

## **Tim Woolf**

**Vice President**

**Synapse Energy Economics, Inc.**

**485 Massachusetts Avenue, Suite 2, Cambridge, MA 02139**

**(617) 453-7031 • fax: (617)-661-0599**

**twoolf@synapse-energy.com**

### **PROFESSIONAL EXPERIENCE**

**Synapse Energy Economics Inc.**, Cambridge, MA. Vice President, 2011 to present.

Provides expert consulting on the economic, regulatory, consumer, environmental, and public policy implications of the electricity and gas industries. The primary focus of work includes technical and economic analyses, electric power system planning, climate change strategies, energy efficiency programs and policies, renewable resources and related policies, power plant performance and economics, air quality, and many related aspects of consumer and environmental protection.

**Massachusetts Department of Public Utilities**, Boston, MA. Commissioner, 2007- 2011.

Oversaw a significant expansion of clean energy policies as a consequence of the Massachusetts Green Communities Act, including an aggressive expansion of ratepayer-funded energy efficiency programs; the implementation of decoupled rates for electric and gas companies; an update of the DPU energy efficiency guidelines; the promulgation of net metering regulations; review of smart grid pilot programs; and review of long-term contracts for renewable power. Oversaw six rate case proceedings for Massachusetts electric and gas companies. Played an influential role in the development of price responsive demand proposals for the New England wholesale energy market. Served as President of the New England Conference of Public Utility Commissioners from 2009-2010. Served as board member on the Energy Facilities Siting Board from 2007-2010. Served as co-chair of the Steering Committee for the Northeast Energy Efficiency Partnership's Regional Evaluation, Measurement and Verification Forum.

**Synapse Energy Economics Inc.**, Cambridge, MA. Vice President, 1997-2007.

**Tellus Institute**, Boston, MA. Senior Scientist, Manager of Electricity Program, 1992-1997.

**Association for the Conservation of Energy**, London, England. Research Director, 1991-1992.

**Massachusetts Department of Public Utilities**, Boston, MA. Staff Economist, 1989-1990.

**Massachusetts Office of Energy Resources**, Boston, MA. Policy Analyst, 1987-1989.

**Energy Systems Research Group**, Boston, MA. Research Associate, 1983-1987.

**Union of Concerned Scientists**, Cambridge, MA. Energy Analyst, 1982-1983.

### **EDUCATION**

Masters, Business Administration. Boston University, Boston, MA, 1993.

Diploma, Economics. London School of Economics, London, England, 1991.

B.S., Mechanical Engineering. Tufts University, Medford, MA, 1982.

B.A., English. Tufts University, Medford, MA, 1982.

## TESTIMONY

**Maine Public Utilities Commission (Docket No. 2013-168).** Testimony regarding policy issues raised by Central Maine Power's 2014 Alternative Rate Plan, including recovery of capital costs, a Revenue Index Mechanism proposal, and decoupling. On behalf of the Maine Public Advocate Office. December 12, 2013. Surrebuttal testimony filed March 21, 2014.

**Colorado Public Utilities Commission (Docket No. 13A-0686EG).** Testimony regarding Public Service Company of Colorado's proposed energy efficiency goals. On behalf of the Sierra Club. October 16, 2013. Surrebuttal filed January 21, 2014.

**Kentucky Public Service Commission (Case No. 2012-00578).** Direct testimony regarding Kentucky Power Company's economic analysis of the Mitchell Generating Station purchase. On behalf of the Sierra Club. April 1, 2013.

**Nova Scotia Utility and Review Board (Matter No. M04819).** Direct testimony regarding Efficiency Nova Scotia Corporation's Electricity Demand Side Management Plan for 2013-2015. On behalf of Counsel to Nova Scotia Utility and Review Board. May 22, 2012.

**Missouri Office of Public Counsel (Docket No. EO-2011-0271).** Rebuttal testimony regarding IRP rule compliance. On behalf of Missouri Office of the Public Counsel. October 28, 2011.

**Nova Scotia Utility and Review Board (Matter No. M03669).** Direct testimony regarding Efficiency Nova Scotia Corporation's Electricity Demand Side Management Plan for 2012. On behalf of Counsel to Nova Scotia Utility and Review Board. April 8, 2011.

**Rhode Island Public Utilities Commission (Docket No. 3790).** Direct testimony regarding National Grid's Gas Energy Efficiency Programs. On behalf of the Division of Public Utilities and Carriers. April 2, 2007.

