



## Two Eminent Leaders Join HEI Board



Martha J. Crawford.

In July, the HEI Board of Directors welcomed two new members: Martha J. Crawford, dean of the Jack Welch College of Business and Technology at Sacred Heart University; and Michael J. Klag, dean emeritus and Second Century Distinguished Professor at the Johns Hopkins Bloomberg School of Public Health.

Members of the Board are drawn from distinguished leaders in science and policy whose principal responsibilities

are to ensure the integrity and scientific quality of HEI's research and review.

Crawford is an internationally recognized expert on technological innovation with extensive experience in business, environmental policy, and higher education. Before joining the Jack Welch College of Business and Technology she was on the faculty of Harvard Business School, and the course she created, "21st Century Energy," was recognized in 2019 by the Paige Prize for national excellence in integrating sustainability into business education curricula.



Michael J. Klag.

PHOTO BY HARRY GIGLIO

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## Traffic Review Protocol Posted

HEI's **expert panel** to review the literature on traffic-related air pollution and health has published its **review protocol**. The protocol has been largely based on standards set by the Cochrane Collaboration, the World Health Organization, and the National Institute of Environmental Health Sciences.

The panel was appointed in 2018 by HEI's Board of Directors following the publication of HEI's well-cited 2010 **critical review**.

Panelists are using a systematic approach to search the scientific literature, assess study quality, summarize results, and reach conclusions about the body of evidence, as reflected in the protocol. HEI expects to publish the panel's findings as a Special Report in Summer 2021. [HEI]

For more information, please see [www.healtheffects.org/air-pollution/systematic-literature-review-traffic-related-air-pollution](http://www.healtheffects.org/air-pollution/systematic-literature-review-traffic-related-air-pollution), or contact Hanna Boogaard at HEI, [hboogaard@healtheffects.org](mailto:hboogaard@healtheffects.org).

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## 2019 Travel Award Recipients

For the second year, HEI conferred three student/postdoc Travel Awards to junior researchers studying air pollution and its health effects. The award covers the costs of HEI Annual Conference registration, travel, hotel,



and meals. The 2019 awardees were (from left) postdoctoral students Ploy Pattanun Achakulwisut of George Washington University and Erika Garcia of the University of Southern California, and graduate student Lauren Hoskovec of Colorado State University. 

## Future Challenges, Diverse Expertise at HEI Annual Conference

Innovative, critical research on air pollution and health took center stage when HEI hosted its [39th Annual Conference](#). About 175 experts from academia, government, industry, and nongovernmental organizations gathered for the three-day event, held in Seattle, Washington, in early May. In addition to the scientific sessions, attendees enjoyed informal opportunities to meet and engage with each other across a variety of disciplines.

### Health and New Mobility

The conference kicked off on Sunday, May 5, with a series of wide-ranging presentations on the future of mobility. Speakers highlighted new, innovative, and potentially disruptive technologies — such as shared, autonomous, and electric vehicles — and their potential air quality and health implications. They also explored the connection between changes in how people travel and a need for new infrastructure, including green space and transport planning. Panelists from the motor vehicle industry and the Seattle Department of Transportation joined the speakers in engaging the audience in a lively discussion on health considerations of future mobility and possible barriers to introducing new transportation modes.

### Health Effects of Early-Life Exposure to Air Pollution

Monday morning began with a session on the latest results from research on potential health effects of prenatal and early-life exposure to air pollution. The speakers highlighted new epidemiological evidence for adverse birth effects, such as low birthweight, as well as respiratory and neurodevelopmental effects in children. Though often subtle, such early-life effects are important because they may impact the rest of the individual's life.



Bryan Duncan of the National Aeronautics and Space Administration (left) with Kees de Hoogh, Swiss Tropical and Public Health Institute.

*Continued on page 3*



Howard Feldman, American Petroleum Institute, with Kate Causey, Institute for Health Metrics and Evaluation.



