

**WILLIAM W. HOGAN**

**PERSONAL DATA**

Born: 1944, Holyoke, Massachusetts  
Address: John F. Kennedy School of Government  
Harvard University  
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**EDUCATION**

B.S. United States Air Force Academy, 1966  
M.B.A. University of California, Los Angeles, 1967  
Ph.D. University of California, Los Angeles, 1971

**PROFESSIONAL EXPERIENCE**

2006 - Raymond Plank Professor of Global Energy Policy, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts  
1999 - Director, LECG, LLC, Cambridge, Massachusetts  
1998 - 2006 Lucius N. Littauer Professor of Public Policy and Administration, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts  
1989 - 1999 Senior Advisor, Putnam, Hayes and Bartlett, Inc., Cambridge, Massachusetts  
1987 - 1998 Thornton Bradshaw Professor of Public Policy and Management, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts  
1982 - 1990 Chairman, Public Policy Program, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts  
1980 - 1997 Director, Putnam, Hayes and Bartlett, Inc., Cambridge, Massachusetts  
1978 - 1987 Professor of Political Economy, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts  
1978 - 1986 Director, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts  
1976 - 1978 Adjunct Professor of Research and Scholarship, Department of Engineering-Economic Systems and Department of Operations Research, Stanford University, Stanford, California; Executive Director, Energy Modeling Forum  
1975 - 1976 Deputy Assistant Administrator for Data and Analysis, Federal Energy Administration  
1974 - 1975 Director, Office of Quantitative Methods, Federal Energy Administration  
1973 - 1974 Acting Director, Modeling Division, Office of Energy Data and Analysis, Department of Interior  
1971 - 1973 Instructor, U.S. Air Force Academy, Department of Economics and Management  
1969 - 1971 Ph.D., Department of Quantitative Methods, Graduate School of Management, University of California, Los Angeles; Chairman: Dr. Arthur Geoffrion; Dissertation: "Optimization

and Convergence of Extremal Value Functions Arising from Structured Nonlinear Programs"

1968 – 1969; Instructor, Associate Professor (part-time), George Washington University  
 1975  
 1967-1969 Operations Research Analyst, U.S. Air Force, Pentagon

## HONORS

International Association for Energy Economics (IAEE), Award for Outstanding Contributions to the Profession, 2005

Contributor, 50<sup>th</sup> Anniversary Issue, Operations Research (50:1, January-February 2002)

President's Award, Institute for Operations Research and Management Sciences (INFORMS) for long-term research with significant impact and influence on society and public policy (2000)

Distinguished Service Award (2000), Center for Business and Government, John F. Kennedy School of Government, Harvard University

Best Paper Award (1997) The Energy Journal: "A Market Power Model with Strategic Interaction in Electricity Networks."

Distinguished Service Award for Service to the Electric Utility Industry (1995), Public Utility Research Center, University of Florida

Distinguished Service Award (1975), Special Award for Exceptional Service (1976), Federal Energy Administration

Alumni Award, Outstanding Doctoral Student, University of California, Los Angeles (1971)

Outstanding Cadet Award, Engineering Management, U.S. Air Force Academy (1966)

## ACTIVITIES AND ORGANIZATIONS

Future of Energy, Harvard University: Energy and Environmental Policy, Co-Chair, 2008-

Management Science and Engineering Department, Stanford University: Visiting Committee 2002-2003

Journal of Regulatory Economics: Editorial Board, 2002-

Royal Society for the Encouragement of Arts, Manufactures & Commerce, London: Fellow, 2000-2004

National Regulatory Research Institute, Ohio State University, External Review Team, 1997-2001

Energy Economics: Editorial Board, 1996-

Electricity Journal: Editorial Advisory Board, 1994-

Resource and Energy Economics: Editorial Board, 1993-1998

H. John Heinz School of Public Policy and Management, Carnegie Mellon University: Advisory Board, 1992- 2000

Electric Power Research Institute: Advisory Group for Economics, 1992-1993

Committee for Economic Development: Advisor, Design Committee on Energy and the Environment, 1990-1993

Project on Economic Reform in Ukraine: Director, 1990-1997

MIT Center for Technology, Policy and Industrial Development: Advisory Board, 1987-1996

National Research Council, Commission on Engineering and Technical Systems: Energy Engineering Board, 1986-1989

The Sawhill Commission (New York State) for the Investigation of the Public Power Option for the Long Island Lighting Company, 1986

