



**KAREN PALMER**

Resources for the Future  
1616 P Street NW, Washington, DC 20036-1400

Phone: (202) 328-5106

Email: [Palmer@rff.org](mailto:Palmer@rff.org)

Fax: (202) 939-3460

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***Education:***

Boston College, Economics	Ph.D., 1990
Dissertation: A New Test for Cross-Subsidies in Regulated Industries with Application to a Local Telecommunications Monopoly.	
Brandeis University, Economics, magna cum laude	B.A., 1981

***Areas of Specialization:***

Environmental Regulation, Electricity Economics, Cap and Trade Design,  
Public Utility Regulation, Renewable Sources of Electricity, Energy Efficiency

***Professional Experience:***

Senior Fellow, Resources for the Future	2010 – present
Director, Future of Power Initiative, Resources for the Future	2018 - present
Research Director, Resources for the Future	2012 – 2017
Associate Director, Center for Climate and Electricity Policy, Resources for the Future	2009 – 2014
Darius Gaskins Senior Fellow, Resources for the Future	2005 – 2009
Senior Fellow, Resources for the Future	1998 – 2005
Fellow, Resources for the Future, Washington, DC	1989 – 1998
Economist, Office of Economic Policy, Federal Energy Regulatory Commission, Washington, DC	1996 – 1997
Consultant, PMA Communications Inc., Boston, MA	1987
Consultant, Interindustry Service, Data Resources Inc., Lexington, MA	1986
Economist, Interindustry Service, Data Resources Inc., Lexington, MA	1981 – 1985

***Professional Activities and Awards:***

President Elect, Association of Environmental and Resource Economists	2020
Member, National Academies Committee on Modernizing the US Electric System	2019
Elected Fellow of the Association of Environmental and Resource Economists	2018
Member, US EIA Electricity Pricing Working Group	2018 - present
Member, Scientific Advisory Committee, Solutions for Energy, Air, Climate and Health Center (SEARCH), Yale and Johns Hopkins	2017 - 2018
Participant, Stanford Energy Modeling Forum 32, Inter-Model Comparison of US Greenhouse Gas Reduction Policies	2016 – 2017
Member, American Economic Association Committee on Government Relations	2016 – present
Public Utility Research Center Distinguished Service Award	2015
Vice President-Government, US Association for Energy Economics Council	2014
Member, Research Advisory Board, American Council for an Energy Efficient	2014 – 2019

## Economy

Elected Member, US Association for Energy Economics Council	2013
Member, Editorial Board, <i>Economics of Energy and Environmental Policy</i>	2011 – present
Member, Advisory Council, Center for Climate and Energy Decision Making, Engineering and Public Policy Department, Carnegie Mellon University	2011 – present
Member, Environmental Economics Advisory Committee, Science Advisory Board, US Environmental Protection Agency	2009 – 2014
Member, RGGI Advisory Group, New York State Energy Research and Development Authority	2008 – 2014
Participant, Stanford Energy Modeling Forum 25, Energy Demand and Efficiency	2008 – 2010
Member, National Research Council Panel on the Future of Electricity from Renewables	2007 – 2009
Member, Environmental Advisory Council, New York Independent System Operator	2004 – present
Member, National Research Council Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants	2004 – 2006
Participant, Center for Advancement of Energy Markets, Default Provider Forum	2002 – 2004
Alternate Participant, National Electronics Products Stewardship Initiative	2001 – 2004
Participant, Stanford Energy Modeling Forum 17, Prices and Emissions in a Restructured Electricity Market	1998 – 2001
Member, National Regulatory Research Institute Research Advisory Committee	1998 – 2001
Participant, Center for Clean Air Policy Restructuring and Air Quality Dialogue	1998 – 2001
Participant, Consumer Energy Council of America Research Foundation, Forum on Electricity Restructuring	1996 – 1998
Participant, Stanford Energy Modeling Forum 15, A Competitive Electricity Industry	1996 – 1998
Reviewer, National Energy Modeling System, Energy Information Administration	1997
Secretary, Association of Environmental and Resource Economists	1994 – 1999
Secretary/Treasurer, Telecommunications Policy Research Conference	1993 – 1996
Chairperson, Organizing Committee of the 21st Annual Telecommunications Policy Research Conference	1993
Member, Organizing Committee of the 19th and 20th Annual Telecommunications Policy Research Conferences	1991 – 1992

*Consultant to* U.S. Energy Information Administration, Louisiana State University Center for Energy Studies, New York Power Pool, Florida Power and Light Company, Hawaii Natural Energy Institute, U.S. Energy Information Administration and Maryland Department of Natural Resources.

