

## WILLIAM A. PIZER

190 Rubinstein Hall, Duke University  
Phone: (919) 613 9286 Email: william.pizer@duke.edu

### Education

Ph.D., M.A. Economics, Harvard University, Cambridge, MA 1996  
B.S. Physics, University of North Carolina, Chapel Hill, NC 1990

### Professional Experience

Professor (previously Associate Professor), Sanford School of Public Policy, and Faculty Fellow, Nicholas Institute for Environmental Policy Solutions, Duke University, Durham, NC 2011-  
Adjunct Professor, Department of Economics, University of North Carolina 2011-  
University Fellow, Resources for the Future, Washington, DC 2011-  
Research Associate, National Bureau of Economic Research, Cambridge, MA 2011-  
Non-Resident Fellow, Center for Global Development, Washington, DC 2012-  
Deputy Assistant Secretary for Environment and Energy, United States Department of the Treasury, Washington, DC 2008-2011  
Research Director, Resources for the Future, Washington, DC 2008  
Senior Staff Economist, National Commission on Energy Policy, Washington, DC 2002-2008  
Senior Fellow (previously Fellow), Resources for the Future, Washington, DC 2002-2008  
Senior Staff Economist, Council of Economic Advisers, Executive Office of the President, Washington, DC 2001-2002  
Visiting Scholar, Stanford University, Stanford, CA 2000-2001  
Visiting Assistant Professor, The Johns Hopkins University, Baltimore, MD 1997-1999  
Fellow, Resources for the Future, Washington, DC 1996-2001

### Committee Membership

Editorial Council, *Journal of the Association of Environment and Resource Economists* 2014-  
Board of Visitors, UNC Institute for the Environment 2008-  
Editorial Board, *Review of Environmental Economics and Policy* 2006-  
Methane Finance Study Group of Experts, World Bank 2012-2013  
Special Sessions Chair, Organizing Committee, 2012 AERE Summer Meetings 2012  
Expert Advisory Committee, Project on Carbon Emission Pricing Policies, Canadian National Roundtable on the Environment and the Economy 2008  
Climate Change Task Force, Council on Foreign Relations 2007-2008  
Environmental Economics Advisory Committee, Science Advisory Board, U.S. Environmental Protection Agency 2005-2008

Product Development Advisory Committee, Climate Change Science Program, U.S. Department of Energy	2006-2008
Chair, Sub-committee on Integrated Assessment Research Program, Behavioral and Environmental Research Advisory Committee, U.S. Department of Energy	2006-2007
Lead Author, Chapter 11, Working Group III, 4 <sup>th</sup> Assessment Report Intergovernmental Panel on Climate Change	2005-2007

### Grants and Awards

- Co-Principal Investigator, Bank of America Charitable Foundation. *Policy Options to Reduce Greenhouse Gas Emissions Globally*, 2013
- Co-Principal Investigator, Bipartisan Policy Center, *Understanding Clean Energy Subsidies*, 2012.
- Co-Principal Investigator, Electric Power Research Institute, *The Competitiveness Impacts Of Domestic Climate Policy: A State-Level Evaluation*, 2011.
- Co-Principal Investigator, Electric Power Research Institute, *Efficient Mechanisms for US Domestic Climate Policy*, 2007.
- Principal Investigator, Hewlett Foundation, Doris Duke Charitable Trust, and Goldman Sachs Center for Environmental Markets, *Interindustry Forum*, 2006.
- Principal Investigator, EPA Grant, *IPCC 4<sup>th</sup> Assessment Report*, 2005.
- Principal Investigator, Center for Global Partnership, *Climate Policy in the U.S. and Japan*, 2004.
- Co-Principal Investigator, Energy Foundation and New York Trust, *Regional Greenhouse Gas Initiative* (multiple projects), 2004.
- Co-Principal Investigator. Smith Richardson Foundation. *Voluntary Environmental Programs*, 2004.
- Co-Principal Investigator. Environmental Protection Agency. *The Environmental Effectiveness of Voluntary Programs: A Plant-level Micro Analysis*, 2003.
- Principal Investigator, National Science Foundation, *The Cost of Environmental Policy in a General Equilibrium Framework*, 2001.
- Co-Principal Investigator, Energy Foundation, *Addressing the Distributional Impacts of Greenhouse Gas Controls*, 2000.
- Co-Principal Investigator, Environmental Protection Agency/National Science Foundation, *Estimating the Cost Savings from Incentive-Based Environmental Policies when Costs are Heterogeneous*, 1999.
- Co-Principal Investigator, Pew Center for Global Climate Change, *Valuing the Future Consequences of Climate Change*, 1999.
- Principal Investigator, Environmental Protection Agency, *Integrated Assessment of Climate Change*, 1998.
- Co-Investigator, Environmental Protection Agency, *Environmental Regulation and Export Performance of U.S. Manufacturing*, 1998.
- Co-Investigator, Department of Energy, *Analyzing Carbon Trading*, 1998.