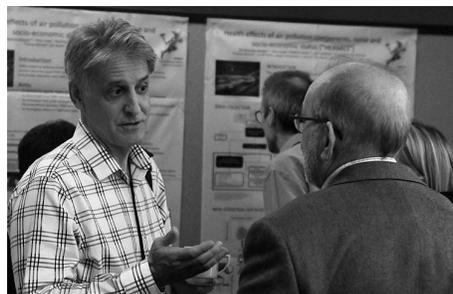
Haneen Khreis, Texas A&M University, and Dan Sperling, University of California, Davis.



Sim Larkin, U.S. Department of Agriculture, Forest Service.



Thomas Luben, U.S. Environmental Protection Agency.

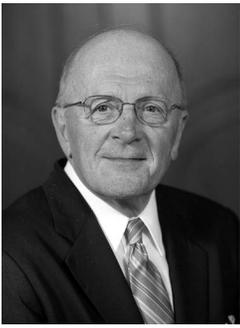


Robert Morris, Eco Logic (left), with Rashid Shaikh, HEI Director of Science.



Charlene Rohr, RAND Corporation; David Foster, HEI Research Committee; and Frank Kelly, HEI Review Committee.

# HEI Thanks Sherwood Boehlert for Decade of Service on Board



Sherwood Boehlert.  
PHOTO BY PAUL SCHNAITTACHER

Sherwood Boehlert recently retired from the HEI Board of Directors after a decade of exemplary service.

Boehlert joined the Board in 2009. He represented New York State in Congress for 24 years, retiring in late 2006. As chair of the House Science Committee for six years and chair of the Transportation and Infrastructure Committee's Subcommittee on Water Resources and Environment, he was at the intersection of U.S. policy and science for much of his career. He was widely viewed as

a thoughtful political leader able to work across party lines to achieve consensus on challenging issues, including increased government investment in scientific research and development,

the Nanotechnology Act, and the acid rain provisions of the 1990 amendments to the Clean Air Act.

After retiring from Congress, Boehlert cochaired the Bipartisan Policy Center's (BPC) National Transportation Policy Project, leading a distinguished panel of industry, transportation, and other experts. He also cochaired the BPC's panel on improving the use of science in public policy.

"Our Board of Directors, and HEI more broadly, benefited enormously from the insight, experience, and wisdom that Sherry brought to the Board," said Richard Celeste, Board chair.

Bob O'Keefe, HEI's vice president, added: "Despite being a lifelong fan of the New York Yankees, Boehlert's love for baseball and dedication to HEI and the environment always made him a welcome guest in Boston." 

## HEI ANNUAL CONFERENCE (Continued from page 2)

### Building Science to Inform Global Actions

After a poster session, Monday afternoon continued with discussions of emerging issues in air pollution. First, an overview of HEI's Global Health Program set the stage for lively discussions about what data are available, as well as opportunities to build scientific knowledge globally, with particular focus on China and India. Such data are essential to enable decision makers to devise policies to safeguard air quality.



Raha Abu Bahar Sadiqin of Boston University with Anders Erickson, University of British Columbia.



Danielle Vienneau, Swiss Tropical and Public Health Institute (left), with Erika Garcia, University of Southern California.

Monday wrapped up with the timely, pressing topic of wildfires. Speakers discussed approaches to monitoring and modeling air pollution and health effects associated with the fires, along with strategies to mitigate impacts on health, such as reducing activity levels and creating clean-air spaces in buildings.

### Long-Term Low-Level Exposure and Health

Tuesday morning began with investigators presenting interim results from three HEI-funded studies assessing the health effects of long-term, low-level exposure in very large populations in the United States, Canada, and Europe, and evaluating whether adverse effects are seen below current air quality standards. The strengths and weaknesses of initial findings from the first two studies, as identified by an independent HEI review panel, were also presented, together with a discussion of possible implications for future research, risk assessment, and regulations.



