Forest Service to conduct research on environmental policy design and the value of ecosystem services. Her latest project links agricultural nutrient pollution to the value of freshwater ecosystem services. She organized an Agricultural and Applied Economics Association (AAEA) Invited Paper Session at the Allied Social Sciences Associations (ASSA) meeting in 2016 on targeting nutrient pollution to protect inland and coastal waterways. Her research has been published in the Journal of the Association of Environmental and Resource Economists, the Journal of Environmental Economics and Management, and the American Journal of Agricultural Economics, among other journals. In 2017, she received the MSU Agricultural, Food, and Resource Economics Research Excellence Award.

Heutel, Garth

Georgia State University

Dr. Garth Heutel is an Associate Professor of Economics in the Andrew Young School of Policy Studies at Georgia State University and a Faculty Research Fellow at the National Bureau of Economic Research. He studies energy and environmental policy, behavioral economics, public economics, and the economics of nonprofit organizations. Some recent research projects include studying the economics of solar geoengineering, estimating the impact of pollution on elderly mortality, and predicting future adaptation to climate change. His research has been published in the Journal of Public Economics, The Economic Journal, American Economic Journal: Economic Policy, Journal of Environmental Economics and Management, Review of Economic Dynamics, and elsewhere. He earned his PhD at the University of Texas at Austin, and he was previously a faculty member at the University of North Carolina at Greensboro and a postdoctoral research fellow at Harvard University.

Hobbs, Elliott

Arizona State University - School of Sustainability

Elliott R. Hobbs is the Entrepreneur Catalyst of the Skysong Sustainability Venture Development at Arizona State University where he is also President of the Hybrid ai500, a research and development project that tests the performance and efficiency of autonomous transportation systems. His areas of research expertise include renewable fuels and transportation, efficiency and sustainability testing; bioremediation, air and water pollution, and social cost assessments; environmental economic evaluation, and the design of sustainable policy implementation. Mr. Hobbs served as a technical researcher for the Department of Energy Clean Cities Coalition (1995-2001) and was Red Hawk Carbon Capture Systems Project Manager (2006-2012). Mr. Hobbs has published 4 patents in bioreactor and hydrogen fueling system design. He holds the standard for building the largest carbon mitigation facility in North America for coal and natural gas power plants, and is attending the executive program at Thunderbird School of Global Management under an academic scholarship. Mr. Hobbs' sources of funding for the past two years include Frazer-Nash Research Limited, Kamkorp Group, Cool Planet Biofuels Inc., United Helium, Inc., The Carman Group, LLC, Electric Applications Incorporated, Realty Executives and Arizona State University.

Holladay, James Scott

University of Tennessee

Dr. J. Scott Holladay is an Assistant Professor in the Department of Economics in the Haslam College of Business at the University of Tennessee. He holds a B.A. in Economics and a B.S. in Computer Science from Furman University. He earned Master's and Ph.D. degrees in Economics from the University of Colorado, Boulder. Previously, he was a post-doctoral researcher at New York University's School of Law. Dr. Holladay's research focuses on the intersection of environmental economics and policy. He has studied how international trade affects pollution emissions from U.S. manufacturing firms and how efforts to reduce emissions domestically affect foreign polluters. He also studies electricity markets, with a particular focus on how low natural gas prices affect the electricity market and energy policy. In addition to a number of policy briefs published through the Institute for Policy Integrity at New York University, he has published peer reviewed articles in the Journal of Environmental Economics and Management, the Journal of Industrial Economics and the Journal of Economic Behavior and Organizations among others. He has received past funding from the Alfred P. Sloan Foundation, the Robert Wood Johnson Foundation and the Appalachian Research Council.

Jacobsen, Grant

University of Oregon

Dr. Grant Jacobsen is an Associate Professor at the University of Oregon and the Director of the Master of Public Administration Program. He received an M.A. and Ph.D. in Economics from the University of California-Santa Barbara, where he was a fellow in the National Science Foundation's Economics and Environmental Science Program. His research focuses on the use of applied empirical techniques to evaluate and inform the design of environmental policies. His work has addressed topics related to renewable energy, energy efficiency, air pollution, extraction of natural gas and oil, carbon offsets, climate change awareness, and voluntary environmental protection. He has published articles in leading academic journals, including the Economic Journal, the Review of Economics and Statistics, and the Journal of Public Economics. He is a member of the editorial council of the Journal of Environmental Economics and Management. He has served as a program reviewer for the U.S. Department of Energy and as an adviser to the Eugene Water & Electric Board. Dr. Jacobsen's research has been supported by the W.E. Upjohn Institute for Employment Research.

