

# Workshop on the Analysis and Management of Energy and Environmental Policy

John F. Kennedy School of Government  
Harvard University

April 13–16, 2015

Conducted by the  
Harvard Environmental Economics Program

*With the support of—and in collaboration with  
The Enel Foundation*





# Map of Harvard Kennedy School Campus



## DAY 1: Monday, April 13

### Orientation Breakfast

One Brattle Square

8:00 – 9:00 am

In this essential orientation session, we will welcome the participants to Harvard, introduce the workshop faculty and staff, offer an overview of the next four days, and provide an opportunity for brief self-introductions by all workshop participants.

All sessions to be held at One Brattle Square, Second Floor in the Harvard Kennedy School Suite, Cambridge.

### Sessions 1–2: Principles of Policy Analysis: An Economic View of Energy and Environmental Policy

9:00 am – 12:15 pm

Robert Stavins

Albert Pratt Professor of Business and Government, Harvard Kennedy School  
Director, Harvard Environmental Economics Program  
Faculty Lead for the Workshop

These sessions will give participants tools to:

- Think analytically about public policy generally
- Think about benefits and costs of specific policies
- Understand fundamental concepts of benefits: use and non-use value
- Understand concepts of costs; importance of opportunity costs

### Break

10:30 – 10:45 am

### Lunch

12:15 – 1:15 pm

### Session 3: Private Risk and Social Welfare in the Electric Sector

1:15 – 2:45 pm

Forest Reinhardt

John D. Black Professor of Business Administration, Harvard Business School

This session will utilize a Harvard Business School case study, “Colbún and the Future of Chile’s Power.” In the case, the Chairman of Chilean electricity generator Colbún S.A., confronts questions about the firm’s future mix of power inputs. To make decisions, he needs to understand the expected cost and risks of various generating technologies and his own prospects for influencing the terms of the debate over energy and environment in Chile. See longer abstract at:

[www.hbs.edu/faculty/Pages/item.aspx?num=43430](http://www.hbs.edu/faculty/Pages/item.aspx?num=43430)

## **DAY 1: Continued**

### **Break**

2:45 – 3:15 pm

### **Session 4: Discussion session**

3:15 – 5:00 pm

All discussion sessions will be led by:

Joseph Aldy

Assistant Professor of Public Policy, Harvard Kennedy School

Former Special Assistant to the President of the United States for Energy and Environment

## **DAY 2: Tuesday, April 14**

### **Topic for the day: Challenges and Opportunities for the Power Industry**

Speakers and participants will explore the challenges and opportunities posed by the related issues of distributed generation, demand-side management (demand response), integration of renewables, and energy/power storage.

### **Breakfast**

8:00 – 8:45 am

### **Session 1: Introduction to the Day and Discussion of Distributed Generation**

8:45 – 10:00 am

Ashley Brown, J.D.

Executive Director, Harvard Electricity Policy Group

### **Session 2: Integration of Renewables**

10:00 – 11:30 am

Christopher Knittel

William Barton Rogers Professor of Energy Economics, MIT Sloan School of Management

### **Lunch**

Bell Hall, Belfer Building, Harvard Kennedy School

11:30 am – 1:30 pm

### **Session 3: Learning by Doing and Learning by Waiting: Approaches to Renewable-Energy Technology**

1:30 – 3:00 pm

William Hogan

Raymond Plank Professor of Global Energy Policy, Harvard Kennedy School

## **DAY 2: Continued**

### **Session 4: Discussion Session**

3:00 – 5:00 pm

### **Reception and Dinner for Workshop participants**

Harvard Faculty Club

5:30 – 8:30 pm

## **DAY 3: Wednesday, April 15**

### **Topic for the day: “Climate-Change Policy and the Power Industry”**

#### **Breakfast**

8:00 – 9:00 am

### **Session 1: The Clean Power Plan and U.S. Policy for Climate Change**

9:00 – 10:30 am

Joseph Aldy

Assistant Professor of Public Policy, Harvard Kennedy School

Former Special Assistant to the President of the United States for Energy and Environment

#### **Break**

10:30 – 11:00 am

### **Session 2: The State of Climate and Energy Policy in Europe**

11:00 am – 12:30 pm

Denny Ellerman

Former Senior Lecturer in Economics, MIT Sloan School of Management

Former Professor, Robert Schumann Centre for Advanced Studies, European University Institute

