

RICHARD G. NEWELL

Resources for the Future
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Education

Ph.D., Harvard University, Public Policy (environmental/natural resource economics)	1997
M.P.A., Princeton University, Woodrow Wilson School, Public Policy	1990
B.S., B.A., Rutgers University, Materials Engineering, Philosophy	1988

Professional Experience

Fellow, Resources for the Future, Washington, DC	1997–present
Researcher and Teaching Fellow, Harvard University, Cambridge, MA	1993–1997
Senior Associate, ICF Incorporated, Fairfax, VA	1990–1993

Advisor and consultant to federal and state agencies, international organizations, non-governmental organizations, and private industry.

Journal Publications

- 2003. Policy-Induced Technology Adoption: Evidence from the U.S. Lead Phasedown. *Journal of Industrial Economics* 51(3):317-343. With Suzi Kerr.
- 2003. Information Programs for Technology Adoption: The Case of Energy-Efficiency Audits. Forthcoming *Resource and Energy Economics*. With Soren T. Anderson.
- 2003. Simplified Marginal Effects in Discrete Choice Models. Forthcoming *Economics Letters*. With Soren T. Anderson.
- 2003. Regulating Stock Externalities Under Uncertainty. *Journal of Environmental Economics and Management* 45:416-432. With William A. Pizer.
- 2003. Cost Heterogeneity and the Potential Savings from Market-Based Policies. *Journal of Regulatory Economics* 23(1):43-59. With Robert N. Stavins.
- 2003. Discounting the Distant Future: How much do Uncertain Rates Increase Valuations? *Journal of Environmental Economics and Management* 46(1):52-71. With William A. Pizer.
- 2003. Trading Cases: Is trading credits in created markets a better way to reduce pollution and protect natural resources? *Environmental Science and Technology* 37(11):217-223. With James Boyd, Dallas Burtraw, Alan Krupnick, Virginia McConnell, Karen Palmer, James Sanchirico, and Margaret Walls.
- 2003. Uncertain Discount Rates in Climate Policy Analysis. *Energy Policy* 32(4):519-529. With William A. Pizer.

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2002. Environmental Policy and Technological Change. *Environmental and Resource Economics* 22:41-69. With Adam B. Jaffe and Robert N. Stavins.
2000. Climate Change and Forest Sinks: Factors Affecting the Costs of Carbon Sequestration. *Journal of Environmental Economics and Management* 40:211-235. With Robert N. Stavins.
1999. The Induced Innovation Hypothesis and Energy-Saving Technological Change. *Quarterly Journal of Economics* 114(3):941-975. With Adam B. Jaffe and Robert N. Stavins.
1992. Advance Disposal Fees: Good Theory—Bad Policy. *Environmental Finance* Spring:83-91. With Michael Berg and Rick Nevin.
1989. The Structure of Sodium Trisilicate Glass via Molecular-Dynamics Employing 3-Body Potentials. *Journal of Materials Research* 4(2):434-439. With B.P. Feuston and S.H. Garofalini.

Journal Submissions Under Review

2003. Prospects for Carbon Capture and Storage Technologies. RFF Discussion Paper 02-68, Resources for the Future, Washington, DC. With Soren T. Anderson.
2003. Prospects for Carbon Capture and Storage. Resources for the Future, Washington, DC. With Soren T. Anderson.
2003. Managing Permit Markets to Stabilize Prices. RFF Discussion Paper 03-34, Resources for the Future, Washington, DC. With William Pizer and Jiangfeng Zhang.
2002. Fishing Quota Markets. RFF Discussion Paper 02-20, Washington, DC. With James N. Sanchirico and Suzi Kerr.

Book Chapters

2003. Technology Policy for Energy and the Environment. In *Innovation Policy and the Economy, Vol. 4*. MIT Press, Cambridge. Forthcoming. With Adam B. Jaffe and Robert N. Stavins.
2003. The U.S. Experience with the Phasedown of Lead in Gasoline. In *International Experience with Competing Regulatory Approaches: Six Paired Cases*, RFF Press, Forthcoming. With Kristian Rogers.
2003. Evaluating the New Zealand Individual Transferable Quota Market for Fisheries Management. Forthcoming in *Ex-Post Evaluation of Tradable Permit Programs*. OECD Paris, France. With Suzi Kerr and James N. Sanchirico.
2003. The Economics of Energy Efficiency. Forthcoming in the *Encyclopedia of Energy*, Cutler Cleveland, ed, Elsevier. With Adam B. Jaffe and Robert N. Stavins.
2003. Technological Change and the Environment. In *Handbook of Environmental Economics*, Karl-Göran Mäler and Jeffrey Vincent, eds, pp. 461-516. North-Holland/Elsevier Science. With Adam B. Jaffe and Robert N. Stavins.