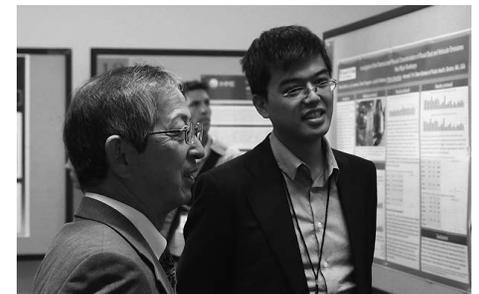
Shannon Walker, Seattle Department of Transportation (left), and Britta Gross, General Motors.

### Looking Forward

The conference concluded with an engaging discussion about HEI's draft Strategic Plan for 2020–2025, with a focus on identifying key gaps in scientific knowledge and highlighting key research opportunities. Following a presentation by HEI staff, sponsors and other attendees discussed various aspects of the proposed plan and how its elements may be strengthened. The new plan, to be finalized during the fall, will become effective on April 1, 2020. 

The HEI Annual Conference 2019 program, all presentation slides, and a photo album are available at [www.healtheffects.org/annual-conference](http://www.healtheffects.org/annual-conference). Next year's conference, which coincides with HEI's 40th anniversary, is scheduled for April 5–7, 2020, at the Renaissance Boston Waterfront Hotel. Registration and program information will be available in early 2020.

CONFERENCE PHOTOS BY CHONA KASINGER



Yoshiaki Shibata of Toyota (left) with Manabu Shiraiwa, University of California, Irvine.

## Communicating the Science

### HEI Informs Discussion of Air Pollution and Health Issues in China

HEI experts traveled to Hangzhou, China, in May to attend the 7th International Conference on Air Benefit and Cost and Attainment Assessment (ABaCAS2019). ABaCAS is a collaboration among the U.S. Environmental Protection Agency, the South China University of Technology, and other Chinese universities and governmental agencies. HEI Vice President Bob O’Keefe gave an invited plenary presentation of key results from the [State of Global Air 2019 report](#).

HEI’s Katy Walker organized and cochaired a session on the influence of shipping on emissions, air quality, exposure, and health in major Chinese port cities and the effectiveness of alternative policy actions. Speakers presented findings from global, regional, and local studies. Yan Zhang of Fudan University presented preliminary results of a collaboration with HEI to assess emissions, air quality, and health impacts of ships and shipping-related sources in Shanghai and the broader Yangtze River Delta region.



Huangpu River, Shanghai.

PHOTO BY KATY WALKER

In other ABaCAS sessions, Allison Patton of HEI presented on the use of mobile monitoring to assess exposures to ultra-fine particles, and Walker gave an overview of HEI’s research program on estimating effects of exposure to low levels of air pollution and potential implications of their findings for health impact assessment.

Walker and Patton then traveled to Shanghai for a “Workshop on Ship Emissions and Their Environmental Impacts and Health Effects in YRD/Shanghai, China.” Zhang and Walker presented preliminary results of the HEI-Fudan shipping study to senior government officials at agencies that regulate the port and shipping activities in Shanghai, including the Shanghai Municipal Bureau of Ecology and Environment, Shanghai Environmental Monitoring Center, and the Vehicle Emission Control Center. Organization of the workshop was a collaboration of HEI with Zhang, Haidong Kan, and Weichun Ma of Fudan University.

### HEI Science Presented in Hong Kong

In June, Rashid Shaikh, HEI’s director of science, presented information from HEI’s work on exposure assessment and health studies at the Institute for the Environment at the Hong Kong University of Science and Technology. His talk was part of an event marking the launch and public release of an innovative mobile app to help citizens understand and manage their exposure to air pollutants. The event was attended by Hong Kong and international scientists, government officials, industry representatives, media, and others.