Center for Acid Rain and Clean Air Policy Analysis, National Governors' Association: Board of Directors, 1985

International Association for Energy Economics: President, 1985

National Petroleum Council: Committee on U.S. Petroleum Refining, 1984-86

Harvard Real Estate and Planning Board: Faculty Advisory Council, 1984-

Gas Research Institute: Advisory Council, 1983-2000; Board of Directors, 1991-2000

Aspen Institute for Humanistic Studies: Energy Steering Committee, 1983-

Harvard Real Estate Corporation: Director, 1982-1983

The Energy Journal: Editorial Board, 1981-

Public Policy and Public Management Case Project: Editorial Board, 1979-1987

Operations Research: Editor, Energy and Environment, 1978-1982

Resources and Energy: Advisory Editor, 1979

National Center for Energy Systems Analysis: Advisory Board, 1979-1981

Argonne National Laboratories: Advisory Board, Energy and Environment Systems Division, 1979-1981

Undergraduate Mathematics Applications Project: Steering Committee, 1979-1981

Energy Modeling Forum, Chairman, Steering Committee, 1978-1987

Texas National Energy Modeling Project: National Advisory Board, 1978-1980

University of Texas, Center for Energy Studies: Advisory Panel, 1977-1979

International Association for Energy Economics (IAEE), 1978-

ORSA: Special Interest Group on Energy Application, Chairman, 1977-1978

Electric Power Research Institute: Supply and Demand Advisory Task Force, 1974-1976

The Mathematical Programming Society, 1971-

The Institute of Operations Research and Management Sciences (INFORMS), 1967-

### **STUDY GROUPS**

MIT Grid Study, 2009 -

Harnessing Renewable Energy, 2009 -

Populism and Natural Resources: An Energy Policy Agenda, Mossavar-Rahmani Center for Business and Government, Kennedy School of Government, Harvard University, 2006 -

Repsol YPF-Harvard Kennedy School Fellows Program, Director, 2002-2006

Initiative on the Future of Electricity, Edison Electric Institute, 1999

Independent Expert Review Panel, U. S. Energy Information Administration Review of the Economic Effects of the Kyoto Protocol, 1998

Electric Utility Market Reform Task Force, sponsored by the Massachusetts Department of Energy and Resources, 1994-1995

Harvard Electricity Policy Group, Research Director, 1993-

Repsol YPF - Harvard Seminars in Energy Policy, Co-Chair, 1988-

Energy Modeling Forum Working Groups: Energy and the Economy (Chairman), 1976-1977; Coal in Transition, 1977-1978; Electric Load Forecasting, 1977-1979; Demand Elasticities (Chairman), 1978-1980; Oil and Gas Supply, 1979-1982; World Oil Models, 1980-1982; Energy Shocks, 1982-1984; Industrial Energy Demand, Conservation and Interfuel Substitution, 1984-1986; International Oil Supplies and Demands, 1989-1991.

Energy Efficiency: A New Agenda, Task Group, American Council for an Energy Efficient Economy, 1988

Diesel Impacts Study Committee, National Research Council, 1979-1981

Resources for the Future: Energy, the Next Twenty Years, sponsored by the Ford Foundation, 1978-1979

Modeling Resources Group, Committee on Nuclear and Alternative Energy Systems, National Academy of Sciences, 1976-1977.

## BOOKS AND ARTICLES

"Contracts and Investment," (with Federico Sturzenegger and Laurence Tai), in The Natural Resources Trap: Private Investment Without Public Commitment, MIT Press, Winter 2009.

"Electricity Market Structure and Infrastructure," in Acting in Time on Energy Policy, Kelly Sims Gallagher, editor, Brookings Institution Press, 2009.

Comments on "Cost Reductions, Cost Padding, and Stock Market Prices: The Chilean Experience with Price-Cap Regulation," in Economía: Journal of the Latin American and Caribbean Economic Association, Vol. 8, No. 2, 2008.

"Energy," Essay in National Strategy Forum Review, published by The National Strategy Forum, Inc, Summer 2008.

"Market-based Transmission Investments and Competitive Electricity Markets," in Electric Choices: Deregulation and the Future of Electric Power, Andrew N. Kleit, editor, Rowman & Littlefield Publishers, 2007.

"Stability of Supply Function Equilibria: Implications for Daily versus Hourly Bids in a Poolco Market," with Ross Baldick. Journal of Regulatory Economics, Vol. 30, No. 2, August 2006.