*Referee for:* The National Science Foundation, American Economic Journal: Economic Policy, Energy Efficiency, Nature Energy, BE Journals in Economic Analysis and Policy, Contemporary Economic Policy, Energy Economics, Energy and Environmental Economics and Policy, Environment and Development, The Energy Journal, The RAND Journal of Economics, Resource and Energy Economics, Economic Inquiry, The Journal of Political Economy, The Journal of Industrial Economics, The Journal of Regulatory Economics, Journal of Public Economics, Journal of Environmental Economics and Management; Land Economics, Regional Science and Urban Economics, Climatic Change, American Journal of Agricultural Economics, Journal of Economic Management and Strategy and Environmental Science and Technology.

### **Testimony:**

Testimony before the Senate Energy and Natural Resources Committee Hearing on The Clean Energy Standards Act of 2012, May 17, 2012.

Testimony before the Senate Energy and Natural Resources Committee hearing on Costs and Benefits for Consumers and Energy Price Effects Associated with the Allocation of Greenhouse Gas Emissions Allowances, October 21, 2009.

### **Journal Publications:**

“Changing Baselines, Shifting Margins: How Predicted Impacts of Pricing Carbon in the Electricity Sector Have Evolved over Time,” (with Anthony Paul and Amelia Keyes), *Energy Economics* 73:371-379 (2018).

“Advances in Evaluating Energy Efficiency Policies and Programs,” (with Kenneth Gillingham and Amelia Keyes), *Annual Review of Resource Economics* 73: 371-379 (2018).

“Using Production Incentives to Avoid Emissions Leakage,” (with Dallas Burtraw, Anthony Paul and Hang Yin), *Energy Economics* 68 (supplement 1): 45-56 (2017).

“Is Energy Efficiency Capitalized into Home Prices? Evidence from Three Cities,” (with Margaret Walls, Todd Gerarden, and Xian Fang), *Journal of Environmental Economics and Management* 82: 104-124 (March) 2017.

“Using Information to Close the Energy Efficiency Gap: A Review of Benchmarking and Disclosure Ordinances,” (with Margaret Walls), *Energy Efficiency*, (2016). doi:10.1007/s12053-016-9480-5.

“A Proximate Mirror: Greenhouse Gas Rules and Strategic Behavior under the US Clean Air Act,” (with Dallas Burtraw, Anthony Paul and Sophie Pan), *Environmental and Resource Economics* 62(2): 217-241. (2015)

“Incentive, Margins and Cost Effectiveness in Comprehensive Climate Policy for the Power Sector,” (with Anthony Paul and Matt Woerman), *Climate Change Economics* 6(4) (2015).

“Assessing the Role of Renewable Energy Policies in Landfill Gas Energy Projects” (with Shanjun Li, Han Kyul Yoo, Molly Macauley, and Jhih-Shyang Shih), *Energy Economics* 49 (2015).

“Limited Attention and the Residential Energy Efficiency Gap” (with Margaret Walls), *American Economic Review Papers and Proceedings* 105(5) (2015).

“The Costs and Consequences of Clean Air Act Regulation of CO<sub>2</sub> Emissions from Power Plants” (with Dallas Burtraw, Josh Linn and Anthony Paul), *American Economic Review Papers and Proceedings* 104(5): 557-562 (2014).

“Bridging the Energy Efficiency Gap: Insights from Economic Theory and Empirical Evidence” (with Kenneth Gillingham), *Review of Environmental Economics and Policy* 8(1): 18-38 (2013).

“Analysis of the Bingaman Clean Energy Standards Proposal,” (with Anthony Paul and Matt Woerman), 2014, *Resource and Energy Economics* 36 (1):113-129.

“Reliability in the US Electricity Industry under New Environmental Regulation” (with Dallas Burtraw, Anthony Paul, Blair Beasley and Matt Woerman) *Energy Policy* 62 (2013): 1078-1091.

“Putting a Floor on Energy Savings: Comparing State Energy Efficiency Resource Standards” (with Samuel Grausz, Blair Beasley, and Timothy J. Brennan), *Utilities Policy* 25: 43-57 (2013).