#### **Lunch**

12:30 – 1:30 pm

### **Session 3: International Climate Policy and the Road to Paris**

1:30 – 3:00 pm

Robert Stavins

Albert Pratt Professor of Business and Government, Harvard Kennedy School

Director, Harvard Environmental Economics Program

Faculty Lead for the Workshop

## DAY 3: Continued

### Break

3:00 – 3:30 pm

### Session 4: Discussion Session

3:30 – 5:00 pm

## DAY 4: Thursday, April 16

### Breakfast

8:00 – 8:30 am

### Session 1: Innovation of Environmental and Energy Technology

8:30 – 10:00 am

Joseph Lassiter

Senator John Heinz Professor of Management Practice in Environmental Management  
Harvard Business School

This session will utilize a Harvard Business School case study, “TerraPower,” which deals with the development of a next-generation nuclear power reactor. See abstract at:

[www.hbs.edu/faculty/Pages/item.aspx?num=43679](http://www.hbs.edu/faculty/Pages/item.aspx?num=43679)

### Break

10:00 – 10:15 am

### Session 2: The Geopolitics of European Energy Security

10:15 – 11:45 am

Meghan O’Sullivan

Jeane Kirkpatrick Professor of the Practice of International Affairs and  
Director of the Geopolitics of Energy Project, Harvard Kennedy School

### Lunch and Discussion Session

11:45 am – 1:15 pm

### Closing remarks

1:15 – 1:30 pm

Robert Stavins

**Joseph Aldy** is an Assistant Professor at the Harvard Kennedy School, a Nonresident Fellow at Resources for the Future, and a Faculty Research Fellow at the National Bureau of Economic Research. His research focuses on climate change policy, energy policy, and mortality risk valuation. He also serves as the Faculty Chair of the Kennedy School's Regulatory Policy Program. In 2009–2010, he served as the Special Assistant to the President for Energy and Environment at the White House. In this position, Aldy was responsible for the energy and environmental policy portfolio at the National Economic Council, for coordinating policy development and evaluation for the Office of Energy and Climate Change, and for international energy and environmental policy in support of the National Security Council. Aldy previously served as a Fellow at Resources for the Future and worked on the staff of the President's Council of Economic Advisers. He served as the Co-Director of the Harvard Project on Climate



Agreements and Co-Director of the International Energy Workshop before joining the Obama Administration. He earned his doctorate in economics from Harvard University, a masters of environmental management degree from the Nicholas School of the Environment, and a bachelors degree from Duke University.



**Ashley Brown** is the Executive Director of the Harvard Electricity Policy Group at Harvard University's John F. Kennedy School of Government. It is a leading "think tank" on matters related to electricity restructuring, regulation, and market formation. A lawyer, he is Of Counsel to the international law firm of Greenberg Traurig. He also serves as a Director of Entegra Power Group, a large independent power producer in the United States. Before his current activities, Ashley Brown served two full terms as Commissioner of the Public Utilities Commission of Ohio from April 1983 to April 1993. As Commissioner, he was of five members responsible for the regulation of the state's electricity, telecommunications, surface transport, water and sanitation, and natural gas sectors.

Mr. Brown has extensive teaching experience in public schools and universities. He has lectured on energy and infrastructure regulation at Universities and other institutions throughout the world. He has advised numerous governments on energy, regulatory, and infrastructure matters. Among the countries in which he has worked are Brazil, Argentina, Costa Rica, South Africa, Namibia, Zambia, Mozambique, Liberia, Tanzania, Equatorial Guinea, Hungary, Ukraine, Russia, India, Indonesia, Bangladesh, and the Philippines.



**Denny Ellerman** is an internationally recognized expert on energy and environmental economics with a particular focus on climate policy, emissions trading, and interactions with energy markets. He is retired from the European University Institute in Florence, Italy, where he was a part-time professor and director of the Climate Policy Research Unit, and from MIT, where he was for many years a senior lecturer and executive director of the Center for Energy and Environmental Policy Research and of the Joint Program on the Science and Policy of Global Change. He is co-editor of the *Review of Environmental Economics and Policy* and a co-author of the leading books on the US SO<sub>2</sub> and the EU CO<sub>2</sub> Allowance Trading Programs,

*Markets for Clean Air: The US Acid Rain Program and Pricing Carbon: The European Emissions Trading Scheme*. He has a Ph.D. in political economy and government from Harvard University.