"Transmission Market Design," in Electricity Deregulation: Where To From Here?, James Griffin, editor, University of Chicago Press, 2005.

"Resource Adequacy and Electricity Markets," EnergyBiz, September-October, 2005.

"Shedding Light," Op-Ed in The Wall Street Journal, April 19, 2004.

"Electricity Is a Federal Issue," Op-Ed in The Wall Street Journal, August 18, 2003

"FERC Knows What To Do," The Energy Daily, May 20, 2003.

"Comment" on J. Villar and H. Rudnick, "Hydrothermal Market Simulator Using Game Theory: Assessment of Market Power," IEEE Transactions on Power Systems, November 2003.

"Making Markets in Electric Power," Governance Amid Bigger, Better Markets, John Donahue and Joseph Nye, editors, Brookings Institution Press, Washington, D.C., 2002.

"Energy Modeling for Policy Studies," Operations Research, Fiftieth Anniversary Issue, January- February 2002.

"Electricity Market Restructuring: Reforms of Reforms," Journal of Regulatory Economics, January, 2002 .

"Market-Based Transmission Investments and Competitive Electricity Markets," in Avoiding the Pitfalls: Lessons for Electricity Restructuring, Andrew N. Kleit, editor, The Independent Institute, Oakland, CA, 2002.

"The Slippery Slope of Socialization," Public Utilities Fortnightly , December 1, 2001

"The California Electricity Meltdown," Harvard Magazine, September- October, 2001.

"Regional Transmission Organizations: Millennium Order on Designing Market Institutions for Electric Network Systems," Electricity Economics: Policies, Einar Hope, Leonid Melamed, and Mikhail Lychagin, editors, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia, 2001.

"Competencia en Mercados Eléctricos Mayoristas," Reforma Estructural del Sector Eléctrico, Ramiro Tovar Landa, compilador, Instituto Tecnológico Autónomo de México (ITAM), Mexico D.F., Mexico, 2000.

"Regional Transmission Organizations: Market Institutions for Electric Network Systems," The Utilities Project: the Impact of Competition, Montgomery Research/ PriceWaterhouseCoopers, San Francisco, 2000.

"The Power of Competition," RSA Journal, Royal Society for the Encouragement of Arts, Manufactures & Commerce, London, UK, February 2000.

"A Concurrent Auction Model for Transmission Congestion Contracts," Energy and Environmental Policy Modeling, John Weyant, editor, Kluwer Academic Publishers, 1999.

"Getting the Prices Right in PJM: What the Data Teach Us," Electricity Journal, Vol. 11, No. 7, August-September, 1998.

"ISO Developments in the United States," Power Economics, Vol. 2, No. 5, June 1998.

"Nodes and Zones in Electricity Markets: Seeking Simplified Congestion Pricing," Designing Competitive Electricity Markets, Hung-po Chao and Hillard Huntington, editors, Kluwer Academic Publishers, 1998.

"WEPEX: What's Wrong With Least Cost?" Public Utilities Fortnightly, January 1, 1998.

"A Market Power Model with Strategic Interaction in Electricity Networks," The Energy Journal, Vol. 18, No. 4, 1997.

Transmission Rights, Through the Looking Glass: A False Dichotomy Between Active and Passive Trading," The Electricity Journal, Vol. 10, No. 8, October 1997.

"Market Power and Strategic Interaction in Electricity Networks," (with Judith Cardell and Carrie Cullen Hitt), Resource and Energy Economics, Vol. 19, 1997.

"Transmission Capacity Reservations Implemented Through a Spot Market with Transmission Congestion Contracts," with Scott M. Harvey and Susan L. Pope, Electricity Journal, Vol. 9, No. 9, November 1996.

"Predictions, Prescriptions, and Policy: Lessons from the Energy Record," in The Energy Crisis: Unresolved Issues and Enduring Legacies, David Lewis Feldman, editor, Johns Hopkins University Press, 1996.

"Using Mathematical Programming for Electricity Spot Pricing" (with E. Grant Read and Brendan J. Ring), Energy Models for Policy and Planning, International Transactions of Operational Research, Vol.3, No. 3/4, 1996.

"Evaluations of Alternatives for Power System Coordination and Pooling in a Competitive Environment," (with Hugh Rudnick and Ruy Varela), IEEE Transactions on Power Systems, 1996.