**Rhode Island Public Utilities Commission (Docket No. 3765).** Surrebuttal testimony regarding National Grid's Renewable Energy Standard Procurement Plan. On behalf of the Division of Public Utilities and Carriers. February 20, 2007.

**Rhode Island Public Utilities Commission (Docket No. 3765).** Direct testimony regarding National Grid's Renewable Energy Standard Procurement Plan. On behalf of the Division of Public Utilities and Carriers. January 17, 2007.

**Minnesota Public Utilities Commission (Docket Nos. CN-05-619 and TR-05-1275).** Direct testimony regarding the potential for energy efficiency as an alternative to the proposed Big Stone II coal project. On behalf of the Minnesota Center for Environmental Advocacy, Fresh Energy, Izaak Walton League of America, Wind on the Wires and the Union of Concerned Scientists. November 29, 2006.

**Rhode Island Public Utilities Commission (Docket No. 3779).** Oral testimony regarding the settlement of Narragansett Electric Company's 2007 Demand-Side Management Programs. On behalf of the Division of Public Utilities and Carriers. November 24, 2006.

**Nevada Public Utilities Commission (Docket Nos. 06-04002 & 06-04005).** Direct testimony regarding Nevada Power Company's and Sierra Pacific Power Company's Renewable Portfolio Standard Annual Report. On behalf of the Nevada Bureau of Consumer Protection. October 26, 2006

**Nevada Public Utilities Commission (Docket No. 06-06051).** Direct testimony regarding Nevada Power Company's Demand-Side Management Plan in the 2006 Integrated Resource Plan. On behalf of the Nevada Bureau of Consumer Protection. September 13, 2006.

**Nevada Public Utilities Commission (Docket Nos. 06-03038 & 06-04018).** Direct testimony regarding the Nevada Power Company's and Sierra Pacific Power Company's Demand-Side Management Plans. On behalf of the Nevada Bureau of Consumer Protection. June 20, 2006.

**Nevada Public Utilities Commission (Docket No. 05-10021).** Direct testimony regarding the Sierra Pacific Power Company's Gas Demand-Side Management Plan. On behalf of the Nevada Bureau of Consumer Protection. February 22, 2006.

**South Dakota Public Utilities Commission (Docket No. EL04-016).** Direct testimony regarding the avoided costs of the Java Wind Project. On behalf of the South Dakota Public Utilities Commission Staff. February 18, 2005.

**Rhode Island Public Utilities Commission (Docket No. 3635).** Oral testimony regarding the settlement of Narragansett Electric Company's 2005 Demand-Side Management Programs. On behalf of the Division of Public Utilities and Carriers. November 29, 2004.

**British Columbia Utilities Commission.** Direct testimony regarding the Power Smart programs contained in BC Hydro's Revenue Requirement Application 2004/05 and 2005/06. On behalf of the Sierra Club of Canada, BC Chapter. April 20, 2004.

**Maryland Public Utilities Commission (Case No. 8973).** Oral testimony regarding proposals for the PJM Generation Attributes Tracking System. On behalf of the Maryland Office of People's Counsel. December 3, 2003.

**Rhode Island Public Utilities Commission (Docket No. 3463).** Oral testimony regarding the settlement of Narragansett Electric Company's 2004 Demand-Side Management Programs. On behalf of the Division of Public Utilities and Carriers. November 21, 2003.

**California Public Utilities Commission (Rulemaking 01-10-024).** Direct testimony regarding the market price benchmark for the California renewable portfolio standard. On behalf of the Union of Concerned Scientists. April 1, 2003.

**Québec Régie de l'énergie (Docket R-3473-01).** Direct testimony of Timothy Woolf and Philp Raphals regarding Hydro-Québec's Energy Efficiency Plan: 2003-2006. On behalf of Regroupement national des Conseils régionaux de l'environnement du Québec. February 5, 2003.

**Connecticut Department of Public Utility Control (Docket No. 01-10-10).** Direct testimony regarding the United Illuminating Company's service quality performance standards in their performance-based ratemaking mechanism. On behalf of the Connecticut Office of Consumer Counsel. April 2, 2002.

**Nevada Public Utilities Commission (Docket No. 01-7016).** Direct testimony regarding the Nevada Power Company's Demand-Side Management Plan. On behalf of the Bureau of Consumer Protection, Office of the Attorney General. September 26, 2001.

**US Department of Energy (Docket EE-RM-500).** Oral testimony at a public hearing on marginal price assumptions for assessing new appliance efficiency standards. On behalf of the Appliance Standards Awareness Project. November 2000.