Kelly, David

University of Miami

Dr. David L. Kelly is a Professor of Economics and the Director of graduate studies in economics at the University of Miami. He was chair of the economics department from 2005-8 and has formerly held positions at the University of California at Santa Barbara and Carnegie Mellon University. Prof. Kelly studies the optimal environmental decision making given uncertainty with learning. He has published widely on optimal climate change policy given uncertainty with learning, adaptation to climate change, the design of environmental regulation given uncertainty, the economic impact of hurricanes, and the effects of economic growth and government policy on the environment. Research authored/co-authored by Professor Kelly has appeared in Science, the Journal of the Association of Environmental and Resource Economists, the Journal of Environmental Economics and Management, and the Journal of Economic Theory. His research has been funded by the National Science Foundation, Department of Energy and other federal agencies.

Kotchen, Matthew

Yale University

Dr. Matthew Kotchen is an Associate Professor of Environmental Economics and Policy at Yale University. His primary appointment is in the Yale School of Forestry and Environmental Studies, with affiliated appointments in the Yale School of Management and the Department of Economics. He is also a faculty research fellow at the National Bureau of Economic Research (NBER). Professor Kotchen's research interests lie at the intersection of environmental and public economics, and ongoing projects employ both theoretical and empirical methods covering a range of topics, including energy, climate change, "green" markets, corporate social responsibility, and applied game theory. Several projects involve collaborations with ecologists and political scientists. Dr. Kotchen joined the Yale faculty in 2009 and has held previous and visiting positions at Williams College, University of California (Santa Barbara and Berkeley), Stanford University, and Resources for the Future (RFF). Dr. Kotchen has received no external research funding over the last two years.

Moore, Jim

Spire Inc

Jim Moore is a Utility Market Analyst for Spire Inc. in St. Louis, Missouri. Spire is an energy company that delivers natural gas to 1.7 million customers across Alabama, Mississippi and Missouri. Prior to joining Spire, Jim spent 28 years at Ameren in several different roles including 20 years trading, hedging and brokering energy commodities. Jim has been involved in coal, power, natural gas, refined products, crude oil and environmental products. Jim was also heavily involved in Integrated Resource Planning, M&A and engineering design work at Ameren. Jim earned his bachelor's degree in electrical engineering from the Missouri University of Science and Technology and a master's in business administration from Washington University, John M. Olin School of Business. Moore is a certified Professional Engineer in the state of Missouri and has Series 3 and Series 33 broker registrations. Moore is an Accreditation Board for Engineering and Technology (ABET) engineering technology accreditation evaluator and has taught as an adjunct and guest lecturer at numerous universities.

Rychlak, Ronald

University of Mississippi

Professor Ronald Rychlak is holder of the Jamie L. Whitten Chair in Law and Government at the University of Mississippi School of Law, where he has been on the faculty since 1987. He also serves as the university's Faculty Athletics Representative. He is a member of the Southeastern Conference's Executive Committee (serving as secretary), president-elect of the Southeastern Association of Law Schools (SEALS), and an advisor to the Holy See's Mission to the United Nations. Ron serves on advisory boards for the US Civil Rights Commission, the Catholic League for Religious and Civil Rights, and Ave Maria School of Law. He is a graduate of Wabash College and Vanderbilt University School of Law, and he has written ten books, including *Environmental Law: Law for the Layperson*, (with David Case), West/Thompson Reuters (2nd printing, 2011); originally released by Oxford University Press (2010).

Sager, Allana

Dexter ATC Field Services, Inc.