“Energy Efficiency Resource Standards: Economics and Policy” (with Timothy J. Brennan), *Utilities Policy* 25: 58-68 (2013).

“Reducing US Residential Energy Use and CO<sub>2</sub> Emissions: How Much, How Soon and at What Cost?” (with Ines Lima Azevedo, Granger Morgan and Lester Lave), 2013, *Environmental Science and Technology* 47 (6): 2502–2511.

“Clean Energy Standards for Electricity: Policy Design Implications for Emissions, Supply, Prices and Regions” (with Anthony Paul and Matthew Woerman), 2013, *Energy Economics* 36: 108-124.

“Flexible Mandates for Investment in New Technology” (with Dalia Patino-Echeverri and Dallas Burtraw), *Journal of Regulatory Economics*, October 2013, Vol. 44(2): 121-155.

“Assessing the Energy Efficiency Information Gap: Results from a Survey of Home Energy Auditors” (with Margaret Walls, Hal Gordon and Todd Gerarden), *Energy Efficiency* 6(2): 271 – 292 (2013).

“Secular Trends, Environmental Regulations, and Electricity Markets” (with Dallas Burtraw, Anthony Paul and Matt Woerman), 2012, *The Electricity Journal* 25(6): 35-47.

“Soft and Hard Collars in a Cap-and-Trade System: A Comparative Analysis” (with Harrison Fell, Dallas Burtraw, and Richard D. Morgenstern), 2012, *Journal of Environmental Economics and Management* 64(2): 183-198.

“Cost-effectiveness and Economic Incidence of a Clean Energy Standard” (with Bryan K. Mignone, Thomas Alfstad, Aaron Bergman, Kenneth Dubin, Richard Duke, Paul Friley, Andrew Martinez, Matthew Mowers, Anthony Paul, Sharon Showalter, Daniel Steinberg, Matt Woerman, Frances Wood), 2012, *Economics of Energy and Environmental Policy* 1(3): 59-86.

“Climate Policy Design with Correlated Uncertainties in Offset Supply and Abatement Cost” (with Harrison Fell, Dallas Burtraw and Dick Morgenstern), 2012, *Land Economics* 88(3):589-611.

“Cost Effectiveness of Electricity Energy Efficiency Programs” (with Toshi Arimura, Richard Newell and Shanjun Li), 2012, *The Energy Journal* 33(2): 63 – 99.

“Energy Efficiency Program Evaluations: Opportunities for Learning and Inputs to Incentive Mechanisms” (with Noah Kaufman), 2011, *Energy Efficiency* 5(2): 243 – 268.

“Price Discovery in Emissions Permit Auctions” (with Dallas Burtraw, Jacob Goeree, Charles Holt, Erica Myers and William Shobe), 2011, *Experiments on Energy, the Environment and Sustainability. Series Title: Research in Experimental Economics, Volume 14*, R. Mark Isaac, Douglas (ed).

“Federal Policies for Renewable Electricity: Impacts and Interactions” (with Anthony Paul, Matt Woerman, and Daniel C. Steinberg), 2011, *Energy Policy* 39(7): 3975-3991.

“The Role of Energy Efficiency Spending in Maryland’s Implementation of the Regional Greenhouse Gas Initiative” (with Anthony Paul, Matthias Ruth, Benjamin F. Hobbs, Daraius Irani, Jeffrey Michaels, Yihsu Chen, Kimberly Ross, Erica Myers), 2010, *Energy Policy* 38(11): 6820-6829, 2010.

“A Symmetric Safety Valve,” (with Dallas Burtraw and Danny Kahn), 2010, *Energy Policy* 38 (9): 4921-4932.

“An Experimental Analysis of Auctioning Emissions Allowances under a Loose Cap,” (with William Shobe, Erica Myers, Charles Holt, Jacob Goeree and Dallas Burtraw), 2010, *Agricultural and Resource Economics Review* 30(2): 162-175.

“From Regions to Stacks: Spatial and Temporal Downscaling of Power Pollution Scenarios,” (with B.F. Hobbs, M.C. Hu, Y. Chen, J.H. Ellis, A. Paul and D. Burtraw), May 2010, *IEEE Transactions on Power Systems* 25(3): 1179-1189.