**Connecticut Department of Public Utility Control (Docket No. 99-09-03 Phase II).** Direct testimony on Connecticut Natural Gas Company's proposed performance-based ratemaking mechanism. On behalf of the Connecticut Office of Consumer Counsel. September 25, 2000.

**Mississippi Public Service Commission (Docket No. 96-UA-389).** Oral testimony on generation pricing and performance-based ratemaking. On behalf of the Mississippi Attorney General. February 16, 2000.

**Delaware Public Service Commission (Docket No. 99-328).** Direct testimony on maintaining electric system reliability. On behalf of the Public Service Commission Staff. February 2, 2000.

**New Hampshire Public Service Commission (Docket No. 99-099 Phase II).** Oral testimony on standard offer services. On behalf of the Campaign for Ratepayers Rights. January 14, 2000.

**West Virginia Public Service Commission (Case No. 98-0452-E-GI).** Rebuttal testimony on codes of conduct. On behalf of the West Virginia Consumer Advocate Division. July 15, 1999.

**West Virginia Public Service Commission (Case No. 98-0452-E-GI).** Direct testimony on codes of conduct and other measures to protect consumers in a restructured electricity industry. On behalf of the West Virginia Consumer Advocate Division. June 15, 1999.

**Massachusetts Department of Telecommunications and Energy (DPU/DTE 97-111).** Direct testimony on Commonwealth Electric Company's energy efficiency plan, and the role of municipal aggregators in delivering demand-side management programs. On behalf of the Cape and Islands Self-Reliance Corporation. January 1998.

**Delaware Public Service Commission (DPSC 97-58).** Direct testimony on Delmarva Power and Light's request to merge with Atlantic City Electric. On behalf of the Delaware Public Service Commission Staff. May 1997.

**Delaware Public Service Commission (DPSC 95-172).** Oral testimony on Delmarva's integrated resource plan and DSM programs. On behalf of the Delaware Public Service Commission Staff. May 1996.

**Colorado Public Utilities Commission (5A-531EG).** Direct testimony on impact of proposed merger on DSM, renewable resources and low-income DSM. On behalf of the Colorado Office of Energy Conservation. April 1996.

**Colorado Public Utilities Commission (3I-199EG).** Direct testimony on impacts of increased competition on DSM, and recommendations for how to provide utilities with incentives to implement DSM. On behalf of the Colorado Office of Energy Conservation. June 1995.

**Colorado Public Utilities Commission (5R-071E).** Oral testimony on the Commission's integrated resource planning rules. On behalf of the Colorado Office of Energy Conservation. July 1995.

**Colorado Public Utilities Commission (3I-098E).** Direct testimony on the Public Service Company of Colorado's DSM programs and integrated resource plans. On behalf of the Colorado Office of Energy Conservation. April 1994.

## REPORTS

Woolf, T., C. Neme, P. Stanton, R. LeBaron, K. Saul-Rinaldi, S. Cowell, *The Resource Value Framework: Reforming Energy Efficiency Cost-Effectiveness Screening*. The National Efficiency Screening Project for the National Home Performance Council, March 2014.

Woolf, T., K. Saul-Rinaldi, R. LeBaron, S. Cowell, P. Stanton, *Recommendations for Reforming Energy Efficiency Cost-Effectiveness Screening in the United States*. Energy Efficiency Screening Coalition for the National Home Performance Council, November 2013.

Woolf T., E. Malone, J. Kallay, K. Takahashi, *Energy Efficiency Cost-Effectiveness Screening in the Northeast and Mid-Atlantic States*. Synapse Energy Economics for Northeast Energy Efficiency Partnerships, Inc. (NEEP), October 2013.

Jackson S., P. Peterson, D. Hurley, T. Woolf, *Forecasting Distributed Generation Resources in New England: Distributed Generation Must Be Properly Accounted for in Regional System Planning*. Synapse Energy Economics for the E4 Group, June 2013.

Woolf T., E. Malone, L. Schwartz, J. Shenot, *A Framework for Evaluating the Cost-Effectiveness of Demand Response*. Synapse Energy Economics and Regulatory Assistance Project for the National Forum on the National Action Plan on Demand Response: Cost-effectiveness Working Group, February 2013.

Woolf T., W. Steinhurst, E. Malone, K. Takahashi, *Energy Efficiency Cost-Effectiveness Screening: How to Properly Account for 'Other Program Impacts' and Environmental Compliance Costs*. Synapse Energy economics for the Regulatory Assistance Project and the Vermont Housing Conservation Board, November 2012.