"Markets in Real Electric Networks Require Reactive Prices," in Readings in Pricing and Technology, Riaz Siddiqi and Michael Einhorn, editors, Kluwer Academic Publishers, 1996.

"A Wholesale Pool Spot Market Must Be Administered by the Independent System Operator: Avoiding the Separation Fallacy," Electricity Journal, December 1995.

- "Electricity Transmission and Emerging Competition," Public Utilities Fortnightly, July 1, 1995.
- "A Breakthrough By Any Definition," Commentary, Energy Daily, May 31, 1995.
- "To Pool or Not To Pool: A Distracting Debate," Public Utilities Fortnightly, January 1, 1995.
- "Efficient Direct Access: Comments on the California Blue Book Proposal," Electricity Journal September, Vol. 7, No. 7, 1994.
- "An Efficient Electricity Market: Using a Pool to Support *Real* Competition," (with Don Garber and Larry Ruff), Electricity Journal, September, Vol. 7, No. 7, 1994.
- "Contract Networks for Electric Power Transmission," in From Regulation to Competition: New Frontiers in Electricity Markets, Michael Einhorn, editor, Kluwer Academic Publishers, 1994.
- "Markets in Real Electric Networks Require Reactive Prices," Energy Journal, Vol.14, No.3, 1993.
- "Electric Transmission: A New Model for Old Principles," Electricity Journal, March 1993.
- "OECD Oil Demand Dynamics: Trends and Asymmetries," Energy Journal, Vol. 14, No. 1, 1993.
- "Cross-Border Trading and Transmission Networks: A Model for Competition in Natural Gas and Electricity Grids," in Energy and Resources Law '92, IBA Section on Energy & Natural Resources Law, London, International Bar Association, 1992.
- "Contract Networks for Electric Power Transmission," Journal of Regulatory Economics, Vol. 4, September 1992.
- "An Efficient Concurrent Auction Model for Firm Natural Gas Transportation Capacity," Information Systems and Operational Research, Vol 30, No. 3, August 1992.
- "Energy and Information Network Infrastructures." Building Information Infrastructure, Brian Kahin editor, McGraw Hill, 1992.
- "Economic Reforms in the Sovereign States of the Former Soviet Union," Brookings Papers on Economic Activity, William G. Brainard and George L. Perry, editors, Washington, D.C., Vol. 2, 1991.
- "Will Demand Increase? Evaluation and Prospects of the Relationships between Economic Growth, Energy Policies, and the Demand for Oil ." Revue de l'Energie, Paris, No. 42, August 1991.
- "Productivity Trends and the Costs of Reducing CO2 Emissions," (with Dale Jorgenson), Energy Journal, Vol. 12, No. 1, 1991.
- "How Far Back Should Prudence Tests Reach?" (with A. Lawrence Kolbe), Public Utilities Fortnightly, January 15, 1991.
- "Modeling Interactions," (with Shailendra C. Parikh), Energy, Vol. 15, No. 3/4, March/April, 1991.
- "Comment on Manne and Richels, 'CO<sub>2</sub> Limits: An Economic Analysis for the USA,'" Energy Journal, Vol. 11, No. 2, April 1990.
- "Including Unbundled Demand-side Options in Electric Utility Bidding Programs," (with Charles J. Cicchetti), Public Utilities Fortnightly, June 8, 1989. Also in Competition in Electricity: New Markets and New Structures, eds., James Plummer and Susan Troppman, Public Utilities Reports, Arlington, VA, 1993.

"A Dynamic Putty - Semi-Putty Model of Aggregate Energy Demand," Energy Economics, Vol. 11, No. 1, January 1989.

"Oil Tariff Policy: An Overview," (with Harry Broadman), Energy Systems and Policy, Vol. 12, 1988.

"Is an Oil Tariff Justified? The Numbers Say Yes" (with Harry Broadman), Energy Journal, Vol. 9, No. 3, 1988.

Lower Oil Prices: Mapping the Impact (with Bijan Mossavar-Rahmani et al.), Harvard University Energy and Environmental Policy Center, 1988.

Energy Security Revisited (with Bijan Mossavar-Rahmani), Harvard University Energy and Environmental Policy Center, September 1987.

"The Boundaries Between Regulation and Competition." In Drawing the Line on Natural Gas Regulation: Harvard Study on the Future of Natural Gas, Joseph Kalt and Frank Schuller, editors, Quorum Books, Greenwood Press, 1987.