“An Experimental Study of Auctions versus Grandfathering to Assign Pollution Permits,” (with Jacob Goeree, Charles Holt, William Shobe and Dallas Burtraw), April – May 2010, *Journal of the European Economic Association* 8 (2-3).

“Collusion in Auctions for Emissions Permits: An Experimental Analysis,” (with Dallas Burtraw, Jacob Goeree, Charles Holt, Erica Myers and William Shobe), 2009, *Journal of Policy Analysis and Management*, 672-691.

“Energy Efficiency Economics and Policy” (with Kenneth Gillingham and Richard Newell), 2009, *Annual Review of Resource Economics*, 1:14.1-14.23.

“Compensation Rules for Climate Policy in the Electricity Sector” (with Dallas Burtraw), *Journal of Policy Analysis and Management* 27(4), 819-847.

“Economic and Energy Impacts from Participation in the Regional Greenhouse Gas Initiative: A Case Study of the State of Maryland” (with Matthias Ruth, Steven Gabriel, Dallas Burtraw, Anthony Paul, Yihsu Chen, Benjamin Hobbs, Daraius Irani, Jeffrey Michael, Kim Ross, Russell Conklin, Julia Miller), 2008, *Energy Policy* 36:2279-2289.

“Air Emissions of Ammonia and Methane from Livestock Operations: Valuation and Policy Options” (with Dallas Burtraw, Juha Siikamaki and Jhih-Shyang Shih), 2009, *Journal of the Air and Waste Management Association* 58: 1117-1129.

“Modeling the Effects of Changes in New Source Review on National SO<sub>2</sub> and NO<sub>x</sub> Emissions from Electricity-Generating Units” (with David Evans, Benjamin Hobbs and Craig Oren), 2008, *Environmental Science and Technology*, 42 (2): 347–353.

“Simple Rules for Targeting CO<sub>2</sub> Allowance Allocation to Compensate Firms” (with Dallas Burtraw and Danny Kahn), 2006, *Climate Policy*, 6:477 - 493.

“The Benefits and Costs of Reducing Emissions from the Electricity Sector,” (with Dallas Burtraw and Jhih-Shyang Shih), 2007, *Journal of Environmental Management*, 83:115 - 130.

“CO<sub>2</sub> Allowance Allocation in the Regional Greenhouse Gas Initiative and the Effect on Electricity Investors,” (with Dallas Burtraw and Danny Kahn), 2006, *The Electricity Journal*, March.

“Cost-Effectiveness of Renewable Electricity Policies,” (with Dallas Burtraw), 2005, *Energy Economics*, 27(6): 873-894.

“Retrospective Review of Energy Efficiency Policies,” (with Richard Newell and Kenneth Gillingham), *Annual Review of Environment and Resources*, 2006, 31: 161-192.

“The Environmental Impacts of Electricity Restructuring: Looking Back and Looking Forward,” (with Dallas Burtraw), 2005. *Environment & Energy Law & Policy Journal*, Vol 1. No. 1.

“Economics of Pollution Trading for SO<sub>2</sub> and NO<sub>x</sub>,” (with Dallas Burtraw, David A. Evans, Alan Krupnick, and Russell Toth), *Annual Review of Environment and Resources* (2005).

“Efficient Emission Fees in the U.S. Electric Sector,” (with Spencer Banzhaf and Dallas Burtraw), *Resource and Energy Economics*, 26 (3) (2004).

“Trading Cases: Is Trading Credits in Created Markets a Better Way to Reduce Pollution and Protect Natural Resources?,” (with Jim Boyd, Dallas Burtraw, Alan Krupnick, Virginia McConnell, Jim Sanchirico, and Margaret Walls), *Environmental Science and Technology*, Vol. 79, No. 3 (June 2003).

“Dealing with Electronic Waste: Modeling the Costs and Environmental Benefits of Computer Monitor Disposal,” (with Molly Macauley and Jhih-Shyang Shih), *Journal of Environmental Management*, (May 2003).

“Ancillary Benefits of Reduced Air Pollution in the U.S. from Moderate Greenhouse Gas Mitigation Policies in the Electricity Sector,” (with Dallas Burtraw, Alan Krupnick, Anthony Paul, Mike Toman, Cary Bloyd), *Journal of Environmental Economics and Management*, (May 2003).

