

PETER FOX-PENNER

Professor of Practice, Boston University Questrom School of Business
Director, Boston University Institute for Sustainable Energy
595 Commonwealth Avenue
Boston, MA. 02215

Phone: 617-353-4298

Email: pfoxp@bu.edu

Web: <http://www.bu.edu/ise/>

Dr. Peter Fox-Penner is an economist with an engineering education and more than 40 years of experience in regulated industries, energy policy, and environmental issues. In a career that has spanned consulting, senior government service, and academia, he has conducted dozens of research assignments, published over fifty papers and articles, written three books, and assisted numerous public and private clients in settings that include expert testimony, speeches, and advice to senior management and boards.

At the Questrom School of Business, Dr. Fox-Penner is a member of the Markets, Public Policy, and Law Department and teaches in the Energy and Environmental Sustainability concentration program for business students. He also directs a university-wide institute that conducts research and engages policymakers on all aspects of sustainable energy. The institute has 35 affiliated faculty at the University and can be found at www.bu.edu/ise.

Dr. Fox-Penner's longest area of specialization has been electricity market policies and regulation. In this area he has advised most major U.S. energy companies and grid operators, and government agencies, as well as a number of international clients, on electric policy issues. He is the author of *the Electric Utility Restructuring: A Guide to The Competitive Era* (1997), *Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities* (Island Press, 2010), and *Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities-Chinese Translation* (China Electric Power Press, 2011) as well as many other publications in electric and energy policy. He has served as the lead expert in the prosecution of market manipulation during the California energy crisis of 2000-2001. His work in this subject area has been cited by the Supreme Court and other authorities.

Dr. Fox-Penner has held a number of management roles in for-profit and non-profit organizations. From 2001 to 2008 and 2010-2013, he served as Brattle's Chairman, leading the firm through two periods of growth and governance reform. He has served on the boards of ENpartners, Environment2004, Environmental Alliance, and Global Energy Group and the advisory boards of Enviance and Gridpoint, and served on the board of The Solar Foundation for five years (2010-15). He is also a Senior Policy Scholar at Georgetown University Center for Business and Public Policy.

Dr. Fox-Penner received his B.S. in Electrical Engineering (1976) and his M.S. in Mechanical Engineering (Energy Policy, 1978) from the University of Illinois, and his Ph.D. in Economics from the Graduate School of Business, University of Chicago (1989).

EDUCATION

B.S. University of Illinois	Electrical Engineering	1976
M.S. University of Illinois	Mechanical Engineering	1978
Ph.D. University of Chicago	Economics	1989

PROFESSIONAL EXPERIENCE

- 2016-Current: Academic Director and Professor of the Practice, Boston University, Boston, MA
- 2014-2015: Principal and Director, The Brattle Group, Washington, DC
- 2012-2013: Principal and Chairman, The Brattle Group, Washington, DC
- 2008-2012: Principal and Chairman Emeritus, The Brattle Group, Washington, DC
- 2007-2008: Principal and Co-Chairman, The Brattle Group, Washington, DC
- 2001-2007: Principal and Chairman, The Brattle Group, Washington, DC
- 1996-2001: Principal and Director, The Brattle Group, Washington, DC
- 1993-1996: Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, United States Department of Energy
Senior Advisor for Technology Policy, Office of Science and Technology Policy, Executive Office of the President
Assistant to the Deputy Secretary of Energy
- 1989-1993: Vice President, Charles River Associates, Boston, MA
- 1991-1993: Professorial Lecturer, Center for Energy and Environmental Studies, Boston University
- 1987-1989: Senior Associate, Charles River Associates
- 1980-1983: Research Engineer and Chief Research Engineer, Illinois Governor's Office of Consumer Service, Chicago, IL
- 1977-1980: Research Assistant and Research Engineer, Office of Vice Chancellor for Energy Research, University of Illinois, Urbana, IL

ACADEMIC HONORS AND FELLOWSHIPS

- *Who's Who*
- Fellow, Center for the Study of Economy and the State, University of Chicago, 1986
- NSF Travel Fellow, Dec. 1981
- MIT Institute Fellowship, 1978
- Earle C. Anthony Fellowship, 1978
- Union Carbide Fellow, 1977-78
- Michigan Annual Giving Scholarship, 1976
- Illinois State Scholar, 1976

- National Merit Scholar, 1976
- Sigma Tau Beta
- Phi Kappa Phi
- Eta Kappa Nu

PROFESSIONAL AFFILIATIONS

- Member of the Board, LRI Energy Solutions, 2014 - Present
- Senior Policy Scholar – Georgetown University Center for Business and Public Policy 2013 - Present
- Advisory Board, Rocky Mountain Institute’s Reinventing Fire, 2010-2011
- Member of the Board, The Solar Foundation, 2009 - Present
- Advisory Board, Gridpoint, 2009-2012
- Advisory Board, Enviance, 2008-2012
- Chairman, Environmental Alliance, 2005-2006
- Managing Member, ENpartners LLC, 2005-2008
- Vice Chairman, Environment2004, 2002-2004
- Member of the Board, Global Energy Group, 2002 - 2003
- Co-Founder and Steering Committee Chair, Patriot’s Energy Pledge 2001
- Advisor, Progressive Policy Institute, Washington, DC, 2000 – 2004
- Advisor Center for National Policy, Washington, DC, 1993 - 1997
- Advisory Board, Massachusetts Institute of Technology Energy Laboratory, 1993-1996
- Nominator, Heniz Foundation Awards, 1995-1996
- Member, Illinois Solar Energy Advisory Board, 1980

PUBLICATIONS

Refereed Publications

“Resilient and Sustainable Infrastructure for Urban Energy Systems.” *The Solutions Journal*, September-October 2014, p. 48-54.

“The Future of US Energy Utilities, AD.” *The Oxford Energy Forum*, February 2013, p. 18.