Woolf T., M. Whited, T. Vitolo, K. Takahashi, D. White, *Indian Point Replacement Analysis: A Clean Energy Roadmap. A Proposal for Replacing the Nuclear Plant with Clean, Sustainable Energy Resource*. Synapse Energy Economics for the Natural Resources Defense Council and Riverkeeper, October 2012.

Keith G., T. Woolf, K. Takahashi, *A Clean Electricity Vision for Long Island: Supplying 100% of Long Island's Electricity Needs with Renewable Power*. Synapse Energy Economics for Renewable Energy Long Island, August 2012.

Woolf T., *Best Practices in Energy Efficiency Program Screening: How to Ensure that the Value of Energy Efficiency is Properly Accounted For*. Synapse Energy Economics for National Home Performance Council, July 2012.

Woolf T., J. Kallay, E. Malone, T. Comings, M. Schultz, J. Conyers, *Commercial & Industrial Customer Perspectives on Massachusetts Energy Efficiency Programs*. Synapse Energy Economics for the Massachusetts Energy Efficiency Advisory Council, April 2012.

Woolf T., M. Wittenstein, R. Fagan, *Indian Point Energy Center Nuclear Plant Retirement Analysis*. Synapse Energy Economics for Natural Resources Defense Council, and Riverkeeper, October 2011.

Woolf T., V. Sabodash, B. Biewald, *Equipment Price Forecasting in Energy Conservation Standards Analysis*. Synapse Energy Economics for Appliance Standards Awareness Project, and Natural Resources Defecse Council, March 2011.

Johnston L., E. Hausman, A. Sommer, B. Biewald, T. Woolf, D. Schlissel, A. Rochelle, D. White, *Climate Change and Power: Carbon Dioxide Emission Costs and Electricity Resource Planning*. Synapse Energy Economics for the Tallahassee Electric Utility, March 2007.

Woolf T., *Cape Light Compact Energy Efficiency Plan 2007-2012: Providing Comprehensive Energy Efficiency Services to Communities on Cape Cod and Martha's Vineyard*. Synapse Energy Economics for the Cape Light Compact, February 2007.

Woolf T., A. Sommer, *Comments on the Potential for Energy Efficiency Resources to Meet the Demand for Electricity in North Carolina*. Synapse Energy Economics for the Southern Alliance for Clean Energy, submitted to the North Carolina Utilities Commission, Docket E-100, Sub 110, February 2007.

Woolf T., *Review of the District of Columbia Reliable Energy Trust Fund and Natural Gas Trust Fund Working Group and Regulatory Processes*, Synapse Energy Economics for the District of Columbia Office of People's Counsel, January 2007.

Woolf T., *Cape Light Compact Annual Report on Energy Efficiency Activities in 2005*. Synapse Energy Economics for the Cape Light Compact, submittted to the Massachusetts Department of Telecommunications and Energy and the Massachusetts Division of Energy Resources, July 2006.

Steinhurst W., T. Woolf, A. Sommer, K. Takahashi, P. Chernick, J. Wallach, *Integrated Portfolio Management in a Restructured Supply Market*. Synapse Energy Economics and Resource Insight for the Ohio Office of Consumer Counsel, June 2006.

Peterson P., D. Hurley, T. Woolf, B. Biewald, *Incorporating Energy Efficiency into the ISO-New England Forwarded Capacity Market*. Synapse Energy Economics for Conservation Services Group, June 2006.

Fagan R., A. Napoleon, A. Rochelle, A. Sommer, W. Steinhurst, D. White, K. Takahashi, *Study of Potential Mohave Alternative/Complementary Generation Resources*. Pursuant to CPUC Decision 04-12-016, Synapse Energy Economics for Southern California Edison, with Sargent and Lundy, November 2005.

Woolf T., D. White, C. Chen, A. Sommer, *Potential Cost Impacts of a Renewable Portfolio Standard in New Brunswick*. Synapse Energy Economics for the New Brunswick Department of Energy, October 2005.

Woolf T., K. Takahashi, G. Keith, A. Rochelle, P. Lyons, *Feasibility Study of Alternative Energy and Advanced Energy Efficiency Technologies for Low-Income Housing in Massachusetts*. Synapse Energy Economics for the Low-Income Affordability Network, Action for Boston Community Development, and Action Inc., with Zapotec Energy, August 2005.