Co-Investigator, Department of Energy, *The Diffusion of New Technologies: A Microeconomic Analysis of Firm Decision Making at the Plant Level*, 1997.

Principal Investigator, National Science Foundation, *The Economics of Carbon Taxes and Permits: An Integrated Climate-Economy Assessment of Policy Efficiency Under Uncertainty*, 1997.

### Journal Publications

Forthcoming. Estimating the Job Impacts of Environmental Regulation. *Journal of Benefit-Cost Analysis*. With Anna Belova, Wayne Gray, Joshua Linn, and Richard Morgenstern.

Forthcoming. Encouraging Clean Energy Investment in Developing Countries: What Role for Aid? *Climate Policy*. With Mark Buntaine.

2015. Regulating Existing Power Plants under the Clean Air Act: Present and Future Consequences of Key Design Choices. *Energy Policy* 83. p 87-98. With Brian Murray and Martin Ross.

2015. Terminating Links between Emission Trading Programs. *Journal of Environmental Economics and Management* 74. p. 142-159. With Andrew Yates.

2014. Using and Improving the Social Cost of Carbon. *Science* 356, p. 1189-1190. With Matthew Adler, Joseph Aldy, David Anthoff, Maureen Cropper, Kenneth Gillingham, Michael Greenstone, Brian Murray, Richard Newell, Richard Richels, Arden Rowell, Stephanie Waldhoff, and Jonathan Wiener.

2014. Should Governments Use a Declining Discount Rate in Project Analysis? *Review of Environmental Economics and Policy* 8. p. 145-163. With Kenneth Arrow, Maureen L. Cropper, Christian Gollier, Ben Groom, Geoffrey M. Heal, Richard G. Newell, Robert S. Pindyck, Paul R. Portney, Thomas Sterner, Richard S. J. Tol and Martin L. Weitzman.

2014. Carbon Markets: Past, Present, and Future. *Annual Review of Resource Economics* 6. p. 191-215. With Richard Newell and Daniel Raimi.

2014. Carbon Market Lessons and Global Policy Outlook. *Science* 343, p. 1316-1317. With Richard Newell and Daniel Raimi.

2014. Declining Discount Rates. *American Economic Review: Papers and Proceedings* 104(5). With Maureen Cropper, Ben Groom, and Mark Freeman.

2013. Determining Benefits and Costs for Future Generations. *Science* 341. p. 349-350. With Kenneth Arrow, Maureen L. Cropper, Christian Gollier, Ben Groom, Geoffrey M. Heal, Richard G. Newell, Robert S. Pindyck, Paul R. Portney, Thomas Sterner, Richard S. J. Tol and Martin L. Weitzman.

2013. Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges. With Richard Newell and Daniel Raimi. *Journal of Economic Perspectives*.

2012. Prices versus quantities versus bankable quantities. With Harrison Fell and Ian MacKenzie. *Resource and Energy Economics* 34(4). P. 607-623.

2011. The Performance of Industrial Sector Voluntary Climate Programs: Climate Wise and 1605(b). With Richard Morgenstern and Jhih-Shyang Shih. *Energy Policy* 39(12), 7907-7916.