With Heidi Bishop. “Mission, Structure, and Governance in Future Electric Markets: Some Observations.” *The Oregon Law Review*, April 2011.

With James Bohn, Romkaew Broehm, and Gary Taylor. “The Regulation of Competition in Wholesale Electric Power Markets.” *Energy Law Journal* 23, No. 2 (2002): 281-348.

With Gregory N. Basheda, Darrell B. Chodorow, Jason A. Hicks, Eric Hirst, James K. Mitchell, Dean M. Murphy and Joseph B. Wharton. “The FERC, Stranded Cost Recovery, and Municipalization.” *Energy Law Journal* 19 (1998): 351-386

“Efficiency and the Public Interest: QF Transmission and the Energy Policy Act of 1992.” *Energy Law Journal* 14 (1993): 51-73.

With Karen Palmer, David Simpson, and Michael Toman. "Electricity Fuel Contracting: Relationships with Coal and Gas Suppliers." *Energy Policy*, October, 1993: 1045-1054.

With Franklin M. Fisher, Joen Greenwood, William G. Moss, and Almarin Phillips. "Due Diligence and the Demand for Electricity: A Cautionary Tale." *Journal of Industrial Organization*, 1992.

"Cogeneration After PURPA: Energy Conservation and Industry Structure." *Journal of Law and Economics* 33 (October 1990): 517-552.

"Regulating Independent Power Producers: Lessons of the PURPA Approach." *Resources and Energy* 12 (1990): 117-141.

"A Dynamic Input-Output Analysis of Net Energy Effects in Single Fuel Economics." *Energy Systems and Policy* 5, no. 2 (1981).

With Bruce M. Hannon and Robert Herendeen. "An Energy Conservation Tax: Impacts and Policy Implications." *Energy Systems and Policy* 5, no. 2 (1981).

With R.S. Chambers, R.A. Herendeen, and J.J. Joyce. "Gasohol: Does It or Doesn't It . . . Produce Positive Net Energy?" *Science* 206, no. 4420 (November 1979): 789-795.

"Considerations of Energy Cost and Versatility in Choosing Optimal Stockpile Forms." *Resources Policy* 5, no. 2 (June 1979): 414-448.

"The Acoustic Specification and Design of a Modern Recording Studio." *Journal of the Audio Engineering Society* (June 1979).

With R.A. Herendeen and T. Milke. "New Hybrid 1971 Energy Intensities." *Energy* 4 (1979): 469-473.

"Cynics, Martyrs, and the Value of Energy Conservation." *Science and Public Policy* 5 (1978): 105-110.

With Clark Bullard and David Pilati. "Energy Analysis: Handbook for Combining Process and Input-Output Analysis." *Resources and Energy* (June 1979). Also published by the Energy Research and Development Administration, Washington, DC, ERDA 77-61).

"Energy Intensity of Electric Commuter Railways." Center for Advanced Computation Technical Memo 24, June 1974, Reprinted as "Total Energy and Labor Requirements for an Electric Commuter Railroad." *Energy* 3 (1978): 539-542.

Monographs and Books

With Gary Taylor, J.D., Shaun Ledgerwood, Ph.D., J.D., and Romkaew Broehm, Ph.D. *Market Power and Market Manipulation in Energy Markets: From the California Crisis to the Present*. Reston, VA: Public Utilities Reports, Inc., 2015.

Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities. Washington, DC: Island Press, 2010.

Electric Utility Restructuring: A Guide to the Competitive Era. Vienna, VA: Public Utility Reports, 1997.

With Karen Palmer, David Simpson, and Michael Toman. *Power Plant Fuel Supply Contracts: The Changing Nature of the Long-Term Supply Relationship*. Arlington, VA: Public Utility Reports, 1992.

Electric Power Transmission and Wheeling: A Technical Primer. Washington, DC: The Edison Electric Institute, 1990.

Book Chapters

With Dean Murphy, Mariko Geronimo, and Matthew McCaffree (The Edison Foundation). "Promoting Use of Plug-In Electric Vehicles through Utility Industry Acquisitions and Leasing of Batteries." Chapter 14 in *Plug-In Electric Vehicles: What Role for Washington*. David B. Sandalow, ed., Brookings Institution Press, 2009.

With Diana Moss. *Network Access, Regulation and Antitrust. Introduction "Economics of Legal Relationships."* Routledge (London), 8th Vol. in series, 2005, pp. 1-9.

With Romkaew Broehm. "Price-Responsive Electric Demand: A National Necessity, Not an Option," chapter 10 in *Electricity Pricing in Transition*. ed. Ahmad Faruqui and B. Kelly Eakin," Kluwer Academic Publishers, 2002.

With Ellen Craig and Adam Schumacher. "Value Drivers in the Utility Industry of 2002." *PUR Analysis of The Nation's Largest Investor-Owned Electric and Gas Utilities*, December 2001 Edition, Public Utilities Reports.

"What Role Should the Federal Government Play in Energy Efficiency?" in *Policy Evolution: Energy Conservation to Energy Efficiency*. Douglas A. Decker and Alan Berolzheimer, eds. Liburn, GA: The Fairmount Press, 1997.

"Energy Policy: Today's View from the Federal Government," in *The Energy Crisis: Unresolved Issues and Enduring Legacies*, David Feldman, ed., Johns Hopkins University Press, 1996.

Selected Additional Publications

With B. Tuschida, S. Sergici, B. Mudge, et al. "Comparative Generation Costs Scale and Residential-Scale PV in Xcel Energy Colorado's Service Area." Prepared for First Solar, July 2015.

"The Missing Smart Power Chapter," Huffington Post, October 23, 2014.

With William P. Zarakas, Sanem Sergici, Heidi Bishop and Jake Zahniser-Word. "Utility Investments in Resiliency: Balancing Benefits with Cost in an Uncertain Environment," *The Electricity Journal*, Vol. 27, Issue 5, June 2014.