“The Determinants of Household Recycling: A Material Specific Analysis of Unit Pricing and Recycling Program Attributes,” (with Robin Jenkins, Salvador Martinez and Michael Podolsky), *Journal of Environmental Economics and Management*, (February 2003).

“The Effect on Asset Values of the Allocation of Carbon Dioxide Emission Allowances,” (with Dallas Burtraw, Ranjit Bharvirkar and Anthony Paul), *The Electricity Journal*, (June 2002).

“Implementing Electricity Restructuring: Polices, Potholes and Prospects,” (with Timothy Brennan and Salvador Martinez), *Environmental and Resource Economics*, (June 2002).

“Cost Effective Reduction of NO<sub>x</sub> Emissions from Electricity Generation,” (with Dallas Burtraw, Ranjit Bharvirkar and Anthony Paul), *Journal of the Air and Waste Management Association* 51: 1476-1489 (October 2001)

“SO<sub>2</sub> Control by Electric Utilities: What are the Gains from Trade?,” (with Dallas Burtraw, Curtis Carlson and Maureen Cropper), *Journal of Political Economy* 108(6): 1292-1326. (December 2000).

“Upstream Pollution, Downstream Waste Disposal and the Design of Comprehensive Environmental Policies,” (with Margaret Walls), *Journal of Environmental Economics and Management* (February 2001).

“Renewables from Another Angle,” (with Dallas Burtraw, James McVeigh, and Joel Darmstadter), 2000. *Electric Perspectives* 25(2): 10-20. See: “Winner, Loser, or Innocent Victim: Has Renewable Energy Performed as Expected?”

“Winner, Loser, or Innocent Victim: Has Renewable Energy Performed as Expected?” (with Dallas Burtraw, James McVeigh, and Joel Darmstadter), *Solar Energy* 68(3): 237-255. (2000). Published also as Renewable Energy Policy Project Research Report No. 7, and Resources for the Future Discussion Paper 99-28 (March).

“Assessing the Impact of Electricity Restructuring on the Environment in Maryland,” (with Diane Brown, Matt Kahal, Dallas Burtraw, Julie Ross and Mark Garrison) *EM*, (August 1998).

“Electricity Restructuring: Environmental Impacts,” *Forum for Applied Research and Public Policy*, 11, (Fall 1997).

“Environmental Regulation and Innovation: A Panel Data Study,” (with Adam Jaffe) *Review of Economics and Statistics*, 79, (1997).

“The Cost of Reducing Municipal Solid Waste,” (with Hilary Sigman and Margaret Walls) *Journal of Environmental Economics and Management*, 34, (June 1997).

“Optimal Policies for Solid Waste Disposal: Taxes, Subsidies and Standards,” (with Margaret Walls) *Journal of Public Economics* (August 1997).

“‘Second-Best’ Adjustments to Externality Estimates in Electricity Planning with Competition,” (with Dallas Burtraw and Alan Krupnick) *Land Economics*, 73, (May 1997).

“Electricity Restructuring and Regional Air Pollution,” (with Dallas Burtraw) *Resource and Energy Economics*, 19 (March 1997).

"How Should an Accumulative Toxic Substance Be Banned?" (with Mike Toman) *Environmental and Resource Economics*, 9, (January 1997).

“The Efficiency of Wholesale versus Retail Competition in Electricity,” (with Doug Bohi) *The Electricity Journal*, (October 1996).

“Tightening Environmental Standards: The Benefit-Cost or the No-Cost Paradigm?” (with Wallace Oates and Paul Portney) *Journal of Economic Perspectives*, 9 (1995), pp. 119-132.

“Social Costing of Electricity in Maryland: Effects on Pollution, Investment and Prices,” (with Alan Krupnick, Hadi Dowlatabadi and Stuart Siegel) *The Energy Journal*, 16, (1995), pp. 1-26.

"Comparing the Costs and Benefits of Diversification by Regulated Firms" (with Timothy J. Brennan), *The Journal of Regulatory Economics*, 6 (1994), pp. 112-136.

"Electricity Fuel Contracting: Relationships with Coal and Gas Suppliers" (with Peter Fox-Penner, David Simpson, and Michael Toman), *Energy Policy*, 27 (1993), pp. 1045-1054.

"Implementing Social Costing in the Electric Utility Industry" (with Hadi Dowlatabadi), *Energy and Environment*, 4 (1993), pp. 197-220.