The app, **Personalized Real-Time Air Quality Informatics System for Exposure–Hong Kong (PRAISE–HK)**, was developed by an interdisciplinary team of scientists. It combines state-of-the-art sensor technologies, big data, air quality modeling systems, and exposure science to effectively analyze and forecast air quality in Hong Kong down to the street level. Future developments of the app will include information on exposures in specific microenvironments and recommendations for cleaner travel routes around the city, as well as personalized exposure and risk profiles. [HEI](#)

### NEW BOARD MEMBERS (Continued from page 1)

For many years Crawford lived and worked in Paris, first serving as principal administrator of the Organization for Economic Cooperation and Development’s Environmental Performance Review program and later as chief technology officer for several large multinational companies, including Air Liquide (industrial gases), Areva (nuclear and renewable energies), and L’Oréal (cosmetics and consumer products).

A self-described “pragmatic environmentalist,” Crawford grew up on a ranch in southern Arizona. She holds a Ph.D. in environmental engineering from Harvard University and an M.B.A. from the French Collège des Ingénieurs. A dual U.S. and French citizen since 1999, she serves on the boards of two French multinational companies, Altran Technologies and Suez Environnement.

Klag, an internist and epidemiologist, served as the tenth dean of Johns Hopkins Bloomberg School of Public Health. He guided the school to unprecedented growth across a range of categories

and continued to elevate it as a pacesetter institution of global influence and impact. He has held numerous external leadership positions and serves on the boards of other not-for-profit organizations, including the David and Lucille Packard Foundation and the Johns Hopkins Hospital.

Prior to his appointment as Bloomberg School dean, Klag spent 21 years at the Johns Hopkins School of Medicine. His scientific contributions have been in the prevention and epidemiology of kidney disease, hypertension, and cardiovascular disease. From 1988 to 2011 he directed one of the longest-running longitudinal studies in existence, the Precursors Study, which began in 1946. He is the author of more than 200 publications and was editor-in-chief of the *Johns Hopkins Family Health Book*.

Klag earned his medical degree at the University of Pennsylvania and his M.P.H. degree from the Johns Hopkins School of Hygiene and Public Health. [HEI](#)

## HEI Releases New Report on Household Air Pollution in Ghana

A new HEI study in Ghana published recently at [www.healtheffects.org](http://www.healtheffects.org) documents the importance of the contribution of household air pollution to ambient air pollution, with potential lessons for other low- and middle-income countries. The study — *HEI Communication 19, Contribution of Household Air Pollution to Ambient Air Pollution in Ghana: Using Available Evidence to Prioritize Future Action* — was led by HEI's Ghana Working Group, composed of scientists from Ghana, the United States, Canada, the United Kingdom, and India. They evaluated the strength of evidence on the contribution of household air pollution to ambient (outdoor) fine particle air pollution (PM<sub>2.5</sub>) in Ghana as well as its impacts on health.

*The study's findings are likely to apply more broadly to household air pollution throughout sub-Saharan Africa, where 80 percent of the population relies on solid fuels for cooking.*

The study reported that household air pollution from the burning of solid fuels (wood, coal, charcoal, and other biomass) for cooking contributes to nearly 10,000 deaths each year in Ghana. Also noted in the report:

- Household air pollution is the seventh leading risk factor for premature mortality in Ghana, where approximately 73% of the population relies on solid fuels for cooking.
- Household solid fuel use (including cooking, lighting, and heating) is a major contributor to the levels of outdoor fine particulate matter (PM<sub>2.5</sub>) that Ghanaians breathe; one study suggests it contributed nearly 65% of the primary PM<sub>2.5</sub> emissions in the country in 2010.
- These findings are also likely to apply more broadly to household air pollution throughout sub-Saharan Africa, where 80% of the population relies on solid fuels for cooking.

This new study is one among a growing number of studies that have pointed to household burning of solid fuels for cooking, lighting, and heating as a major contributor to high air pollution levels, not only inside homes but also outdoors. In sub-Saharan Africa, Ghana has emerged as a good case study because of the presence of an active air quality monitoring network and ongoing efforts on air quality management.

Beyond reporting on current knowledge, another goal of the review was to evaluate the data and resources in Ghana and the region for estimating source contributions to ambient PM<sub>2.5</sub>. The report includes a *Summary for Policy Makers*, which presents the main conclusions and identifies strategies and tools for improving the understanding of sources of air pollution.