With J. Weiss, I. Shavel, P. Ruiz, et al. "Exploring Natural Gas and Renewables in ERCOT, Part III: The Role of Demand Response, Energy Efficiency, and Combined Heat & Power," Prepared for The Texas Clean Energy Coalition May 29, 2014.

With J. Weiss, I. Shavel, P. Ruiz, et al. "Exploring Natural Gas and Renewables in ERCOT Part II: Future Generation Scenarios for Texas," Prepared for The Texas Clean Energy Coalition, December 10, 2013.

With Dan Harris and Serena Hesmondhalgh, "A Trip to RIIO in Your Future?," *Public Utilities Fortnightly*, October 2013.

"President Obama's Climate Change Action Plan: Positives and One Big Regret Versus the Last Time Around." Huffington Post, June 28, 2013.

"A High Energy State of the Union," Huffington Post, February 19, 2013.

"Climate Adaption Equities," Huffington Post, November 20, 2012.

“Renewable Energy Standards: If It Ain’t Broke, Don’t Fix It.” *Climate Progress*, January 17, 2012.

With Joe Wharton. “SureWest’s Transformation and Its Lessons for Today’s Electric Utilities.” *The Brattle Group*, December 2011.

“Surprising Deployment Developments.” *IEEE Smart Grid*, August 2011.

With Rich Goldberg and Jamie Read. “Smart Power, Energy Price Risk Management Evolution.” *Electric Light and Power*, November 2010.

“The Smart Meter Backslide.” *The Harvard Business Review Blog Network*, October 4, 2010.

“The Smart Grid–Enabled Energy Services Utility: How Utilities Can Become Sustainable by Selling Less.” *The Solutions Journal*, September 2010, pp. 42-48.

With Heidi Bishop. “Natural Gas in the Wake of Climate Change Legislation.” *American Gas*, August/September 2010, pp. 5-10.

With Richard Schmalensee. “Legislation Beats Regulation.” *Roll Call*, June 28, 2010.

With Johannes P. Pfeifenberger and Delphine Hou. “For Grid Expansion, Think ‘Subregionally’.” *The Energy Daily*, June 8, 2010.

“Smart Power Business Models for a Smarter Grid.” *Smart Grid News*, June 8, 2010.

With James D. Reitzes, Adam C. Schumacher, and Daniel Gaynor. “Generation Cost Savings From Day 1 and Day 2 RTO Market Designs,” *The Brattle Group, Inc.*, October 1, 2009.

With Johannes Pfeifenberger. “The Anchor-Tenant Model – And Some of the Chickens and Eggs.” *The Electricity Journal*, July 2009, pp. 86-87.

With Ahmad Faruqui and Ryan Hledik. “Smart-Grid Strategy: Quantifying Benefits.” *Public Utilities Fortnightly*, July 2009, pp. 33-36, 60.

“Fix Utilities Before They Need a Rescue.” *Harvard Business Review*, July-August 2009, pp. 18-19.

“Return of the Energy Services Model: How Energy Efficiency, Climate Change, and Smart Grid Will Transform American Utilities.” *The Brattle Group, Inc.*, May 2009.

With Marc W. Chupka, Robert Earle and Ryan Hledik. “Transforming America’s Power Industry: The Investment Challenge 2010-2030.” Prepared for The Edison Foundation, November 2008.

With Joseph B. Wharton. “The Zone of Reasonableness and Long Term Power Contracts.” *The Brattle Group, Inc.*, March 12, 2007.

With Joe Romm. “Plugging Into the Grid.” *Progressive Policy Institute (PPI)*, March 2007.

With Marc Chupka, Gregory Basheda, Adam Schumacher. “The Demand Effect.” *Electric Perspectives*, September/October 2006.

With Gregory Basheda, Marc Chupka, Johannes P. Pfeifenberger, Adam Schumacher. “Why Are Electricity Prices Increasing?” *The Edison Foundation*, June 2006.

“Heard Around Town: Focus on Energy Policy and the Energy Efficiency Market.” *The NAESCO Newsletter*, November 2005.

“A Welcome Truce in the Electricity Wars.” *Public Utilities Fortnightly*, October 2005.

“Rethinking the Grid – Avoiding More Blackouts and Modernizing the Power Grid Will Be Harder than You Think.” *The Electricity Journal*, March 2005.

“U.S. Needs a Plan to Keep the Lights On.” *The Plain Dealer*, August 26, 2004.

“A Year Later, Lessons from the Blackout.” *The New York Times*, August 15, 2004.

With Romkaew Broehm. "Deregulated Electricity Pricing in the U.S.: Dramatic New Rules From the FERC," The Brattle Group, April 25, 2004.

“Will Federal Legislation Fix the Grid?” Progressive Policy Institute, October 7, 2003.

With Greg Basheda. "State Involvement in the Regional Transmission Planning Process," The Edison Electric Institute, October 2003.

With William G. Moss. “Geographic Market Definition in Electric Power Markets.” The Brattle Group, August 30, 2000, Revised & Submitted January 2002.

“Easing Gridlock on the Grid: Electric Planning and Siting Compacts.” *The Electricity Journal*, November 2001.

“Clean Growth: A Balanced Energy Policy for the 21st Century.” Progressive Policy Institute’s Policy Report, October 2001.

With Greg Basheda. “A Short Honeymoon for Utility Deregulation.” *Issues in Science and Technology*, Spring 2001.

“What not to learn from the California Crisis.” (Op-ed) *The Providence Journal*, March 3, 2001.

“Epitaph for Electric Deregulation.” Prepared for the National Council on Competition and the Electric Industry, December 2000 meeting, October 2000.

With Frank Graves. “Monopoly Power After Reform? A Time for Soul-Searching.” *Public Utilities Fortnightly*, May 2000.

“Federal Restructuring Legislation: Any Chance in This Congressional Session?” *Energy Efficiency Journal*, March 2000.