Mrs. Allana Sager is an Environmental Engineer for Dexter ATC Field Services, providing onsite support for the Water and Wastewater Treatment program at the Total Petrochemicals and Refining Facility in Port Arthur, TX. She received a Bachelor of Science in Biology and Biochemistry from Texas A&M University. She continued her studies and received a Master of Science in Civil Engineering with a specialty focus in Environmental Engineering, and a Business Certificate from the Mays School of Business at Texas A&M University. Allana was awarded a graduate research assistantship by the Texas Engineering Experiment Station at Texas A&M University where she conducted research in the Global Petroleum Research Institute regarding the stability of hydraulic fracturing waters and methods to monitor microbial activity in these waters. Her work was published and presented to the Society of Petroleum Engineer's Industry Board at the Unconventional Resource Technology Conference where she was commended for bringing a revolutionary topic forward for industry wide discussion. Post publication, her work was also featured in the *Journal of Petroleum Technology* as a feature story detailing the best available technology and practices identified by her team's research. Her technical background also includes biotechnology, biopolymers, wastewater treatment, stormwater management, water reuse, membrane technology, industrial water storage and containment. In addition, she has also developed an expertise in the implementation and maintenance of federal and state water and air quality standards covering the discharge of treated process water, facility stormwater, particulate matter, volatile organics, benzene waste operations, and national emissions standards for hazardous air pollutants. She is recognized as an effective communicator of science and engineering to both technical and non-technical audiences. Since Allana has joined industry, she has received the Engineer-In-Training (EIT) certification from the Texas Board of Professional Engineers, and is currently working towards her Professional Engineering (PE) License. She actively works to give back to her community by being an active member of Engineers without Borders, the American Society of Civil Engineers, the American Chemical Society, and the American Water Works Association. She is not currently a recipient of any research grants or federal funding, but she did receive funding from a private sector environmental consulting firm (GSI Environmental) during her research.

Sexton, Steven

Duke University

Dr. Steven Sexton is Assistant Professor of Public Policy and Economics in the Sanford School of Public Policy at Duke University and faculty fellow of the Duke University Energy Initiative. Dr. Sexton received a Ph.D. in agricultural and resource economics and B.A.s in economics and political science from the University of California, Berkeley. His research focuses on evaluation of efficiency and distributional impacts of environmental and energy policy and welfare impacts of renewable energy and agricultural technology adoption. It is published in Review of Economics and Statistics, Journal of Environmental Economics and Management, Journal of Economic Perspectives, and Environmental Research Letters, among other journals. Current projects estimate the cost effectiveness of net energy metering subsidies to rooftop solar adopters, the spatially varying social benefits of solar capacity, and model uncertainty in estimation of climate change damages. His research has been supported within the past two years by the National Science Foundation, the Sloan Foundation, the National Bureau of Economic Research, and the Department of Energy.

Van Houtven, George

RTI International

Dr. George Van Houtven is Program Director for Ecosystem Services Research at RTI International and a senior environmental economist with over 20 years of experience managing and conducting applied policy research, primarily for the U.S. Environmental Protection Agency (EPA) and other federal agencies. He received a B.A. in Political Economy from Johns Hopkins University and a Ph.D. in Economics from the University of Maryland. Over the course of his career, Dr. Van Houtven's research has primarily focused on economic valuation of human health and ecological benefits and on markets for ecosystem services. Through grants, cooperative agreements, and task order funding from several EPA offices, he has specialized in the development and application of nonmarket valuation methods linking economic and environmental models to assess the benefits of a wide range of air, water, and hazardous waste pollution regulations. This research has included the development of innovative structural and meta-analytic benefit transfer methods, with a particular emphasis on valuing human health and water quality improvements. It has also involved the design, implementation, and analysis of several stated preference surveys valuing environmental benefits ranging from reduced mortality and reproductive risks to improved lake water quality, as well as the advancement of methods for combining revealed and stated preference data. He is also currently leading an EPA-funded effort to develop an ecosystem service classification system designed to support the quantification and valuation of environmental benefits. In recent years, Dr. Van Houtven's research has also increasingly focused on incentive-based mechanisms for environmental policy, in particular water quality trading, and the application of optimization methods to analyze the cost-benefit tradeoffs associated with alternative trading program designs. Over the last two years, his main sources of research funding have been EPA and the Environment Agency—Abu Dhabi.