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2002. The Induced Innovation Hypothesis and Energy-Saving Technological Change. In A. Grübler, N. Nakićenović, and W. D. Nordhaus, eds., *Technological Change and the Environment*, RFF Press, Washington, DC. With Adam B. Jaffe and Robert N. Stavins.
2001. Energy-Efficient Technologies and Climate Change Policies: Issues and Evidence. In M. Toman, ed., *Climate Change Economics and Policy: An RFF Anthology*. RFF Press, Washington, DC. With Adam B. Jaffe and Robert N. Stavins.
1994. Developments at the Interface of U.S. Energy and Environmental Policy. In *Energy and the Environment: Evolving Challenges and Opportunities*, pp. 1–33. Cambridge, MA: John F. Kennedy School of Government, Harvard University. With Henry Lee and Robert N. Stavins.

Other Publications

2003. Catching Market Efficiencies. *Resources* 150 (Spring):8-11. With James N. Sanchirico.
2002. Discounting the Benefits of Climate Change Policies Using Uncertain Rates. *Resources* 146 (Winter):15-20. With William A. Pizer.
2001. *Discounting the Benefits of Climate Change Mitigation: How much do Uncertain Rates Increase Valuations?* Economics Technical Series, Pew Center on Global Climate Change, Washington, DC. With William A. Pizer.
2000. Balancing Policies for Energy Efficiency and Climate Change. *Resources* 140(Summer):14-17.
1997. Environmental Policy and Technological Change: The Effects of Economic Incentives and Direct Regulation on Energy-Saving Innovation. Ph.D. thesis, Harvard University, Cambridge, MA.
1992. Commentary on “Waste Management—Taxing the Trash Away”. *Environment* 34(10):2-3. With Michael Berg and Rick Nevin.
1990. *State Investments in Science and Technology: Evaluating the Attainment of Economic Development Goals*. Princeton University, Princeton, NJ. With Emily Pelton.

Working Papers

2003. Environmental and Technology Policies for Climate Change and Renewable Energy. RFF Discussion Paper. With Carolyn Fischer.
2003. Analysis of Concentration and Consolidation in New Zealand Fishing Quota Markets. Report to New Zealand Ministry of Fisheries. With James N. Sanchirico.
2003. Evaluating the New Zealand Individual Transferable Quota Market for Fisheries Management. Report to New Zealand Ministry of Fisheries. With James N. Sanchirico and Suzi Kerr.
2003. Carbon Mitigation Costs for Commercial Buildings: A Discrete-Continuous Model of Multi-fuel Energy Demand. With William Pizer.

2000. Induced Invention, Innovation, and Diffusion: An Integrated Application to Energy-Saving Technology. Working Paper, Resources for the Future, Washington, DC. With Adam B. Jaffe and Robert N. Stavins.

Presentations

Technology Policy for Energy and Environment, Conference on Environmental and Technology Policy, Energy Use, and Technological Change, Amsterdam, Netherlands, November 2002; RFF Spring Board Meeting, Santa Barbara, CA, April 2003; NBER Conference on Innovation Policy and the Economy, Washington, DC, April 2003; RFF Workshop on Learning-by-Doing in Energy Technologies, Washington, DC, June 2003.

Energy, Environment, and Technology Policy, US-Japan Joint Initiative on Climate Change Policy, MITI, Tokyo, Japan, July 1999. Also presented at: Energy Information Administration Course in Environmental and Resource Economics, EIA, Washington, D.C., January 1999; and the Workshop on Innovation and Environmental Policy, German Federal Ministry of Education and Science, Chiemsee, Germany, September 2001.

Policy-Induced Technology Adoption: Evidence from the U.S. Lead Phasedown. 1999 AEA Annual Meeting, AEA, Chicago, IL, January 1999. Also presented at: Energy Information Administration Course in Environmental and Resource Economics, EIA, Washington, D.C., January 1999; Harvard University Seminar in Environmental Economics, Harvard University, Cambridge, MA, October 2001; Conference on International Experience with Competing Regulatory Approaches, Washington, DC, December 2002; Workshop on Twenty Years of Market-Based Instruments for Environmental Protection, Santa Barbara, August 2003.