“Electric Power Deregulation: Blessings and Blemishes, A Non-Technical Review of the Issues Associated with Competition in Today’s Electric Power Industry.” Prepared for the National Council on Competition and the Electric Industry, March 14, 2000.

With Johannes P. Pfeifenberger. “Transmission Access, Episode II: FERC’s Journey.” *Public Utilities Fortnightly*, August 1999.

With J.P. Pfeifenberger, P.Q. Hanser, and G.N. Basheda. “In What Shape is Your ISO?” *The Electricity Journal*, July 1998.

“Transco vs. ISO: A Sideshow?” *Public Utilities Fortnightly*, June 1, 1998.

With Matt O’Loughlin. “Fostering Market Center Development and Integration of the Natural Gas Grid Through Improved Pipeline Ratemaking.” Prepared for NorAm Gas Transmission Company, May 1998.

“An Open Letter to the President” *The Electricity Journal*, March 1997.

With Philip Q Hanser and Joseph B. Wharton. “Real-Time Pricing: Restructuring’s Big Bang?” *Public Utilities Fortnightly*, March 1997.

“Critical Trends in State Utility Regulation.” *Natural Resources and Environment* 8 (Winter 1994): 17-20.

“Electricity in A Competitive Environment: The Real Issue is Not Retail Wheeling.” *Edison Times IRP Quarterly*, Fall 1994.

With Chris Fitzgerald. “A Proposal for Design-Based Auto Industry Environmental Regulation.” *Total Quality Environmental Management* 2 (Spring 1993): pp. 323-327.

“Comparative Employment Impacts of Infrastructure Options.” December 2, 1992

“The Private DSM Industry - A Gleam in Whose Eye?” *The Electricity Journal* 4 (December 1991), 21-25.

With Paul D. O'Rourke and Peter J. Spinney. *Competitive Procurement of Electric Utility Resources* (EPRI CU-6898s). Palo Alto, CA: Electric Power Research Institute, July 1990.

With Mark Horton and Peter Spinney. “Bidding Update.” *Cogeneration & Resource Recovery* 9, no. 7 (November/December 1990): pp. 6–11.

With Edward Kee. “Bid Policies Overhauled.” *Cogeneration & Resource Recovery* 9, no. 7 (November/December 1990): pp. 14–15.

Comments on Notice of Proposed Rulemaking Concerning Avoided Costs. Before the Federal Energy Regulatory Commission, Docket RM88-4, June, 1988.

“Allowing for Regulation in Forecasting Load and Financial Performance.” *Public Utilities Fortnightly*, January 7, 1988.

“Price Formula Issues Associated with SPR Release Programs.” Prepared for the Office of Energy Emergencies, U.S. Department of Energy, 1988.

“The Immediate Consequences of an Oil Supply Emergency for the Financial Markets and Major User Groups.” Prepared for the Office of Energy Emergencies, U.S. Department of Energy, 1988.

With others. “Independent Load Forecast for the Commonwealth Edison Service Territory.” Governor's Office of Consumer Services, Chicago, June 1981. ICC Docket No. 80-0706.

“The Norwegian Power Planning Process.” Institute for Environmental Studies, University of Oslo, Norway, 1981.

With R. Herendeen. “A 1972 Energy and Labor Commodity-Commodity Input-Output Model.” Energy Research Group, University of Illinois, Urbana, IL, March 1980.

“Correspondence Between the EDIO Input-Output Model and the ERG-90 and 360-Order Input-Output Model.” Energy Research Group, University of Illinois, Urbana, IL, March 1980.

With J. Kurish. “Energy and Labor Cost of Alternative Coal-Electric Fuel Cycles.” Energy Research Group, University of Illinois, Urbana, IL, February 1980.

“Handbook of Research Techniques.” Energy Research Group Technical Memo 123. Revised December 1979.

“A Structure of the Electric Utility Industry, 1990.” Energy Research Group Technical Memo 121, November 1979.

With B. Hannon and R. Herendeen. "Calculation of Alpha in the Determination of Primary Energy." Energy Research Group, University of Illinois, Urbana, IL, November 1979.

"Notes of the Bechtel ESPM/ERG I/O Bridge for Operating (Annual) and Capital (Investment) Costs, Purchasers Prices, 1978." Energy Research Group Technical Memo 119, August 1979.

"Transformation of Brookhaven National Laboratories 110-Order I/O Data into ERG-Usable Form." Energy Research Group Technical Memo 118, July 1979.

"1967-1977 Price Indices for Use with the Energy Research Group Energy Input-Output Policy Models." Energy Research Group Technical Memo 117, June 1979.

"Direct Energy Transactions Matrix for 1971." Energy Research Group, University of Illinois, Urbana, IL, June 1979.

With Jack Joyce. "Background Energy Cost Calculations for ACR Gasohol Production." Report to ACR Processes, Inc., November 1977.

With Clark Bullard and Donna Amado. "Net Energy Effects and Resource Depletion: An All-Nuclear Economy." Center for Advanced Computation Document 238, September 1977.

"Taking Appropriate Technology to Task." WIN 13: (April 7, 1977):8-10.

With Donna Amado. "Net Energy Effects and Resource Depletion: An All-Oil Economy." Center for Advanced Computation Document 231, April 1977.

"Standardization of Energy Accounting Techniques." Center for Advanced Computation Technical Memo 83, January 1977.

With Jaap Spek. "Stockpile Optimization and Versatility Consideration for Strategic and Critical Materials." Center for Advanced Computation Document 217, May 1976.

"Energy Requirements and Aerosol and Alternative Packaging: A Case Study." Center for Advanced Computation Document 204, February 1976. 2nd revision, July 1976.

With Bruce Hannon. "The Energy Research Group Resource Energy-Employment Model and Its Uses in Stockpile Policymaking." Report to the Office of Preparedness, General Services Administration, July 1975.

"The Coal Future: Capital and Fuel Cycle Energy Costs of a 1000 MW Nuclear Reactor." Appendix B to Michael Rieber's Center for Advanced Computation Document 163, May 1975.