Woolf T., *The Cape Light Compact Energy Efficiency Plan: Phase III 2005-2007: Providing Comprehensive Energy Efficiency Services to Communities on Cape Cod and Martha's Vineyard*. Synapse Energy Economics for the Cape Light Compact, April 2005.

Woolf T., *Review of Avoided Costs Used in Minnesota Electric Utility Conservation Improvement Programs*. prepared for the Minnesota Office of Legislative Auditor, November 2004.

Woolf T., *NEEP Strategic Initiative Review: Qualitative Assessment and Initiative Ranking for the Residential Sector*. Synapse Energy Economics for the Northeast Energy Efficiency Partnerships, Inc., October 2004.

Woolf T., *A Balanced Energy Plan for the Interior West*. Synapse Energy Economics for the Hewlett Foundation Energy Series, with Western Resource Advocates and Tellus Institute, May 2004.

Steinhurst W., P. Chernick, T. Woolf, J. Plunkett, C. Chen, *OCC Comments on Alternative Transitional Standard Offer*. Synapse Energy Economics for the Connecticut Office of Consumer Counsel, October 2003.

Woolf T., *Potential Cost Impacts of a Vermont Renewable Portfolio Standard*. Synapse Energy Economics for the Vermont Public Service Board, presented to the Vermont RPS Collaborative, October 2003.

Biewald B., T. Woolf, A. Rochelle, W. Steinhurst, *Portfolio Management: How to Procure Electricity Resources to Provide Reliable, Low-Cost, and Efficient Electricity Services to All Retail Customers*. Synapse Energy Economics for the Regulatory Assistance Project and the Energy Foundation, October 2003.

Woolf T., G. Keith, D. White, M. Drunsic, M. Ramiro, J. Ramey, J. Levy, P. Kinney, S. Greco, K. Knowlton, B. Ketcham, C. Komanoff, D. Gutman, *Air Quality in Queens: Cleaning Up the Air in Queens County and Neighboring Regions*. Synapse Energy Economics, Konheim & Ketcham, and Komanoff Energy Associates for a collaboration of Natural Resources Defense Council, Keyspan Energy, and the Coalition Helping to Organize a Kleaner Environment, May 2003.

Chen C., D. White, T. Woolf, L. Johnston, *The Maryland Renewable Portfolio Standard: An Assessment of Potential Cost Impacts*. Synapse Energy Economics for the Maryland Public Interest Research Group, March 2003.

Woolf T., *The Cape Light Compact Energy Efficiency Plan: Phase II 2003-2007: Providing Comprehensive Energy Efficiency Services to Communities on Cape Cod and Martha's Vineyard*. Synapse Energy Economics for the Cape Light Compact, with Cort Richardson, the Vermont Energy Investment Corporation, and Optimal Energy Incorporated, March 2003.

Woolf T., *Green Power and Energy Efficiency Opportunities for Municipalities in Massachusetts: Promoting Community Involvement in Energy and Environmental Decisions*. Synapse Energy Economics for the Massachusetts Energy Consumers Alliance, May 2002.

Woolf T., *The Energy Efficiency Potential in Williamson County, Tennessee: Opportunities for Reducing the Need for Transmission Expansion*. Synapse Energy Economics for the Harpeth River Watershed Association and the Southern Alliance for Clean Energy, April 2002.

Woolf T., *Electricity Restructuring Activities in the US: A Survey of Selected States*. Synapse Energy Economics for the Arizona Corporation Commission Utilities Division Staff, March 2002.

Woolf T., *Powering the South: A Clean and Affordable Energy Plan for the Southern United States*. Synapse Energy Economics with and for the Renewable Energy Policy Project and a coalition of Southern environmental advocates, January 2002.

Johnston L., G. Keith, T. Woolf, B. Biewald, E. Gonin, *Survey of Clean Power and Energy Efficiency Programs*. Synapse Energy Economics for the Ozone Transport Commission, January 2002.

Woolf T., *Proposal for a Renewable Portfolio Standard for New Brunswick*. Synapse Energy Economics for the Conservation Council of New Brunswick, presented to the New Brunswick Market Design Committee, December 2001.

Woolf T., G. Keith, D. White, F. Ackerman, *A Retrospective Review of FERC's Environmental Impact Statement on Open Transmission Access*. Synapse Energy Economics and the Global Development and Environmental Institute for the North American Commission for Environmental Cooperation, with the Global Development and Environment Institute, October 2001.

Woolf T., *Repowering the Midwest: The Clean Energy Development Plan for the Heartland*. Synapse Energy Economics for the Environmental Law and Policy Center and a coalition of Midwest environmental advocates, February 2001.