"Energy Policy Modelling in the USA: Competing Societal Alternatives," (with Martin Greenberger.) In The Politics of Energy Forecasting, Thomas Baumgartner and Atle Midttun, editors, Oxford University Press, 1987.

"Energy Security and Oil Market Risk Analysis" (with Paul N. Leiby.) In Energy Decisions for the Future: Proceedings of the Eighth Annual International Conference of the IAEE, Mitsuru Miyata and Kenichi Matsui, editors, Tokyo, 1986.

"Patterns of Energy Use." In Energy Conservation: Successes and Failures, John C. Sawhill and Richard Cotton, editors, The Brookings Institute, 1986.

"Energy and Economy: Global Interdependences," Energy Journal, Vol. 6, No. 4, 1985.

"Integrated Fuel and Investment Planning: Methods and Process" (with Charles Mann, Susan Manning, and Darrell Smith.) In Models in the Decision Making Process: Planning Under Uncertainty, Andrew Kydes, editor, North-Holland, 1985.

"Energy, the Economy, and Oil Security." In Improving U.S. Energy Security, Richard Gonzales, et al, editors, Ballinger Publishing Co., 1985.

"Energy Policy." In Energy Resources and National Policy: The Reagan Approach, Paul R. Portney, editor, Urban Institute Press, 1984.

"Oil Stockpiling: Help Thy Neighbor," Energy Journal, Vol. 4, No. 3, 1983.

"Methods and Algorithms for Combining Energy Models: Optimization in a Network of Process Models", (with John Weyant). In Energy Models and Studies, Studies in Management Science and Systems, B. Lev, editor, Vol. 20, 1983.

Caught Unawares: the Energy Decade in Retrospect, with Martin Greenberger, et al., Ballinger Publishing Company, 1983.

"Alternatives to Transfer of Large-Scale Models." In Large Scale Energy Models, Robert M. Thrall, Russell G. Thompson, and Milton L. Holloway, editors, Westview Press, 1983.

"Policies for Oil Importers." In OPEC Behavior and World Oil Prices, J. Griffin and D. Teece, editors, George Allen and Unwin, London, 1982.

"On Convergence of the PIES Algorithm for Computing Equilibria," with B. H. Ahn, Operations Research, Vol. 30, No. 2, 1982.

Decision Analysis of Regulating Diesel Cars, National Academy Press, 1982.

"Combined Energy Models." In Advances in the Economics of Energy and Resources, Vol. 4, John. R. Moroney, editor, JAI Press, 1982.

"Energy and Security Policy." In Toward A New U.S. Industrial Policy?, Michael L. Wachter and Susan M. Wachter, editors, University of Pennsylvania Press, 1981.

"Import Management and Oil Emergencies." In Energy and Security, David Deese and Joseph Nye, editors, Ballinger Publishing Co., 1981.

"Aggregate Elasticity of Energy Demand," with the EMF Working Group, The Energy Journal, Vol. 2, No. 2, 1981.

"Gasoline, Prices, Taxes and Demand." In The Dependence Dilemma: U.S. Gasoline Consumption and America's Security, Daniel Yergin, editor, Center for International Affairs, Harvard University, 1980.

"Economic Growth and Higher-Priced Energy." In Energy in America: Fifteen Views, S. Ramo, editor, Center for the Study of the American Experience, University of Southern California, 1980.

"Alternatives to Transfer of Large-Scale Models," Simulation, April 1980.

Background Papers for Energy: The Next Twenty Years, contributor, H. Landsberg, editor, Ballinger Press, 1980.

"Capital Energy Complementarity in Aggregate Energy-Economic Analysis," Resources and Energy, Vol. 2, North-Holland Publishing Company, 1979.

Energy: The Next Twenty Years, contributor. A Ford Foundation/Resources for the Future Report, Ballinger Press, 1979.

Energy Information: Description, Diagnosis, and Design, editor and contributor. Stanford Institute for Energy Studies, Stanford University, 1979.

"Energy and Economic Growth." In Energy Conservation and Public Policy, John Sawhill, editor, Prentice-Hall, 1979.

"The Energy Modeling Forum: A Communication Bridge," in K.B. Haley, Operational Research, '78, North-Holland Publishing Company, 1979.

"Policy Modeling for Energy Decision," The Stanford Engineer, Stanford University, Winter 1978.