"Summary of Techniques Used for Calculating the Energy Costs of Constructing a Commercial Nuclear Reactor." Center for Advanced Computation Technical Memo, April 1975.

"The Dollar, Energy and Labor Impact of 1971 Regular Route Intercity Bus Transportation." Center for Advanced Computation Technical Memo 31, July 1974.

"Energy Intensity of Motorcycle Travel." Center for Advanced Computation Technical Memo 30, July 1974.

PRESENTATIONS

"Prospects for Radical Change in the U.S. Electric Industry: What Can Utilities and State Utility Regulators Do Today?" Presented with NRRI, December 17, 2014.

“Public Power in the Age of Smart Power.” Presented to the American Public Power Association Annual Board Meeting, October 6, 2014.

“The Future of Electric Utility Business Models: The View from 2013.” Presented at California Energy Efficiency Industry Council, June 25, 2013.

“Empowering Consumers with Options.” Moderated discussion at The Clean Energy Summit, Las Vegas, NV, August 7, 2012.

“Electricity: Seeking Progress in an Uncertain Environment: Regulatory Issues.” Session Chair at the Aspen Energy Policy Forum, Aspen, CO, July 4, 2012.

“The Future of Electric Utilities in the U.S. and China,” By Peter Fox-Penner and Judy Chang. Presented to the State Grid Energy Research Institute, Beijing, China, June 25, 2012.

Invited Participant, PG&E/RMI Electricity Roundtable: Exploring Innovative Strategies for a Distributed Energy Future, October 25, 2011.

“The End of the Traditional Utility.” Presented to Enel, Rome, Italy, October 21, 2011.

“The Future of Utilities: Business Models and Strategy.” Presented at the Electricity Policy Research Group (EPRG), Cambridge, U.K. October 19, 2011.

“Energy Efficiency and Utility Demand-Side Management Programs,” By Peter Fox-Penner and Ahmad Faruqi. Presented at The World Bank, July 14, 2011.

“Policy Challenges Associated with Renewable Energy Integration.” By Peter Fox-Penner, Judy Chang, Philip Q Hanser and Kamen Madjarov. Presented at the 2011 MITEI Symposium, Managing Large-Scale Penetration of Intermittent Renewables, Cambridge, MA, April 20, 2011.

“Smart Power and the Future of Electric Utilities.” Presented to the New England Electricity Restructuring Roundtable, April 15, 2011.

“Assessing Competition in the Network Industries: Some Observations.” Presented at ABA’s – Annual Spring Program, An Update on Competition Analysis in Regulated Industries, March 7, 2011.

“Capsule Overview of Global Energy Policy and Issues.” Presented to Hogan and Lovells’ Global Energy Summit, March 5, 2011.

“Surviving the Coming Era—Cordially.” Presented at The Energy Bar Association’s Mid-Year Meeting, Ronald Reagan Building and International Trade Center, December 9, 2010.

“Electric Utility Business and Regulatory Models of the Future.” Presented at NARUC 122nd Annual Conference, Atlanta, GA, November 16, 2010.

“An Introduction to Electricity Grid Infrastructure: System Complexity in a Rapidly Changing Industry,” The Brattle Group, August 31, 2010.

“Impediments to the Vision.” Presented at the Aspen Energy Policy Forum, Aspen, CO, July 4, 2010.

“Electric Utility Business Models of the Future.” Presented at the Colorado Public Utility Commission, July 1, 2010.

“Mission, Structure, and Governance in Future Electric Markets: Some Observations.” Presented to the American Antitrust Institute- Public and Private: Are the Boundaries in Transition? Washington, D.C. June 24, 2010.

“The Smart Grid: Challenges and Opportunities for Communications Services Providers.” By Peter Fox-Penner and William Zarakas, presented at USTelecom Board of Directors Meeting, Williamsburg, VA, June 18, 2010.

“Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities.” Presented on a Merrill Lynch Investor conference call, May 21, 2010.

“Regulation, The Smart Grid, and Industry Structural Change.” Presented at the American Enterprise Institute meeting, March 18, 2010.

“Issues in The Future of Power 2010.” Presented to Sensus’ Executive Retreat, Raleigh, NC, January 31, 2010.

“Transmission Investment Needs and Cost Allocation: New Challenges and Models,” by Johannes P. Pfeifenberger, Peter S. Fox-Penner, and Delphine Hou. Presented to the staff at the Federal Energy Regulatory Commission Staff, December 1, 2009.

“Building Smart Power: Redesigning the Grid for Renewable Resources and Energy Efficient Services.” Presented on a Merrill Lynch Investor conference call, September 24, 2009.

“Passing a Climate Policy in Today’s Downturn: The Time is Now.” Presented at IIT Chicago-Kent College of Law - Moving the Midwest Forward: The Benefits of Building a Low-Carbon Economy, Chicago, IL, July 22, 2009.

“Statement of Dr. Peter Fox-Penner before the Natural Resources Committee National Governors Association.” Biloxi, MS, July, 19, 2009.

“Developments in Energy Efficiency, Renewable Power, and Transmission in the U.S.” Presented to the Comisión Nacional de Energía, Madrid, Spain, May 5, 2009.

“Keynote Address at the AAI 9th Annual Energy Roundtable,” Presented at the AAI 9th Annual Energy Roundtable, Arlington, VA, March 3, 2009.

“Smart Grid Opportunities for the Design Professional Industry.” Presented at Design Profession Coalition – Winter Membership Meeting, Washington, DC, March 2, 2009.

“A New Electricity Business Model for a Low-Carbon World.” Presented at The Global Energy and Environmental Institute (GEEI) at SAIS, John Hopkins University, February 18, 2009

“Smart Grid Observations on the Eve of the Obama Administration.” (talking points). Presented at the GridWise Alliance Membership Meeting, Houston, TX, December 9, 2008.