Woolf T., B. Biewald, D. Allen, D. White, L. Johnston, *Marginal Price Assumptions for Estimating Customer Benefits of Air Conditioner Efficiency Standards*. Synapse Energy Economics for the Appliance Standards Awareness Project, comments on the Department of Energy's proposed rules for efficiency standards for central air conditioners and heat pumps, December 2000.

Woolf T., *The Cape Light Compact Energy Efficiency Plan: Providing Comprehensive Energy Efficiency Services to Communities on Cape Cod and Martha's Vineyard*. Synapse Energy Economics for the Cape Light Compact, November 2000.

Woolf T., *Comments of the Citizens Action Coalition of Indiana*, Workshop on Alternatives to Traditional Generation Resources, June 2000.

Woolf T., *Investigation into the July 1999 Outages and General Service Reliability of Delmarva Power & Light Company*. Synapse Energy Economics for the Delaware Public Service Commission Staff, with Exponent Failure Analysis, Docket No. 99-328, February 2000.

Woolf T., B. Biewald, *Market Distortions Associated With Inconsistent Air Quality Regulations*. Synapse Energy Economics for the Project for a Sustainable FERC Energy Policy, November 1999.

Woolf T., J. Ramey, T. MacGregor, *Measures to Ensure Fair Competition and Protect Consumers in a Restructured Electricity Industry in West Virginia*. Synapse Energy Economics and MacGregor Energy Consultancy for the West Virginia Consumer Advocate Division, Case No. 98-0452-E-GI, June 1999.

Woolf T., B. Biewald, D. Glover, *Competition and Market Power in the Northern Maine Electricity Market*. Synapse Energy Economics and Failure Exponent Analysis for the Maine Public Utilities Commission, November 1998.



Woolf T., *New England Tracking System*. Synapse Energy Economics for the New England Governors' Conference, with Environmental Futures and Tellus Institute, a methodology for a region-wide electricity tracking system to support the implementation of restructuring-related policies, December 1998.

Woolf T., D. White, B. Biewald, W. Moomaw, *The Role of Ozone Transport in Reaching Attainment in the Northeast: Opportunities, Equity and Economics*. Synapse Energy Economics and the Global Development and Environment Institute for the Northeast States for Coordinated Air Use Management, July 1998.

Biewald B., D. White, T. Woolf, F. Ackerman, W. Moomaw, *Grandfathering and Environmental Comparability: An Economic Analysis of Air Emission Regulations and Electricity Market Distortions*. Synapse Energy Economics and the Global Development and Environment Institute for the National Association of Regulatory Utility Commissioners, June 1998.

Biewald B., T. Woolf, P. Bradford, P. Chernick, S. Geller, J. Oppenheim, *Performance-Based Regulation in a Restructured Electric Industry*. Synapse Energy Economics, Resource Insight, and the National Consumer Law Center for the National Association of Regulatory Utility Commissioners, November 1997.

Biewald B., T. Woolf, M. Breslow, *Massachusetts Electric Utility Stranded Costs: Potential Magnitude, Public Policy Options, and Impacts on the Massachusetts Economy*. Synapse Energy Economics for the Union of Concerned Scientists, MASSPIRG and Public Citizen, November 1997.

Woolf T., *The Delaware Public Service Commission Staff's Report on Restructuring the Electricity Industry in Delaware*. The Delaware Public Service Commission Staff, Tellus Study No. 96-99, August 1997.

Woolf T., *Preserving Public Interest Obligations Through Customer Aggregation: A Summary of Options for Aggregating Customers in a Restructured Electricity Industry*. The Colorado Office of Energy Conservation, Tellus Study No. 96-130, May 1997.

Woolf T., *Zero Carbon Electricity: the Essential Role of Efficiency and Renewables in New England's Electricity Mix*. The Boston Edison Settlement Board, Tellus Study No. 94-273, April 1997.

Woolf T., *Regulatory and Legislative Policies to Promote Renewable Resources in a Competitive Electricity Industry*. The Colorado Governor's Office of Energy Conservation, Tellus Study No. 96-130-A5, January 1997.

Woolf T., *Comments Regarding the Investigation of Restructuring the Electricity Industry in Delaware*. On behalf of the Staff of the Delaware Public Service Commission, Docket No. 96-83, Tellus Study No. 96-99, November 1996.

Woolf T., *Response of Governor's Office of Energy Conservation*. Colorado Public Utilities Commission Questionnaire on Electricity Industry Restructuring,. Docket No. 96Q-313E, Tellus No. 96-130-A3, October 1996.