"Energy Modeling: Building Understanding for Better Use," Proceedings, Second Lawrence Symposium on Systems and Decision Sciences, 1978.

"Energy-Economy Interactions: The Fable of the Elephant and the Rabbit?" with Alan S. Manne. In Modeling Energy-Economy Interactions - Five Approaches, Charles J. Hitch, editor, Resources for the

Future Research Papers, 1977. Also in Advances in the Economics of Energy and Resources, Robert S. Pindyck, editor, JAI Press, 1978.

"Energy Policy Models for the National Energy Outlook," with James Sweeney and Michael Wagner, TIMS Studies in Management Sciences, Vol. 10, North-Holland Publishing Company, 1978.

"Project Independence Evaluation System: Structure and Algorithms." In Mathematical Aspects of Production and Distribution of Energy. Proceedings of Symposium in Applied Mathematics, edited by P.D. Lax, Vol. 21, 1977.

"The BOXSTEP Method for Large-Scale Optimization," with R.E. Marsten and H.W. Blankenship. Operations Research, Vol. 23, No. 3, 1976.

"Norm Minimizing Estimation and Unbiasedness," Econometrica, Vol. 44, No. 3, 1976.

"Optimizing the Procurement of Aviation Fuels," with Larry Austin, Management Science, Vol. 22, No. 5, 1976.

"Energy Policy Models for Project Independence," Computers and Operations Research, Vol. 2, Pergamon Press, 1975.

"Toward the Development of an Equilibrium Capital Market Model Based on Semivariance," (with J.S. Warren), Journal of Financial and Quantitative Analysis, Vol. 9, January 1974.

"Applications of a General Convergence Theory for Outer Approximation Algorithms," Mathematical Programming, Vol. 5, 1973.

"Point-to-Set Maps in Mathematical Programming," SIAM Review, July 1973.

"Directional Derivatives for Extremal Value Functions with Applications to the Completely Convex Case," Operations Research Vol. 21, No. 1, 1973.

"The Continuity of the Perturbation Function of a Convex Program," (technical note) Operations Research, Vol. 21, No. 1, 1973.

Computation of the Efficient Boundary in the E-S Portfolio Selection Model," (with J.W. Warren), Journal of Financial and Quantitative Analysis, Vol. 7, September 1972.

"Coordination of Two-Level Organizations with Multiple Objectives," (with A. Geoffrion.) In Techniques of Optimization, edited by A.V. Balakrishnan, Academic Press, 1972.

"Comment on: Klymov G.P., 'Minimisation d'une fonctionnelle convexe continue donnée sur une multiplicité convexe compacte de l'espace vectoriel topologique.'" Bulletin de la Classe des Sciences, May 1971.

## SELECTED RECENT WORKING PAPERS AND OTHER DOCUMENTS

*Selected recent works among many available on Professor Hogan's website:*  
<http://ksghome.harvard.edu/~whogan/>

"Electricity Market Reform," William W. Hogan, prepared for the *Harvard China Review*, September 2009.

"Regulation of electricity transmission investment in Italy," William W. Hogan, Thomas-Olivier Leautier, Guido Cervigni, and Dmitri Perekhodtsev, a report for TERNA, July 2009.

"Electricity Market Reform: APPA's Journey Down the Wrong Path," John Chandley and William W. Hogan, supported by the COMPETE Coalition, May 2009.

"Texas Nodal Market Design: Observations and Comments," Presentation, ERCOT Energized Conference, Austin, TX. May 2, 2008.

"Electricity Market Design: Coordination, Pricing and Incentives," Presentation ERCOT Energized Conference, Austin, TX. May 2, 2008.

"Electricity Market Design: Market Models for Coordination and Pricing," Energy Information Administration Conference, Washington, DC, April 6-8, 2008.

"Electricity Market Design: Coordination, Pricing and Incentives," Faculty Research Seminar, Harvard Kennedy School, Cambridge, MA, March 5, 2008.

"Electricity Market Design: Coordination, Pricing and Incentives," Energy Policy Research Seminar, Harvard Kennedy School, Cambridge, MA, February 12, 2008.

"Electricity Market Hybrids: Mixed Market Design, Regulation and Investment," Keynote Presentation, La Asociación Española para la Economía Energética (AEEE), Bilbao, Spain, January 17, 2008.

"Market-Clearing Electricity Prices and Energy Uplift," co-authored with Paul R. Griblik and Susan L. Pope. December 31, 2007.