“A New Electricity Business Model for a Low Carbon World.” Presented at 2008 Marketing Executives’ Conference Retreat, Coeur d’Alene, Idaho, October 12, 2008.

“Supplying the Navy’s Energy: Trends and Challenges.” By Peter Fox-Penner and Dean Murphy, Presented at NAVFAC, May 28, 2008.

“Transforming America’s Power Industry: The Investment Challenge, Preliminary Findings.” Presented at Edison Foundation Conference, Keeping the Lights On: Our National Challenge, New York City, April 21, 2008.

“Global Climate Change: Exploring the Implications for Travel & Tourism.” Presented at the Travel Industry Association 2008 Policy Council Meeting, Washington, DC, March 13, 2008.

“Developments and Issues in Utility Energy Efficiency – 2008.” Presented to Consumers Affairs Committee of the National Association of Regulatory Utility Commissioners (NARUC), Washington, DC, February 17, 2008

“Electric Rate ‘Decoupling’ and Energy Efficiency Programs.” EEI’s 2007 Spring Legal Conference, Charleston, SC, April 16, 2007.

“Overview of Demand-Side Climate-Friendly Technologies.” Presented at The Edison Foundation Climate Change Technologies in the Power Sector Workshop, December 7, 2006.

“Why Are Electricity Prices Increasing? An Industry Wide Perspective.” Presented at the Foundation for American Communications’ Seminar (FACS), November 2, 2006.

“Why Are Electricity Prices Increasing?” Presented at Edison Electric Institute’s Annual Conference, June 20, 2006.

“Renewable Energy and the Oil/Gas Price Shock.” Presented at ACORE’s Renewable Energy in America: Policies for Phase II, Washington, DC, October 17, 2005.

“The Global Power Industry: Is it Really Back to the Future?” Presented at The Discover Showcase, Toronto, Canada, October 25, 2004.

“Natural Gas - Electric Issues in New England.” By Peter Fox-Penner and Greg Basheda. Presented at Edison Electric Institute’s New England CEO Dialogue, Manchester, New Hampshire, April 27, 2004.

“Efficient Grid Expansion and Participant Funding.” By Peter Fox-Penner. Presented at the Harvard Electric Policy Group meeting, December 11, 2003.

“The Role of an Expert Witness in Testimony and Litigation Support: What We Teach Our Own.” By Peter Fox-Penner and Lynda Borucki. Presented at the Energy Bar Association’s Mid Year Meeting, December 5, 2003.

“The Role of Alternative Energy in the US Supply.” By Peter Fox-Penner and Adam Schumacher. Presented to the 54th Annual Program on Oil and Gas Law, Houston, Texas, February 20-21, 2003.

“Market Measurement and The Delivered Price Test Under Standard Market Design.” By Peter Fox-Penner, Gary Taylor, Romkaew Broehm and Metin Celebi. Presented to the Staff of the Federal Energy Regulatory Commission, November 15, 2002.

“Enron and Electricity Deregulation.” Presented at Le Centre Francais sure les Etats-Unis (CFE), May 15, 2002.

“At the Crossroads or on the Brink? U.S. Electric Industry Trends in Early 2002.” Presented at Cooperative Finance Corporation’s CEO Conference, April 10, 2002.

“Revenues, Regulations and ITC Business Models,” Presented at the Executive Transmission Forum, January 29, 2002.

“A ‘Securities’ Versus ‘Antitrust’ of the Competitive Power Industry and its Implication for RTO Market Monitoring.” Remarks before the American Antitrust Institute Conference on Electricity Market Monitoring, December 11, 2001.

“What Does the California Experience Tell Us About Fixing the Rest of America’s Power Markets?” By Peter Fox-Penner and Joseph B. Wharton. Presented at the National Association Business Economics Regional/Utility Roundtable, April 24, 2001.

“Taming the Lions in America’s Electric Markets: Five Major Challenges.” Presented at National Governors’ Association Center for Best Practices, Executive Policy Forum on Energy, “Is Electricity Restructuring in Jeopardy?” Washington, DC, April 5, 2001.

“The Challenge to Co-operatives in the Electric Power Industry of the 21st Century.” NRECA’s 30th Annual CEO Leadership Conference. Keystone, CO, August 2, 2000.

“Price-Responsive Electric Demand: A National Priority.” The Electric Power Research Institute’s International Energy Pricing Conference. Washington, DC, July 26, 2000.

“Incentives, Regulation and Transmission Companies: One Practitioner’s View.” Presented to The Federal Energy Regulatory Commission’s RTO Staff. Washington, DC, July 16, 1999.

“ISOs, Transcos, Gridcos, and Long-Run Power Industry Efficiency.” Federal Energy Bar Association’s Mid-Year Meeting. Washington, DC, December 4, 1998.

“Market Power Issues in Restructured Electric Power Markets.” American Bar Association’s Satellite Seminar, “Critical Federal and State Practice Issues in Electricity Deregulation.” Washington, DC, December 3, 1998

“SAVIOR OR BUREAUCRAT? ISOs, Competition, and Independent Transmission Companies.” Winning with Retail Competition, 2nd Annual PUR Conference, Arlington, VA, June 22, 1998.

“The Evolution of the Energy Services Industry.” Have it Your Way: Buying and Saving Energy in the Age of Customer Choice, Annual Meeting of Energy Management Consortium and the Northeast Energy Efficiency Council, Boston, MA, September 18, 1997.

“Volatility and Stability in the Deregulated Generation Marketplace.” Restructuring and Convergence, Successful Strategies in the Energy Services Marketplace, Arlington, VA, May 22, 1997.

“Progress and Promise: The Clinton Administration’s Efforts in Fostering Sustainable Development.” Global Accords for Sustainable Development: Enabling Technologies and Links to Finance and Legal Institutions Conference, M.I.T., Cambridge, MA, September 5, 1996.