Economic Incentives, Direct Regulation, and Energy-Saving Innovation, International Workshop on Induced Technological Change and the Environment, IIASSA, Vienna, Austria, June 1999. Also presented at: NBER Summer Institute Workshop on Public Policy and the Environment, NBER, Cambridge, MA, August 1997; World Congress of Environmental Economists, AERE/EAERE, Venice, Italy, July 1998; RFF Seminar Series, RFF, Washington, D.C., November 1997; Association of Energy Economists Annual Meeting, USAEE/IAEE, Albuquerque, NM, October 1998; Carnegie-Mellon University, Pittsburgh, PA, January 1997; Georgetown University, Washington, D.C., January 1997; Harvard University, Cambridge, MA, December 1997; University of California at Santa Barbara, January 1997; and University of Chicago, January 1997.

Managing Permit Markets to Stabilize Prices, Workshop on Instrument Design and Choice in Environmental Regulation, Helsinki School of Economics, Helsinki, Finland, October 2002.

Fishing Quota Markets, Harvard University Seminar in Environmental Economics, Harvard University, Cambridge, MA, April 2002. Also presented at NBER Summer Institute Workshop on Public Policy and the Environment, NBER, Cambridge, MA, August 2002; 2003 AEA Annual Meeting, Washington, DC, January 2003; Energy Information Administration, Washington, DC, March 2003.

Energy Efficiency and Climate Policy: Issues and Evidence, Americans for Equitable Climate Solutions, Washington, DC, May 2002.

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Integrated Analysis of Technology Innovation and Diffusion, EMF19 Workshop on Technology Modeling, Stanford Energy Modeling Forum, Washington, D.C., June 2001. Also presented at 2001 AEA Annual Meeting, New Orleans, LA, January 2001; Integrated Assessment Technology PI Meeting, Snomass, CO, July 2003.

Discounting the Distant Future: How Much do Uncertain Rates Increase Valuations? 2002 AEA Annual Meeting, AEA, Atlanta, GA, January 2002. Also presented at: 2nd World Congress of Environmental Economists, AERE/EAERE, Monterey, CA, June 2002; NBER Summer Institute Workshop on Public Policy and the Environment, NBER, Cambridge, MA, August 2000; and the Program in Science, Technology, and Environmental Policy Seminar, Princeton University, Princeton, NJ, April 2000. Discounting for Health Workshop, RFF, Washington, DC, May 2003.

Regulating Stock Externalities Under Uncertainty, NBER Summer Institute Workshop on Public Policy and the Environment, NBER, Cambridge, MA, July 1999. Also presented at: AERE Workshop on Market-Based Policies, Harvard University, Cambridge, MA., July 1999; Harvard University Seminar in Environmental Economics, Harvard University, Cambridge, MA, November 1998; Stanford University Seminar in Environmental Economics, Stanford University, Stanford, CA, April 1999; and World Congress of Environmental Economists, AERE/EAERE, Venice, Italy, July 1998.

Cost Heterogeneity and the Potential Savings from Market-Based Policy, World Congress of Environmental Economists, AERE/EAERE, Venice, Italy, July 1998. Also presented at: 2000 AEA Annual Meeting, AEA, Boston, MA, January 2000; Annual Meeting of the European association of Environmental and Resource Economists, EAERE, Crete, Greece, July 2000; and Harvard University Seminar in Environmental Economics, Harvard University, Cambridge, MA, April 2000.

Other Professional Activities

Peer review for: *American Economic Review*, American Agricultural Economics Association, Blackwell Publishers, *Contemporary Economic Policy*, Council of Economic Advisors, U.S. Department of Energy, Dutch Social Science Research Council, *Economic Journal*, *Energy Journal*, *Environment and Development Economics*, *Environmental and Resource Economics*, U.S. Environmental Protection Agency, Intergovernmental Panel on Climate Change, *Journal of Economic Dynamics and Control*, *Journal of Environmental Economics and Management*, *Journal of Policy Analysis and Management*, *Journal of Public Economics*, U.S. National Science Foundation, Research Council of Norway, *Resource and Energy Economics*, RFF Press, *Scandinavian Journal of Economics*; MISTRA Foundation for Strategic Environmental Research, United Nations University Press.

Invited expert: U.S. Department of Energy E-Vision 2002 Conference on Energy Efficiency (Washington, May 2002), U.S. Department of Energy Expert Workshop on Energy Intensity in the U.S. Economy (Washington, January 2002), U.S. Department of Energy Expert Workshop on the Measuring the Benefits of Energy R&D (Washington, March 2002), OECD Workshop on Technology and Environmental Policy (Paris, June 2001), U.S. Department of Energy Workshop on The Government's Role in Technology Innovation (Washington, February 2002), U.S. Environmental Protection Agency Workshop on The Pollution Abatement Cost Expenditure Survey (March 2000), Pew Center Workshop on the

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Timing of Climate Change Policies (October 2001), Pew Center Workshop on the Economics and Integrated Assessment of Climate Change (July 1999), Ocean Law Project Annual Meeting (April 2000), US Energy and Greenhouse Gas Model Technical Workshop (Washington, April 1999).