2010. Voluntary Environmental Regulation in Developing Countries: Mexico's Clean Industry Program. *Journal of Environmental Economics and Management* 60(3), 182-192. With Allen Blackman, Bidisha Lahiri, Marisol Rivera Planter, and Carlos Muñoz Piña.
2010. Designing Climate Mitigation Policy. *Journal of Economic Literature*, 48(4), 903-934. With Joseph Aldy, Alan Krupnick, Richard Newell, and Ian Parry.
2010. Regional Patterns of Household Carbon Emissions. *Climatic Change* 99(1-2), 47-63. With Michael Batz and Jim Sanchirico.
2009. Issues in Designing U.S. Climate Change Policy. *Energy Policy* 30(3), 179-210. With Joseph Aldy.
2009. Balancing Cost and Emission Certainty: An Allowance Reserve for Cap-and-Trade. *Review of Environmental Economics and Policy* 3(1), 84-103. With Brian Murray and Richard Newell
2008. Carbon Mitigation Costs for the Commercial Sector: Discrete-Continuous Choice Analysis of Multifuel Energy Demand. *Resource and Energy Economics* 30, 527-539. With Richard Newell.
2008. Indexed Regulation. *Journal of Environmental Economics and Management*, 56(3), 221-233. With Richard Newell.
2008. Modeling Endogenous Technological Change for Climate Policy Analysis. *Energy Economics*, 30(6), 2734-2753. With Richard Newell and Kenneth Gillingham.
2008. Endogenizing technological change: Matching empirical evidence to modeling needs. *Energy Economics*, 30(6), 2754-2770. With David Popp.
2007. Decentralization in the EU ETS and Lessons for Global Policy. *Review of Environmental Economics and Policy* 1(1), 112-133. With Joseph Kruger and Wallace Oates.
2006. Economies of Scale and Technical Efficiency in Community Water Systems. *Journal of American Water Works Association* 98(9), 100-108. With Jhih-Shyang Shih, Winston Harrington, and Kenny Gillingham.
2006. Modeling economy-wide vs sectoral climate policies using combined aggregate-sectoral models. *Energy Journal* 27(3), 135-168. With Dallas Burtraw, Winston Harrington, Richard Newell, and James Sanchirico.
2006. The evolution of a global climate change agreement. *American Economic Review Papers and Proceedings* 96(2), 26-30.
2005. The Case for Intensity Targets. *Climate Policy* 5(4), 455-462.
2004. Managing Permit Markets to Stabilize Prices. *Environment and Resource Economics* 32(2). With Richard Newell and Jiangfeng Zhang.
2003. Defining and Trading Emission Targets. *Climate Policy* 3(S2), p. S3-S6. With Andrei Marcu.
2003. Uncertain Discount Rates and Climate Policy Analysis. *Energy Policy* 32(), p. 519-529. With Richard Newell.
2003. Discounting the Distant Future: How Much Do Uncertain Rates Increase Valuations? *Journal of Environmental Economics and Management* 46(1), p. 52-71. With Richard Newell.