Invited Speaker, Fourth Biennial Conference of the International Society for Ecological Economics, Boston, MA, August 7, 1996.

“Linking Energy, Environment, and Technology to the Economy.” Globalcon Energy and Environment Exposition, April 3, 1996.

21st Annual Illinois Energy Conference, November 1996.

Civil Engineering Research Foundation, Washington meeting, October 12, 1995.

“Technology and Economic Growth: The Government’s Role.” M.I.T. Club of Washington, DC, October 10, 1995.

“The Impact of Government Budget Changes and Restructuring on Engineering.” ASME and the Public Lecture Series, Washington, DC, September 21, 1995.

“Energy - Environment - Technology: Two Visions, Two Directions.” Proceedings of the 1995 International Energy and Environment Congress. Association of Energy Engineers, Richmond, VA, 1995.

“The Federal Role in Energy Efficiency.” Eighth Biannual DSM Evaluation Conference, Chicago, IL, August 24, 1995.

Invited Speaker, Seventh National DOE/EPRI Demand-Side Management Conference, Dallas, TX, June 28, 1995.

“Utility Restructuring and Regulatory Reform.” Invited Presentation, National Association of Regulatory Utility Commissioners Attorneys' Conference, Tucson, AZ, May 18, 1995.

Invited Speaker, Conservation Committee, Semi-Annual Meetings of the National Association of Regulatory Utility Commissioners, 1994 and 1995.

Invited Panelist, OECD Seminar on Sustainable Production and Consumption, Massachusetts Institute of Technology, December 19, 1994.

“Electric Utilities and the Environment: Restructuring Need Not Mean Retreat.” Invited Presentation, “Brave New World - Managing Externalities in a Competitive Electric Utility Industry.” University of Illinois Center for Regulatory Studies, Chicago, IL, November 17, 1994.

Invited Speaker, International Ground Source Heat Pump Association, Hershey, PA, October 17, 1994.

Invited Speaker, “Washington: Business and Public Policy,” Brookings Institution Seminar, October 18, 1994.

“Federal Climate Change Management Programs and Climate-Wise,” Businesses for Social Responsibility 1994 Environment Conference, Boston, MA, October 13, 1994.

Invited Speaker, National Association of State Energy Officials, Asheville, NC, August 31, 1984.

Invited Speaker, Annual Meeting of the California Institute for Energy Efficiency, Berkeley, CA, July 25, 1994.

“Voluntary Greenhouse Gas Reporting Under the Energy Policy Act of 1992.” Invited Presentation, International Conference on Global Climate Change, Center for Environmental Information, Washington, DC, February 1993.

Panel Moderator, Natural Gas Procurement Strategies, Association of Energy Engineers Annual Conference, Boston, MA, June 1992.

Panel Moderator, Alternative Fuel Vehicles Conference, the Management Exchange, Washington, DC, April 1992.

Invited Presenter, American Water Works Association. Conservation Committee Workshop, Austin, TX, January 1992.

“The Future History of DSM.” Plenary presentation, 5th National Demand-Side Management Conference, Boston, MA, August 1, 1991.

“Visibility of the Buy Strategy — Bulk Power Transfers: Solution or Fatal Attraction?” The Management Exchange “The Buy vs. Build Decision” Conference, Washington, DC, March 22, 1991.

TESTIMONY

- **Federal Energy Regulatory Commission, Docket Nos. EL02-60-007 and EL02-62-006, May 19, 2015**

Subject: Prepared Direct Testimony on behalf of the California Parties re: how Shell's activity directly contributed to the uncompetitive market spot prices paid by CDWR during the negotiation period.

Sponsor: The California Parties

- **International Center for Settlement of Investment Disputes, ICSID Case No. ARB(AF)/12/3, December 16, 2014**

Subject: Expert Report of Dr. Fox-Penner re: to evaluate the rationales provided by the Government of British Columbia ("BC") or Canada for the self-supply requirements and net-of-load electricity sales restrictions (collectively "restrictions") that BC Hydro and Power Authority ("BC Hydro") and the British Columbia Utilities Commission ("BCUC" or the "Commission") imposed on Mercer's BC investment, the Zellstoff Celgar kraft pulp mill, ("Celgar"), as well as restrictions imposed on other self-generators.

Sponsor: Mercer International, Inc.

- **In The Court of Chancery of the State of Delaware, C.A. No. 8860-CS, August 22, 2014**

Subject: Rebuttal Report – rebutting Defendant's experts' reports

Sponsor: Morris, Nichols, Arsht & Tunnell LLP, on behalf of its client, Nathan Owen

- **In The Court of Chancery of the State of Delaware, C.A. No. 8860-CS, July 25, 2014**

Subject: Expert Report examining the future business prospects for ESG and to contrast this picture with ESG's business climate in the recent past.

Sponsor: Morris, Nichols, Arsht & Tunnell LLP, on behalf of its client, Nathan Owen

- **State of New Jersey Board of Public Utilities, BPU Docket No. EO13020155 and GO13020156, November 27, 2013**

Subject: Prepared Rebuttal Testimony on PSE&G's Energy Strong Program

Sponsor: Public Service Electric Gas Company

- **Federal Energy Regulatory Commission, Docket No. EL01-10-085, March, 12, 2013**

Subject: Prepared Rebuttal Testimony on behalf of the California Parties re: examine two aspects Respondents spot market sales activities to CERS during the CERS Period

Sponsor: California Parties

- **Federal Energy Regulatory Commission, Docket No. EL01-10-085, September 21, 2012**

Subject: Prepared Direct Testimony on behalf of the California Parties re: examine two aspects Respondents spot market sales activities to CERS during the CERS Period

Sponsor: California Parties

- **Federal Energy Regulatory Commission, Docket No. EL00-95-248, August 25, 2011**

Subject: Prepared Direct Testimony on behalf of the California Parties re: tariff violations affected MCP

Sponsor: California Parties

- **Federal Energy Regulatory Commission, Docket No. EL02-71-000, December 17, 2009**