The Working Group identified several practical opportunities to improve the scientific evidence necessary to inform local and national decisions on air pollution mitigation and cleaner energy choices. These ideas include:

- establishment (or expansion) of the air quality monitoring program,
- comprehensive data development and collection for major sources of air pollution, and
- enhanced coordination among the several analysis efforts underway.

For African countries, the Working Group also noted the importance of regional actions to address the management of air pollution and its sources. [HEI](#)

The Ghana Working Group's research was supported by Bloomberg Philanthropies ([www.bloomberg.org](http://www.bloomberg.org)). The *Summary for Policy Makers*, and the full HEI Communication 19, can be downloaded at [www.healtheffects.org/publications](http://www.healtheffects.org/publications). For more information, contact Katy Walker, [kwalker@healtheffects.org](mailto:kwalker@healtheffects.org), or Pallavi Pant, [ppant@healtheffects.org](mailto:ppant@healtheffects.org).

## HEI-Energy Program, Website Launched

HEI-Energy, a new, independent research organization built on the HEI model but separately funded, is now fully in operation and has a website of its own. The site, [www.hei-energy.org](http://www.hei-energy.org), was launched in July.

The mission of HEI-Energy is to bring credible science to bear on discussions of the potential for population exposures and health effects associated with the development of oil and natural gas from unconventional resources. It will soon release its inaugural publications, a pair of literature reviews to support planning for research. [HEI](#)

### MARK YOUR CALENDAR:

HEI Annual Conference  
April 5–7, 2020  
Renaissance Boston  
Waterfront Hotel  
Boston, MA

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Daniel S. Greenbaum, *President*

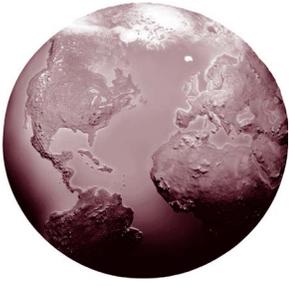
HEI is a nonprofit organization funded jointly by government and industry to research and evaluate the health effects of air pollution. An overview of HEI, information on its current research program, and all published HEI reports are available for downloading, free of charge, from the website.

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### SIGN UP: HEI NEWSLETTER ONLINE

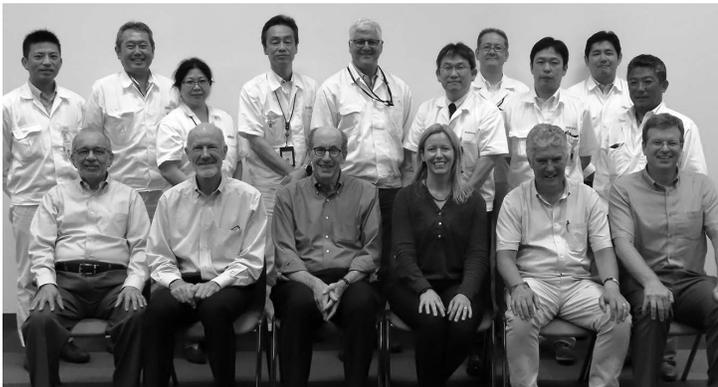
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### HEI Visits Sponsors, Government Officials, and Scientists in Japan



In July, an HEI delegation held meetings in and around Tokyo with sponsors, government officials, and the scientific community to help plan the new HEI Strategic Plan for 2020–2025. HEI President Dan Greenbaum, Vice President Bob O’Keefe, and Director of Science Rashid Shaikh were joined by (left photo, front row, from center) Jennifer Peel and Frank Kelly of the HEI Review Committee and Allen Robinson, Research Committee. They had a chance to meet with a range of HEI auto sponsors at the Japanese Automobile Manufacturers Association (above); visit and take test drives of new technology at the Honda R&D facility in Tochigi (left); and meet with Ministry of Environment of Japan officials as well as a number of leading epidemiology and exposure scientists. 