"How Reliably Can Climate Change and Mitigation Policy Impacts on Electric Utilities be Assessed?" (with Hadi Dowlatabadi, Robert Hahn, Raymond J. Kopp, and Diane DeWitt), *Utility Policy*, 1 (July 1993), pp. 261-268.

"A Test for Cross Subsidies in Local Telephone Rates: Do Business Customers Subsidize Residential Customers?," *The RAND Journal of Economics*, 23 (1992), pp. 415 - 431.

"Using an Upper Bound on Stand-Alone Cost in Tests of Cross-Subsidy," *Economics Letters*, 35 (1991), pp. 457-460.

"Diversification by Regulated Monopolies and Incentives for Cost-Reducing R&D," *American Economic Review*, 81 (1991), pp. 266-270.

"Sources of Structural Change in the United States, 1963-78: An Input-Output Perspective" (with Stanley J. Feldman and David McClain), *Review of Economics and Statistics*, 69 (1987), pp. 503-510.

"Structural Change in the United States: Changing Input-Output Coefficients" (with Stanley J. Feldman), *Business Economics*, 20 (1985), pp. 39-54.

### ***Books and Monographs:***

*Alternating Currents: Electricity Markets and Public Policy*, (with Timothy J. Brennan and Salvador A. Martinez), Washington, DC RFF Press, 2002.

*A Shock to the System: Restructuring America's Electricity Industry*, (with Timothy J. Brennan, Raymond J. Kopp, Vito Stagliano, Alan J. Krupnick and Dallas Burtraw), Washington, DC, Resources for the Future, 1996.

*Using Economic Incentives to Regulate Toxic Substances* (with Molly Macauley and Michael Bowes), Washington, DC, Resources for the Future, 1993.

*Power Plant Fuel Supply Contracts: The Changing Nature of Long-Term Relationships* (with Michael Toman, David Simpson, and Peter Fox-Penner), Arlington, Va., Public Utility Reports, 1992.

### ***Other Publications and Reports:***

*Benefits and Costs of Power Plant Carbon Emissions Pricing in New York* (with Daniel Shawhan and Paul Picciano), RFF report, July 23, 2019.

*State Policy Options to Price Carbon from Electricity* (with Dallas Burtraw, Anthony Paul and Paul Picciano), RFF report, May 15, 2019.



“Could Blockchain Technology Improve Water, Wastewater and Solid Waste Management in the Oil and Gas Industry?” (with Jhih-Shyang Shih), *Resources* 199, March 2019.

“Fuel Security Concerns in PJM and ISO – Are they Justified?” (with Kathryn Cleary), *Resources* 199, March 2019.

*Clean Energy Standards* (with Kathryn Cleary and Kevin Rennert), RFF Issue Brief, January 2019.

*Market Designs for Clean Energy Transitions: The Role of New Generator Finance* (with Jay Bartlett, Heidi Bishop, Kathryn Cleary, Karl Hausker), Event Summary, November 2018.

“Marking a Decade of Climate Policy Cap and Trade Leadership in RGGI” (with Dallas Burtraw), *Resources* 199.

“A Strategic Electricity Generating Reserve: A Solution in Search of a Problem” (with Brian Prest), *Resources* 198.

“Carbon Pricing for US Electricity Sector Now More Effective and Less Expensive” (with Anthony Paul and Amelia Keyes) *Resources* 198.

*Economic Approaches to Understanding and Addressing Resilience in the Bulk Power System: A Workshop Summary* (with Devin Hartman, Paul Picciano and Daniel Shawhan), RFF Workshop Summary, June 18, 2018.

“Understanding Grid Resilience Implications for Market Design: Beyond the NETL Study (with Devin Hartman and Daniel Shawhan), Opinion Section, *Utility Dive*, April 24, 2018

“The Benefits of Flexible Policy Designs: US Conservation Standards for Appliances (with Joshua Blonz and Benjamin Leard) *Resources* 197.

*Comments on the US Department of Energy’s Office of Energy Efficiency and Renewable Energy’s Request for Information on Energy Conservation Standards Program Design* (with Joshua Blonz and Benjamin Leard), RFF Report (2018).

*The Future of Power Markets in a Low Marginal Cost World: Workshop Summary* (with Amelia Keyes and Dallas Burtraw), RFF Report (2017).