2003. Regulating Stock Externalities Under Uncertainty. *Journal of Environmental Economics and Management* 45, p. 416-432. With Richard Newell.
2003. Instrument Choice for Environmental Protection When Technological Innovation Is Endogenous. *Journal of Environmental Economics and Management* 45(3). With Ian Parry and Carolyn Fischer.
2003. How Large are the Welfare Gains from Technological Innovation Induced by Environmental Policies? *Journal of Regulatory Economics* 23(3), p. 237-255. With Ian Parry and Carolyn Fischer.
2002. Combining Price and Quantity Controls to Mitigate Global Climate Change. *Journal of Public Economics* 85(3), p. 409-434.
2002. Jobs versus the Environment: Is There a Trade-Off? *Journal of Environmental Economics and Management* 43(3), p. 412-436. With Richard Morgenstern and Jhih-Shyang Shih.
2001. The Cost of Environmental Protection. *Review of Economics and Statistics* 83(4), p. 732-738. With Richard Morgenstern and Jhih-Shyang Shih.
2001. Ecological Forecasts: An Emerging Imperative. *Science* 293. p. 657-660. With James S. Clark, Steven R. Carpenter, Mary Barber, Scott Collins, Andy Dobson, Jonathan A. Foley, David M. Lodge, Mercedes Pascual, Roger Pielke Jr., Cathy Pringle, Walter V. Reid, Kenneth A. Rose, Osvaldo Sala, William H. Schlesinger, Diana H. Wall, and David Wear.
1999. Optimal Choice of Policy Instrument and Stringency under Uncertainty: The Case of Climate Change. *Resource and Energy Economics* 21(3-4), p. 255-287.
1996. Derivation of the OLS Estimator without Using Calculus. *Econometric Theory* 12(2), p. 395-396.

### Books

2007. *Reality Check: The Nature and Performance of Voluntary Programs in the United States, Europe, and Japan*. Washington: RFF Press. With Richard Morgenstern.
2007. *Assessing U.S. Climate Policy Options: A report summarizing work at RFF as part of the inter-industry U.S. Climate Policy Forum*. Washington: RFF. With Raymond Kopp. <http://www.rff.org/cpfreport>.

### Book Chapters

2014. Facing the Climate Change Challenge in a Global Economy. With Lee Branstetter. In Alan Taylor and Robert Feenstra, eds., *Globalization in an Age of Crisis*. Chicago: University of Chicago Press.
2013. The Employment and Competitiveness Impacts of Power-Sector Regulations. In Cary Coglianese, Adam M. Finkel, and Christopher Carrigan, eds., *Does Regulation Kill Jobs?* Philadelphia: University of Pennsylvania Press. With Joseph Aldy.
2013. Comparing Countries' Climate Mitigation Efforts in a Post-Kyoto World. In I. Parry, A. Morris, and R. Williams, eds., *Carbon Taxes and Fiscal Reforms: Key Issues Facing US Policy Makers*. Washington: International Monetary Fund. With Joseph Aldy.

2010. Policies for Developing Country Engagement. In Joseph Aldy and Robert Stavins, eds., *Post-Kyoto International Climate Policy: Implementing Architectures for Agreement*. Cambridge: Cambridge University Press. With Daniel Hall, Michael Levi, and Takahiro Ueno.
2009. Economics versus Climate Change. In Roger Guesnerie and Henry Tulkens, eds, *The Design of Climate Policy*. Cambridge: MIT Press.
2007. Climate Policy Design under Uncertainty. In Michael Schlesinger et al, eds, *Human-Induced Climate Change*. Cambridge: Cambridge University Press.
2006. A U.S. perspective on future climate regimes. *2005 Sustainability Review*. Paris: Agence Française de Développement (AFD) & Institut du développement durable et des relations internationales (IDDRI).
2006. Practical Climate Policy. Joseph Aldy and Robert Stavins, eds. *Architectures for Agreement*. Cambridge University Press.
2005. Calculating the Costs of Environmental Regulation. In K.G.-Maler and Jeffrey Vincent eds, *Handbook of Environmental Economics, Volume 3*. Amsterdam: Elsevier. p. 1307-1351. With Raymond Kopp.
2005. Economics of Climate Change. Larry Blume and Steven Durlauf, eds. *The New Palgrave Dictionary of Economics, 2<sup>nd</sup> Edition*. Palgrave MacMillan. With Larry Goulder.
2004. Domestic Climate and Technology Policy. In *New Approaches on Energy and the Environment: Policy Advice for the President*. Washington: RFF Press. With Raymond Kopp, Richard Morgenstern, and Richard Newell.
2004. A Tale of Two Policies: Clear Skies and Climate Change. In Randall Lutter and Jason Shogren eds, *Painting the White House Green*. Washington: RFF Press.
2002. Limiting Costs and Assuring Domestic Effort under the Kyoto Protocol. Forthcoming in Ching-Cheng Chang, Robert Mendelsohn, and Daigee Shaw, eds., *Global Warming in Asian-Pacific*, Northampton: Edward Elgar. With Raymond Kopp, Frédéric Gherzi, and Richard Morgenstern.
2001. Designing Climate Policy to Address Uncertainty. In *Designing Climate Policy: The Challenge of the Kyoto Protocol*, edited by H. Abele, T. C. Heller and S. P. Schleicher. Vienna: Service Fachverlag.
2001. Choosing Price or Quantity Controls for Greenhouse Gases. In Toman, M.A. ed, *Climate Change Economics and Policy*, Washington, DC: Resources for the Future.