**William Hogan** is the Raymond Plank Professor of Global Energy Policy. He is Research Director of the Harvard Electricity Policy Group (HEPG), which is exploring the issues involved in the transition to a more competitive electricity market. In addition, he serves as Chair of the Kennedy School Appointments Committee. Previously he has served as Director of Graduate Studies for the Ph.D. Program in Public Policy and the Ph.D. Program in Political Economy and Government at the Kennedy School of Government, Chair of the Public Policy Program, Director of the Repsol YPF-Harvard Kennedy School Fellows Program for energy policy research, a member of the organizing committee for the Repsol YPF-Harvard Energy Policy Seminar, and as Director of the former Energy and Environmental Policy Center.

Professor Hogan has been actively engaged in the design and improvement of competitive electricity markets in many regions of the United States, as well as around the world, from England to Australia. His activities include designing the market structures and market rules by which regional transmission organizations, in various forms, coordinate bid-based markets for energy, ancillary services, and financial transmission rights. This research is also part of the larger activities on the future of energy and energy policy research at Harvard University through the Environment and Natural Resources Policy Program, Harvard Environmental Economics Program, Harvard University Center for the Environment, and the Mossavar-Rahmani Center for Business and Government.



He was a member of the faculty of Stanford University where he founded the Energy Modeling Forum (EMF), and is a Past President of the International Association for Energy Economics (IAEE). He received his undergraduate degree from the U.S. Air Force Academy and his Ph.D. from UCLA.

**Christopher Knittel** is the William Barton Rogers Professor of Energy and Professor of Applied Economics in the Sloan School of Management at the Massachusetts Institute of Technology, the Director of the Center for Energy and Environmental Policy Research at the Massachusetts Institute of Technology, and Faculty Co-Director of The E2e Project, a research initiative between MIT and UC Berkeley to undertake rigorous evaluation of energy efficiency investments. He joined the faculty at MIT in 2011, having taught previously at UC Davis and Boston University. Professor Knittel received his B.A. in economics and political science from the California State University, Stanislaus in 1994 (*summa cum laude*), an M.A. in economics from UC Davis in 1996, and a Ph.D. in economics from UC Berkeley in 1999. His research focuses on environmental economics, industrial organization, and applied econometrics. He is a Research Associate at the National Bureau of Economic Research in the Productivity, Industrial Organization, and Energy and Environmental Economics groups. He is the co-editor of the *Journal of Public Economics*, and an associate editor of the *Journal of Transportation Economics and Policy*, and *Journal of Energy Markets*, having previously served as an associate editor of *The American Economic Journal — Economic Policy* and *The Journal of Industrial Economics*. His research has appeared in *The American Economic Review*, *The American Economic Journal*, *The Review of Economics and Statistics*, *The Journal of Industrial Economics*, *The Energy Journal* and other academic journals.



**Joseph Lassiter** is the Senator John Heinz Professor of Management Practice in Environmental Management. Joe teaches Entrepreneurial Finance and Innovation in Business, Energy, and Environment in the Harvard Business School MBA Program as well as courses in its Executive Education Program. He is Faculty Chair of the University-wide Harvard Innovation Lab. His academic and professional work focuses on high-potential ventures and has most recently concentrated on the cleantech and energy sectors.



From 1994 to 1996, Joe was President of Wildfire Communications, a telecommunications software venture backed by Matrix Partners and Greylock Management. From 1977 to 1994, Joe was a Vice President of Teradyne (manufacturer of automatic test equipment) and a member of its Management Committee. Joe joined Teradyne in 1974 as a Product Manager while on sabbatical from MIT.

Joe began his career at MIT's Department of Ocean Engineering as an Instructor in 1970 and was promoted to Assistant Professor in 1972. He developed and taught a course on marine mineral resource economics. He lectured in hydrodynamics, marine transportation, and computer simulation modeling. In a joint program with Harvard Law School, he lectured on marine legal / regulatory policy. His research focused on forecasting economic and environmental consequences of offshore oil and gas development. He was appointed to the MIT-led National Academy of Engineering study on the future of engineering education. Joe received his BS, MS, and PhD from MIT and was awarded National Science, Adams, and McDermott Fellowships. He was elected to Sigma Xi.