*Lessons from Integrated Resource Planning and Carbon Trading for Integrating Carbon Adders into Wholesale Electricity Markets* (with Dallas Burtraw and Amelia Keyes), RFF Report (2017)

*Expanding the Toolkit: The Potential Role for an Emissions Containment Reserve in RGGI* (with Dallas Burtraw, Anthony Paul, Charles Holt and William Shobe), RFF Report (2017).

“Helping States Prepare for the Clean Power Plan: An Interview with Karen Palmer and Anthony Paul” *Resources* 192.

*Approaches to Address Potential CO<sub>2</sub> Emissions Leakage under the Clean Power Plan* (with Dallas Burtraw, Josh Linn, Anthony Paul, Kristen McCormack, Hang Yin), RFF Report, January 2016.

*Comments on EPA's Draft Evaluation, Measurement and Verification Guidance for Demand-Side Energy Efficiency*, RFF Report, January 2016.

“Complying with EPA’s Clean Power Plan: Policy Options for States,” (with Anthony Paul), *Resources* 189.

“What Homeowners Say about Home Energy Audits,” (with Margaret Walls), *Resources* 188.

“Comments to the US Environmental Protection Agency on its Proposed Clean Power Plan,” (with Dallas Burtraw, Clayton Munnings, Carolyn Fischer, Anthony Paul, Robertson Williams, Nathan Richardson, and Jhih-Shyang Shih), RFF Report, 2014.

“Renewable Energy,” (with Joshua Linn), Entry in *Environmental and Natural Resource Economics: An Encyclopedia*, John Whitehead and Timothy Haab (eds.) (2014)

“Mixing It Up: Power Sector Energy and Regional and Regulatory Climate Policies in the Presence of a Carbon Tax” (with Dallas Burtraw), in *Carbon Taxes and Fiscal Reform: Key Issues Facing US Policymakers*, Ian Parry, Adele Morris, and Robertson Williams(eds), International Monetary Fund, 2015.

“The Effect of Natural Gas Supply on Retail Electricity Prices,” (with Dallas Burtraw, Matthew Woerman and Blair Beasley), RFF Issue Brief 12-05, 2012.

“Borrowing to Save Energy: An Assessment of Energy-Efficiency Financing Programs” (with Margaret Walls and Todd Gerarden), RFF Report, 2012.

“Clean Air Regulations and the Electricity Sector” (with Dallas Burtraw, Anthony Paul, Blair Beasley and Matt Woerman), *Resources* 181.

“The Variability of Potential Revenue from a Tax on Carbon” (with Anthony Paul and Matt Woerman), 2012, RFF Issue Brief 12-03.

“Compensation for Electricity Consumer under a U.S. CO<sub>2</sub> Emissions Cap,” (with Anthony Paul and Dallas Burtraw), in *Reforming Rules and Regulations*, Vivek Ghosal (ed), MIT Press, 2010.

“Cleaner Electricity and Less of It: The Prospects for Reducing CO<sub>2</sub> Emissions by Requiring Renewable Energy and Energy Efficiency,” *Resources* 176 (2010)

“The Evolving SO<sub>2</sub> Allowance Market: Title IV, CAIR and Beyond,” (with David Evans), RFF Weekly Policy Commentary, July 13, 2009.

*Electricity from Renewable Sources: Status, Prospects and Impediments* (America’s Energy Future Panel on Electricity from Renewables, participating authors). Washington: National Academy of Science, National Academy of Engineering and National Research Council, 2009.

*Renewable Energy and Efficiency Modeling Analysis Partnership (REMAP): An Analysis of How Different Energy Models Addressed a Common High Renewable Energy Penetration Scenario in 2025*, (with Nate Blair, Thomas Jenkin, James Milford, Walter Short, Patrick Sullivan, David Evans, Elliot Lieberman, Gary Goldstein, Evelyn Wright, Kamala R. Jayaraman, Boddu Venkatesh, Gary Kleiman,

Christopher Namovicz, Bob Smith, Ryan Wiser and Frances Wood) National Renewable Energy Lab Technical Report NREL/TP-6A2-45656, September 2009

*Compliance Responsibility and Allowance Allocation in a CO<sub>2</sub> Emissions Cap-and-Trade Program for The Electricity Sector in California* (with Dallas Burtraw and Anthony Paul), Report to the California Energy Commission, September 30, 2008.