### Other Publications

2014. How to manage carbon prices – Lessons from the Northeast. <http://thehill.com/blogs/pundits-blog/energy-environment/223130-how-to-manage-carbon-prices-lessons-from-the-northeast>
2014. Climate change and aviation. <http://thehill.com/blogs/pundits-blog/energy-environment/218976-climate-change-and-aviation>.

2014. Top three things to look for in EPA's power plant rule. <http://thehill.com/blogs/pundits-blog/energy-environment/207752-top-three-things-to-look-for-in-epas-power-plant-rule>.
2014. Regulating Greenhouse Gas Emissions under Section 111(d) of the Clean Air Act: Implications for Petroleum Refineries. Nicholas Institute Working Paper 14-05. With Kristie Beaudoin, Allison Donnelly, Sarah K. Adair, Brian Murray, and Tim Profeta.
2014. Regulating Greenhouse Gases Sector by Sector under the Clean Air Act: How Well Does the Electric-Generating Unit Experience Translate to Petroleum Refineries? Nicholas Institute Policy Brief 14-02. With Kristie Beaudoin, Allison Donnelly, Sarah K. Adair, Brian Murray, and Tim Profeta.
2014. Devolved Access Modalities: Lessons for the Green Climate Fund from existing practice. European Capacity Building Initiative. With Benito Müller.
2013. How Governments can best use public funds for CDM. Guest Commentary, *Carbon Markets Europe* 12(2). p.8.
2013. Thinking Through When the World Bank Should Fund Coal Projects. <http://www.cgdev.org/publication/thinking-through-when-world-bank-should-fund-coal-projects>. With Scott Morris.
2012. Mobilizing the Private Sector: Quantity-Performance Instruments for Public Climate Funds. Oxford Energy and Environment Brief. With Arunabha Ghosh, Benito Müller, and Gernot Wagner.
2011. Seeding the market: auctioned put options for certified emissions reductions. Nicholas Institute Policy Brief 11-06.
2009. The Competitiveness Impacts of Climate Change Mitigation Policies. Report by the Pew Center on Global Climate Change. With Joseph Aldy.
2007. Combating Global Warming. *Regulation*, Fall 2007, p 18-22. With Ian Parry.
2006. Climate Change Policy in the United States 2006. *Bridges*.
2005. Understanding Proposed CAFE Reforms for Light Trucks. <http://www.rff.org/rff/News/Features/Understanding-Proposed-CAFE-Reforms-for-Light-Trucks.cfm>. With Madeleine Baker.
2005. What Kyoto Means for Oil and Gas. *Horizon* 2, p. 52.
2005. What is the United States Doing about Climate Change? Everyone Else is Coping with Kyoto. *Resources* 157, p.20.
2005. Setting Energy Policy in the Modern Era: Tough Challenges Lie Ahead. *Resources* 156, p. 8.
2005. Regional Greenhouse Gas Initiative: Prelude to a National Program. *Resources* 156, p. 4. With Joe Kruger.
2005. Mercury Rising: Understanding Global Warming Economics. *Imagine* 12(3), p. 21.
2004. The EU Emissions Trading Directive: The New Grand Policy Experiment. *Environment* 46(8). With Joe Kruger.