**Meghan O'Sullivan** is the Jeane Kirkpatrick Professor of the Practice of International Affairs and Director of the Geopolitics of Energy Project at Harvard University's JFK School of Government. In 2013, she served as the vice chair of the All Party Talks in Northern Ireland, which sought to resolve on-going obstacles to peace. She was previously a Special Assistant to President George W. Bush and Deputy National Security Advisor for Iraq



and Afghanistan. Prior to that, she was Senior Director for Strategic Planning and Southwest Asia at the National Security Council; was a political advisor to the Coalition Provisional Authority administrator and Deputy Director for governance in Baghdad; and was a fellow at the Brookings Institution. Meghan is a strategic advisor to energy companies, an adjunct senior fellow at the Council of Foreign Relations, and an occasional foreign affairs columnist for *Bloomberg View*. Meghan serves on the Executive Committee of the Trilateral Commission, as a trustee of the German Marshall Fund, a member of the Advisory Board to the Women's Initiative at the George W. Bush Institute, and a member of the Board of the Belfer Center at Harvard. She has been

awarded the Defense Department's Distinguished Public Service Medal, their highest honor for civilians, and is a three time recipient of the State Department's Superior Honor Award. In 2008, *Esquire Magazine* named her one of the most influential people of the century. She has published books and articles on American foreign policy, including *Shrewd Sanctions: Statecraft and State Sponsors of Terrorism and Honey and Vinegar: Incentives, Sanctions, and Foreign Policy*. Meghan received her B.A. from Georgetown University and her Masters of Science in Economics and doctorate in Politics from Oxford University.

**Forest Reinhardt** is the John D. Black Professor of Business Administration at Harvard Business School. He is co-chair of the School's Global Energy Seminar, an executive education course for leaders of firms that play important roles in the delivery of energy services. He also teaches in the HBS Agribusiness Seminar.

In the HBS Owner/President Management Program, Reinhardt teaches a course on Global Markets, which helps business leaders understand the economic and political environment in which business is conducted, and the opportunities and risks to which globalization gives rise.

Recently, Reinhardt served as course head for the required MBA course, Strategy, which covers topics in industry analysis, competitive advantage, and corporate strategy. Reinhardt currently serves as the faculty chair of Harvard Business School's Asia-Pacific Research Center and the chair of the HBS Executive Education Asia-Pacific Region.

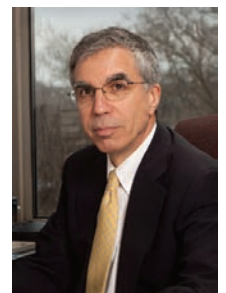
Reinhardt is interested in the relationships between market and nonmarket strategy, the relations between government regulation and corporate strategy, the behavior of private and public organizations that manage natural resources, and the economics of externalities and public goods. He is the author of *Down to Earth: Applying Business Principles to Environmental Management*, published by Harvard Business School Press. Like that book, many of his articles and papers analyze problems of environmental and natural resource management. He has written numerous classroom cases on these and related topics, used at Harvard and many other schools in MBA curricula and in executive programs.

Reinhardt received his Ph.D. in Business Economics from Harvard University in 1990. He also holds an MBA from Harvard Business School.



**Robert Stavins** is the Albert Pratt Professor of Business and Government, John F. Kennedy School of Government, Harvard University, Director of the Harvard Environmental Economics Program, Director of Graduate Studies for the Doctoral Program in Public Policy and the Doctoral Program in Political Economy and Government, Co-Chair of the Harvard Business School-Kennedy School Joint Degree Programs, and Director of the Harvard Project on Climate Agreements. He is a University Fellow of Resources for the Future, a Research Associate of the National Bureau of Economic Research, Co-Editor of the *Review of Environmental Economics and Policy*, Editor of the *Journal of Wine Economics*, an elected Fellow of the Association of Environmental and Resource Economics, and a member of the editorial boards of several journals. He was formerly the Chairman of the Environmental Economics Advisory Committee of the U.S. Environmental Protection Agency's Science Advisory Board, and a member of the Board of Directors of Resources for the Future.

He was a Lead Author of the Second and Third Assessment Reports of the Intergovernmental Panel on Climate Change, and is currently a Coordinating Lead Author of the Fifth Assessment Report. Professor Stavins' research has examined diverse areas of environmental economics and policy, and his work has appeared in a hundred articles in academic journals and popular periodicals, and several books. He holds a B.A. in philosophy from Northwestern University, an M.S. in agricultural economics from Cornell, and a Ph.D. in economics from Harvard.





## Harvard Environmental Economics Program

Harvard Kennedy School  
79 John F. Kennedy Street  
Cambridge, MA 02138

+1 617 496 8054  
e: [heep@harvard.edu](mailto:heep@harvard.edu)  
w: [heep.hks.harvard.edu](http://heep.hks.harvard.edu)



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