*The Role of Energy Efficiency Spending in Maryland's Implementation of the Regional Greenhouse Gas Initiative*, A Study Commissioned by the Maryland Department of the Environment and conducted by the Center for Integrative Environmental Research (CIER), (with Ruth, Matthias, Kimberly Ross, Nathan Hultman, Joanna Mauer, Ivan Dario Valencia, Nicolai Herman, Anthony Paul, Erica Myers, Benjamin Hobbs, Daraius Irani, Jeffrey Michael and Yihsu Chen.) University of Maryland, October 2008.

*Auction Design for Selling CO<sub>2</sub> Emission Allowances under the Regional Greenhouse Gas Initiative* (with Dallas Burtraw, Charles Holt, William Shobe and Jacob Goeree), Report to the New York State Energy Research and Development Authority, October 2007.

*Economic and Energy Impacts from Maryland's Potential Participation in the Regional Greenhouse Gas Initiative*. (with Dallas Burtraw, Anthony Paul, Steven Gabriel, Mathius Ruth, Kim Ross, Ben Hobbs, Yihsu Chen, Daraius Irani, Jeff Michaels) University of Maryland Center for Integrated Environmental Research, January 2007.

*New Source Review for Stationary Sources of Air Pollution* (Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollution, National Research Council, participating author). Washington: National Research Council, 2006.

“Air Emissions of Ammonia and Methane from Livestock Operations: Valuation and Policy Options” (with Jih-Shyang Shih, Dallas Burtraw and Juha V. Siikamaki), in *Agricultural Air Quality: State of the Science*, Conference Proceedings, June 2006.

*Reducing Emissions from the Electricity Sector: The Costs and Benefits Nationwide and in the Empire State* (with Dallas Burtraw and Jih-Shyang Shih) New York State Energy Research and Development Authority Final Report 05-02 (May 2005).

“Renewable Sources of Electricity: Safe Bet or Tilting at Windmills?” (with Joel Darmstadter), *Resources* 156 (2005).

Book Review of “The Economics of Hydroelectric Power” by Brian K. Edwards, in *The Journal of Energy and Development* 30: 2, Spring 2005.

“Environmental Regulation of Electric Power Generation” (with Dallas Burtraw), in *New Approaches on Energy and the Environment: Policy Advice for the President*, Richard D. Morgenstern and Paul R. Portney, eds., (2004).

“Experimental Federalism,” (with Winston Harrington and Margaret Walls), in *New Approaches on Energy and the Environment: Policy Advice for the President*, Richard D. Morgenstern and Paul R. Portney, eds., (2004).

“Finding a Cost-Effective Policy to Promote Renewable Energy Sources,” (with Dallas Burtraw), *Resources* 154, (2004).

“SO<sub>2</sub> Cap and Trade Program in the United States: A Look at a Living Legend,” (with Dallas Burtraw), chapter in *Choosing Environmental Policy: Comparing Instruments and Outcomes in the United States and Europe*, Winston Harrington and Richard Morgenstern, eds. *Resources for the Future* (2004).

*Electricity, Renewables and Climate Change: Searching for a Cost-Effective Policy* (with Dallas Burtraw), RFF Report, (May 2004).

“Toward an Integrated Theory of Open Economy Environmental and Trade Policy,” (with Arvind Panagariya, Wallace Oates and Alan J. Krupnick) in *Environmental Policy and Fiscal Federalism: Selected Essays of Wallace E. Oates*, Wallace E. Oates, ed. (2004).

“A Comparison of the Effects of the Distribution of Emission Allowances for Sulfur Dioxide, Nitrogen Oxides and Carbon Dioxide,” (with Dallas Burtraw), Research Report to the EPA National Center for Environmental Research (May 2, 2003).

“Putting a Prod in Product Stewardship,” (with Margaret Walls), op-ed in *Waste News*, March 31, 2003.

*Electricity Restructuring, Environmental Policy and Emissions* (with Dallas Burtraw, Ranjit Bhavirkar and Anthony Paul), RFF Report, (December 2002).

*The Product Stewardship Movement: Understanding Costs, Effectiveness and The Role for Policy* (with Margaret Walls), RFF Report, (November 2002).

“Capping Emissions: How Low Should We Go?” (with Spencer Banzhaf and Dallas Burtraw), *Public Utilities Fortnightly*, (December 2002).

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