Woolf T., *Position Paper of the Vermont Department of Public Service*. Investigation into the Restructuring of the Electric Utility Industry in Vermont, Docket No. 5854, Tellus Study No. 95-308, March 1996.

Woolf T., *Can We Get There From Here? The Challenge of Restructuring the Electricity Industry So That All Can Benefit*. The California Utility Consumers' Action Network, Tellus Study No. 95-208 February 1996.

Woolf T., *Promoting Environmental Quality in a Restructured Electric Industry*. The National Association of Regulatory Utility Commissioners, Tellus Study No. 95-056, December 1995.

Woolf T., *Comments to the Pennsylvania Public Utilities Commission Regarding an Investigation into Electric Power Competition*. The Pennsylvania Office of Consumer Advocate, Docket No. I-00940032, Tellus Study No. 95-260, November 1995.

Woolf T., *Systems Benefits Funding Options*. Wisconsin Environmental Decade, Tellus Study No. 95-248, October 1995.

Woolf T., *Achieving Efficiency and Equity in the Electricity Industry Through Unbundling and Customer Choice*. Initial and Reply Comments of the New Jersey Division of Ratepayer Advocate, in an investigation into the future structure of the electric power industry, Docket No. EX94120585Y, Tellus Study No. 95-029-A3, September 1995.

Woolf T., *Non-Price Benefits of BECO Demand-Side Management Programs*, prepared for the Boston Edison Settlement Board. Tellus Study No. 93-174, August 1995.

Woolf T., B. Biewald, *Electric Resource Planning for Sustainability*, prepared for the Texas Sustainable Energy Development Council. Tellus Study No. 94-114, February 1995.

## **ARTICLES AND PRESENTATIONS**

Woolf T., B. Biewald, and J. Migden-Ostrander, *NARUC Risk Workshop for Regulators*, presented at the Mid-Atlantic Conference of Regulatory Utility Commissioners, June 2013.

Woolf T., *Energy Efficiency Screening: Accounting for 'Other Program Impacts' & Environmental Compliance Costs*, Presented at Regulatory Assistance Project Webinar, March 2013

Woolf T., *Energy Efficiency: Rates, Bills, Participants, Screening, and More*, presented at Connecticut Energy Efficiency Workshop, March 2013

Woolf T., *Best Practices in Energy Efficiency Program Screening*, Presented at SEE Action Webinar, March 2013

Woolf T., *Energy Efficiency Screening: Application of the TRC Test*, Presented at Energy Advocates Webinar, January 2013

Woolf T., *Best Practices in Energy Efficiency Program Screening*, Presented at American Council for an Energy-Efficient Economy Webomar, December 2012

Woolf T., *In Pursuit of All Cost-Effective Energy Efficiency*, Presented at Sierra Club Boot Camp, October 2012

Woolf T., *Best Practices in Energy Efficiency Program Screening*, presented at NARUC Summer Meetings, Energy Efficiency Cost-Effectiveness Breakfast, July 2012.

Woolf T., *Energy Efficiency Cost-Effectiveness Tests*, presented at the Northeast Energy Efficiency Partnerships Annual Meeting, October 2011

Woolf T., *Why Consumer Advocates Should Support Decoupling*, presented at the 2011 ACEEE National Conference on Energy Efficiency as a Resource, September 2011.

Woolf T., *A Regulator's Perspective on Energy Efficiency*, presented at the Efficiency Maine Symposium, In Pursuit of Maine's Least-Cost Energy, September 2011.

Woolf T., *Bill Impacts of Energy Efficiency Programs: The Importance of Analyzing and Managing Rate and Bill Impacts*, presented at the Energy in the Northeast Conference, Law Seminar International, September 2010.

Woolf T., *Bill Impacts of Energy Efficiency Programs: The Implications of Bill Impacts in Developing Policies to Motivate Utilities to Implement Energy Efficiency*, presented to the State Energy Efficiency Action Network, Utility Motivation Work Group, November 2010.

Woolf T., *Bill Impacts of Energy Efficiency Programs*, presented to the Energy Resources and Environment Committee at the NARUC Winter Meetings, February 2010.

Woolf T., *Price-Responsive Demand in the New England Wholesale Energy Market: Description of NECPUC's Limited Supply-Side Proposal*, presented at the NEPOOL Markets Committee Meeting, November 2009.