Subject: Rebuttal testimony of Drs. Fox-Penner and Reynolds on behalf of the California Parties – Lockyer Case

Sponsor: State of California – Attorney General

- **Federal Energy Regulatory Commission, Docket No. EL00-95-000, et al., May 26, 2009**

Subject: Testimony of Dr. Peter Fox-Penner and Gerald A. Taylor on Behalf of the California Parties – analysis of sellers’ in markets operated by CAISO and CALPX

Sponsor: California Parties

- **Federal Energy Regulatory Commission, Docket No. EL09-_-000, et al., May 23, 2009**

Subject: Testimony of Dr. Peter Fox-Penner on Behalf of the People of the State of California, *EX REL*. Edmund G. Brown, Jr., Attorney General – (examine seller behavior in bilateral spot market sales to CERS)

Sponsor: California Parties

- **Public Utilities Commission of the State of Colorado, Docket No. 08S- 520E, March 20, 2009**

Subject: Rebuttal testimony on behalf of the Public Service Company of Colorado Regulatory Treatment in Electric Utility Rate Cases

Sponsor: Xcel Energy

- **Public Utilities Commission of the State of Colorado, Docket No. 08S- 520E, November 14, 2008**

Subject: Direct Testimony on behalf of the Public Service Company of Colorado regarding Regulatory Treatment in Electric Utility Rate Cases

Sponsor: Xcel Energy

- **Public Utilities Commission of the State of Colorado, Docket No. 07A-447E, June 9, 2008**

Subject: Rebuttal testimony on behalf of Public Service Company of Colorado responding to the question of vertical integration vs. reliance of purchased power

Sponsors: Xcel Energy

- **U.S. Federal Energy Regulatory Commission, Docket No: EC08- -000, May 30, 2008**

Subject: Affidavit on behalf of Nevada Power Company analyzing the competitive effects of Nevada Power’s acquisition of Bighorn power plant on wholesale competition

Sponsor: Nevada Power Company

- **U.S. Federal Energy Regulatory Commission, Docket No: EL02-71-004, April 21, 2008**

Subject: Declaration before the FERC; demonstrating evidence of sellers’ exercise of market power, including evidence of gaming, withholding, and anomalous bidding, and explaining why “market-wide relief” is an economically appropriate way to compensate buyers who purchase power in markets where prices are profoundly affected by the exercise and abuse of market power.

Sponsor: California Parties

- **U.S. Federal Energy Regulatory Commission, Docket No: QM07-5, November 17, 2007**

Subject: Testimony on behalf wind power clients re: SPP's wholesale power markets did not provide Qualifying Facilities (QFs), particularly wind QFs, to have a meaningful opportunity to sell to third parties (Peter Fox-Penner and Romkaew Broehm)

Sponsor: AWEA, The Wind Coalition and John Deere Renewables

- **Arizona Corporation Commission, Docket No. E-03965A-06-0168, August 31, 2007.**

Subject: Testimony on behalf of New West Energy re: Broad overview of the successes and failures of retail and wholesale electric markets in the U.S. over the last 15 years.

Sponsor: New West Energy/Salt River Project

- **California Public Service Commission, Rulemaking: 06-04-010, May 3, 2007**

Subject: Testimony on behalf of Pacific Gas and Electric Company re: Energy Efficiency Shareholder Incentive Mechanism

Sponsor: Pacific Gas and Electric Company

- **New York Public Service Commission Case No. 06-M-0878, March 7, 2007.**

Subject: Rebuttal Testimony on Impacts of the Transaction on competition in the Joint Petition of National Grid PLC and KeySpan Corporation for Approval of Stock Acquisition and other Regulatory Authorizations

Sponsor: National Grid

- **New York Public Service Commission Case No. 06-M-0878, October 27, 2006.**

Subject: Direct Testimony on Impacts of the Transaction on competition in the Joint Petition of National Grid PLC and KeySpan Corporation for Approval of Stock Acquisition and other Regulatory Authorizations

Sponsor: National Grid

- **U.S. Federal Energy Regulatory Commission Docket No. EC06-427-003, September 25, 2006**

Subject: Supplemental Testimony examining the nature and degree of regulatory control applied to Mystic units 8 and 9 from their conception.

Sponsor: Mystic Development, LLC

- **U.S. Federal Energy Regulatory Commission Docket No. EC06-427-003, August 18, 2006**

Subject: Direct Testimony examining the nature and degree of regulatory control applied to Mystic units 8 and 9 from their conception.

Sponsor: Mystic Development, LLC

- **U.S. Federal Energy Regulatory Commission Docket No. RM04-7-000, August 7, 2006**

Subject: NOPR Comments on Filing to the FERC on Market-Base Rates for Wholesale Sales of Electric Energy, Capacity and Ancillary Services

- **American Arbitration Association Case No. 72198&0065604VSS, June 27, 2006**
Subject: Rebuttal Report - Arbitration between Oakley and New West Energy regarding termination of agreement
Sponsor: New West Energy
- **American Arbitration Association Case No. 72198Y0065604VSS, June 9, 2006**
Subject: Arbitration between Sony Pictures Entertainment and New West Energy regarding termination of agreement
Sponsor: New West Energy
- **U.S. Federal Energy Regulatory Commission Docket No. EC06-____-000, May 23, 2006**
Subject: Affidavit Impact of the merger of National Grid and KeySpan Corporation on competition in wholesale electricity and gas markets
Sponsor: National Grid
- **American Arbitration Association Case No. 73 198 Y 00019 05 MAVI, April 3, 2006**
Subject: Arbitration between Oakley and New West Energy regarding termination of agreement
Sponsor: New West Energy
- **U.S. Federal Energy Regulatory Commission Docket No. EC06-____-000, March 8, 2006**
Subject: Affidavit Impact of SCE's Acquisition on Anaheim's share of SONGS
Sponsor: Southern California Edison Company