2003. Summary and Analysis of McCain-Lieberman—“Climate Stewardship Act of 2003, S.139”. With Ray Kopp  
[http://www.rff.org/McCain\\_Lieberman\\_Summary.pdf](http://www.rff.org/McCain_Lieberman_Summary.pdf)
2002. A Comparison of Two Senate Approaches to Controlling Power Plant Pollution. With Dallas Burtraw. <http://www.rff.org/multipollutant/>
2002. Legislative Comparison of Multipollutant Proposals S. 366, S. 485, and S. 843. With Dallas Burtraw and David Lankton. <http://www.rff.org/multipollutant/>
2001. Discounting the Benefits of Future Climate Change Mitigation: How Much Do Uncertain Rates Increase Valuations? Report by the Pew Center on Global Climate Change. With Richard Newell.
1999. A Proposal for Credible Early Action in U.S. Climate Policy. *Weathervane*. With Raymond Kopp, Richard Morgenstern and Michael Toman. Reprinted in *Flexible Mechanisms for Efficient Climate Policy: Cost Saving Policies and Business Opportunities*, Karl Ludwig Brockmann and Marcus Stonzik (Eds.), Physica-Verlag, Heidelberg, 2000.

### Working Papers

2014. The Competitiveness Impacts of Climate Change Mitigation Policies. With Joseph Aldy. Revise and resubmit to *Journal of the Association of Environmental and Resource Economists*.
2013. Comparability of Effort in International Climate Policy Architecture. With Joseph Aldy. Submitted to *Review of Environmental Economics and Policy*.
2013. Mixing and matching climate change policies.
2013. Linking Carbon Markets: Mechanisms, Requirements, Advantages and Disadvantages, Ways Forward
2012. How Will Climate Change Policies Affect Domestic Manufacturing? With Joseph Aldy.

### Activities (Keynotes, Organized Sessions, Congressional Testimony)

2014. Organizer, The Social Cost of Carbon in Regulatory Analysis, Duke University, (May).
2012. Special Sessions Chair, Organizing Committee, Summer Meetings Association of Environmental and Resource Economists
2009. Keynote address, Facing the Climate Challenge, 17th Annual Conference of the European Association of Environmental and Resource Economists (June)
2008. Organizer and moderator, Federal Policy to Reduce U.S. Greenhouse Gas Emissions: Emission Targets, Regulatory Design, and Broader Policy Goals, RFF (June)
2008. Organizer and moderator, U.S. Greenhouse Gas Emission Reductions: What are the Opportunities, at What Price, and Through What Policies, RFF (June)
2008. Organizer and moderator, Managing Costs in a U.S. GHG Trading Program, RFF. (March).



- 2008. Organizer and respondent, How Much to Stabilize our Climate? A Review of Recent Estimates, RFF (January)
- 2007. Co-Organizer, Assessing U.S. Climate Policy Options: A report summarizing work at RFF as part of the inter-industry U.S. Climate Policy Forum (November), New York (January 2008), San Francisco (April 2008)
- 2007. Keynote address, The Use of Economic Modeling in the Climate Change Debate: Failures and Opportunities, 10th Anniversary Conference on Global Economic Analysis, Purdue University (June).
- 2007. Congressional Testimony, The State of Climate Change Science 2007: The Findings of the Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC), Working Group III: Mitigation of Climate Change, House Science Committee (May).
- 2007. Co-Organizer, *Reality Check: The Nature and Performance of Voluntary Programs in the United States, Europe, and Japan*, RFF. (February)
- 2007. Organizer, The Stern Review and the Economics of Climate Change, RFF (February).
- 2006. Congressional Testimony, CAFE Reform, House Energy and Commerce Committee (May)
- 2006. Congressional Testimony, Climate Change, U.S. Senate Committee on Energy & Natural Resources (April)
- 2006. Co-organizer and Panelist, Higher Oil & Natural Gas Prices: Impact on Power Generation, Transportation Choices, and CO2 Emissions, IFRI, Paris (April)
- 2006. Co-organizer and Panelist, "Choice of Instruments," Economics of Climate Change: Understanding Trans-Atlantic Differences, RFF (March).