Woolf T., *Demand Response in the New England Wholesale Energy Market: How Much Should We Pay for Demand Resources?* presented at the Restructuring Roundtable, October 2009.

Woolf T., *Promoting Demand Resources in Massachusetts: A Regulator's Perspective*, presented at the Energy Bar Association, Northeast Chapter Meeting, June 2008.

Woolf T., *Turbo-Charging Energy Efficiency in Massachusetts: A DPU Perspective*, presented at The Restructuring Roundtable, April 2008.

Woolf T., A. Sommer, J. Nielson, D. Berry, R. Lehr, *Managing Electricity Industry Risk with Clean and Efficient Resources*. The Electricity Journal, Volume 18, Issue 2, March 2005.

Woolf T., A. Sommer, *Local Policy Measures to Improve Air Quality: A Case Study of Queens County, New York*, Local Environment, Volume 9, Number 1, February 2004.

Woolf T., *A Renewable Portfolio Standard for New Brunswick*, presented to the New Brunswick Market Design Committee, January 10, 2002.

Woolf T., *What's New With Energy Efficiency Programs*, Energy & Utility Update, National Consumer Law Center, Summer 2001.

Woolf T., *Clean Power Opportunities and Solutions: An Example from America's Heartland*, The Electricity Journal, July 2001.

Woolf T., *Potential for Wind and Renewable Resource Development in the Midwest*, speaker at WINDPOWER 2001, Washington, DC, June 7, 2001.

Woolf T., B. Biewald, *Electricity Market Distortions Associated With Inconsistent Air Quality Regulations*, The Electricity Journal, April 2000.

Woolf T., *Generation Information Systems to Support Renewable Portfolio Standards, Generation Performance Standards and Environmental Disclosure*, on behalf of the Union of Concerned Scientists, presentation at the Massachusetts Restructuring Roundtable, March 2000.

Ackerman F., B. Biewald, D. White, T. Woolf, W. Moomaw, *Grandfathering and Coal Plant Emissions: the Cost of Cleaning Up the Clean Air Act*, Energy Policy, vol. 27, no 15, December 1999, pages 929-940.

Woolf T., *Challenges Faced by Clean Generation Resources Under Electricity Restructuring*, speaker at the Symposium on the Changing Electric System in Florida and What it Means for the Environment, Tallahassee Florida, November 1999.

Biewald B., D. White, T. Woolf, *Follow the Money: A Method for Tracking Electricity for Environmental Disclosure*, The Electricity Journal, May 1999.

Woolf T., *New England Tracking System Project: An Electricity Tracking System to Support a Wide Range of Restructuring-Related Policies*, speaker at the Ninth Annual Energy Services Conference and Exposition, Orlando Florida, December 1998

Woolf T., B. Biewald, *Efficiency, Renewables and Gas: Restructuring As if Climate Mattered*, The Electricity Journal, Vol. 11, No. 1, January-February, 1998.

Woolf T., J. Michals, *Flexible Pricing and PBR: Making Rate Discounts Fair for Core Customers*, Public Utilities Fortnightly, July 15, 1996.

Woolf T., *Overview of IRP and Introduction to Electricity Industry Restructuring*, training session provided to the staff of the Delaware Public Service Commission, April, 1996.

Woolf T., J. Michals, *Performance-Based Ratemaking: Opportunities and Risks in a Competitive Electricity Industry*, The Electricity Journal, Vol. 8, No. 8, October, 1995.

Woolf T., *Competition and Regulation in the UK Electric Industry*, speaker at the Illinois Commerce Commission's workshop on Restructuring the Electric Industry, August, 1995.

Woolf T., *Competition and Regulation in the UK Electric Industry*, speaker at the British Columbia Utilities Commission Electricity Market Review, Vancouver, British Columbia, February, 1995.

Woolf T., *Retail Competition in the Electricity Industry: Lessons from the United Kingdom*, The Electricity Journal, Vol. 7, No. 5, June, 1994.

Woolf T., *A Dialogue About the Industry's Future*, The Electricity Journal, June, Vol. 7, No. 5, 1994.

Woolf T., E. D. Lutz, *Energy Efficiency in Britain: Creating Profitable Alternatives*, Utilities Policy, July 1993.

Woolf T., *It is Time to Account for the Environmental Costs of Energy Resources*, Energy and Environment, Volume 4, No. 1, First Quarter, 1993.

Woolf T., *Developing Integrated Resource Planning Policies in the European Community*, Review of European Community & International Environmental Law, Energy and Environment Issue, Vol. 1, Issue 2. 1992.

Dated April 2014.