Institutional service: Resources for the Future Communications Committee, Computer Services Committee, Junior Hiring.

Member: American Economics Association, Royal Economic Society, Association of Environmental and Resource Economists, European Association of Environmental and Resource Economists.

Research Grants and Awards

Principal Investigator, National Commission on Energy Policy, Evaluation of Demand-Side Energy-efficiency Programs, 2003.

Principal Investigator, Hewlett Foundation, Workshop on Learning-by-Doing in Energy Technologies, 2003.

Principal Investigator, U.S. Environmental Protection Agency, Treatment of Technological Change in Aggregate Models of Environment, Energy, and the Economy, 2003-2004.

Principal Investigator, U.S. Environmental Protection Agency, Choosing Policies for Encouraging Carbon-Reducing Technology, 2002-2003.

Principal Investigator, New Zealand Ministry of Fisheries, Economic Fishery Conservation Through Individual Transferable Quota: Evidence from the New Zealand Experience, 2002.

Principal Investigator, U.S. Department of Energy, The Effects of Government Policies on the Invention, Innovation, and Diffusion of Energy-Efficient Technologies, 1998–2001.

Investigator, U.S. Department of Energy, An Integrated System for Analyzing Carbon Trading, 1998–2001.

Principal Investigator, Resources for the Future, Economic Fishery Conservation Through Individual Transferable Quota: Evidence from the New Zealand Experience, 1999–2001.

Principal Investigator, U.S. Department of Energy, Induced Energy-Saving Innovation in Industrial Durable Goods, 1998–1999.

Investigator, U.S. Department of Energy, Energy-Efficiency Innovation and the Economic and Regulatory Environment, 1995–1997.

Principal Investigator, National Science Foundation, Estimating the Cost Savings from Incentive-Based Environmental Policies when Costs are Heterogeneous, 1999-2001.

Principal Investigator, U.S. Environmental Protection Agency, Policy-Induced Technology Adoption: Evidence from the U.S. Lead Phasedown, 1999.

Principal Investigator, U.S. Environmental Protection Agency, Heterogeneity in Abatement Costs and the Potential Gains from Using Market-Based Environmental Policies, 1999.

Principal Investigator, Pew Center on Global Climate Change, Discounting Under Uncertainty, 1999–2000.

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Principal Investigator, Resources for the Future, Discounting Under Uncertainty, 1999.

Investigator, U.S. Environmental Protection Agency, Review of the National Energy Modeling System Demand Module, 1998.

Research in Progress

The Effects of Government Policies on the Invention, Innovation, and Diffusion of Energy-Efficient Technologies. With Robert Stavins and Adam Jaffe.

Estimating the Costs from Incentive-Based Policies when Costs are Heterogeneous. With William Pizer and Jhih-Shyang Shih.

Individual Transferable Fishing Quota Markets in New Zealand. With James Sanchirico and Suzi Kerr.

Environment and Technology Policy Instruments. Paper for Conference on Environmental and Technology Policy, Energy Use, and Technological Change, Amsterdam, November 2002.

The Benefits of Climate Mitigation. With William Pizer.

Managing Permit Markets to Stabilize Prices. With William Pizer and Jiangfeng Zhang.

Carbon Mitigation Costs for Commercial Buildings: A Discrete-Continuous Choice Model of Multi-Fuel Energy Demand. With William Pizer.

The Prospects for Carbon Capture and Sequestration. With Soren Anderson.

The Effectiveness and Efficiency of Environmental Regulation: Performance-Based Analysis. With Dallas Burtaw, Winston Harrington, and Richard Morgenstern.

An Integrated System for Analyzing Carbon Trading. With Dallas Burtaw, Winston Harrington, William Pizer, James Sanchirico, and Michael Toman.

Choosing Policies for Encouraging Carbon-Reducing Technology. With Carolyn Fischer.

Recent Collaborators

Soren Anderson (Michigan), James Boyd (RFF), Carolyn Fischer (RFF), Adam Jaffe (Brandeis), Suzi Kerr (Motu), Richard Morgenstern (RFF), William Pizer (RFF), James Sanchirico (RFF), Jhih-Shyang-Shih (RFF), Robert Stavins (Harvard), Michael Toman (RFF), Jiangfeng Zhang (ADB)

Graduate Advisors

Adam Jaffe (Brandeis), Robert Stavins (Harvard), Martin Weitzman (Harvard)