Amicus Brief Regarding Morgan Stanley Capital Group Inc. v. Public Utility District No. 1 of Snohomish County, U.S. Supreme Court, Washington, D.C., November 28, 2007.

"Electricity Market Hybrids: Mixed Market Design and Infrastructure Investments," Presentation, USAEE/IAEE North American Conference, Houston, September 18, 2007.

Comments on Wholesale Competition in Regions with organized Electric Markets. Comments Submitted to the Federal Energy Regulatory Commission, Docket No. RM-07-19-000, September 17, 2007.

"Acting in Time: Regulating Wholesale Electricity Markets." Comments on Wholesale Competition in Power Markets. Comments submitted to the Federal Energy Regulatory Commission, Docket no. AD07-7-000, May 8, 2007.

"Path-Dependent Transmission Access." OATT Conference Keynote presentation, Washington, D.C., June 9, 2006.

Comments on Preventing Undue Discrimination and Preference in Transmission Services. Comments Submitted to the Federal Energy Regulatory Commission, Docket No. RM-05-25-000, November 22, 2005.

"On an 'Energy Only' Electricity Market Design for Resource Adequacy," September 23, 2005.

"Comments on the California ISO MRTU LMP Market Design" (with Scott M. Harvey and Susan L. Pope), February 23, 2005.

"Polynomial Approximations and Supply Function Equilibrium Stability," (with Ross Baldick) August 27, 2004.

"Shedding Light," Wall Street Journal Op Ed, RE: Blackout Task Force Report, April 19, 2004

"Local Market Power Mitigation." Comments submitted to the Federal Energy Regulatory Commission, Technical Conference, Docket Nos. PL04-02-000 and EL03-236-000, February 4, 2004

"A Hazard Rate Analysis of Mirant's Generating Plant Outages in California" (With Scott Harvey and Todd Schatzki). Presentation at IDEI Conference on Competition and Coordination in the Electricity Industry, Toulouse, France, January 2, 2004

"Successful Market Design (SMD) and Failure Diagnosis: Blackouts and Lampposts in Regulating Electricity Markets. Presentation, Regulatory Policy Program Seminar, Kennedy School of Government, Harvard University, October 9, 2003.

"Transmission Market Design," paper presented at Conference on Electricity Deregulation, Texas A&M University, April 4, 2003.

"On Minimum-Uplift Pricing for Electricity Markets," (with Brendan Ring) March 19, 2003.

Initial Comments to the Federal Energy Regulatory Commission on the Standard Market Design NOPR (with John L. Chandley) November 11, 2002.

"Electricity Standard Market Design: Proposal, A; Analysis, A-; Execution, ?" Presentation to HEPG, September 16, 2002.

"Review of the California ISO's Market Design (MD02) Proposal," (with Michael D. Cadwalader and Scott M. Harvey) June 4, 2002.

"Market Power and Market Simulations" (with Scott M. Harvey), July 16, 2002.

"Financial Transmission Right Incentives: Applications Beyond Hedging," May 31, 2002, HEPG Presentation.

"Market Power and Electricity Competition," April 25, 2002, Presentation at ABA Anti-Trust Conference.

"Financial Transmission Right Formulations," March 31, 2002.

"Loss Hedging Financial Transmission Rights" (with Scott M. Harvey), January 15, 2002.

"California Market Design Breakthrough," January 13, 2002.

"Independent Transmission Companies in a Regional Transmission Organization" (with John D. Chandley), December 20, 2001; revised January 8, 2002.

"Identifying the Exercise of Market Power in California" (with Scott M. Harvey), December 28, 2001.

"Market Power and Withholding" (with Scott M. Harvey), December 20, 2001.

"Capacity Constrained Supply Function Equilibrium Models of Electricity Markets: Stability, Non-decreasing Constraints, and Function Space Iterations," December 18, 2001 (with Ross W. Baldick). University of California Energy Institute, Power Working Paper PWP-089.

"Further Analysis of the Exercise of Market Power in the California Electricity Market" November 21, 2001.

"Electricity Market Restructuring: Reforms of Reforms," May 25, 2001, CRRRI Conference Presentation .

"Electricity Market Power Mitigation," May 18, 2001, Presentation at Massachusetts Electric Roundtable.

"Electricity Market Institutions, Texas and the California Meltdown," May 2, 2001, Presentation at University of Texas Conference

"On the Exercise of Market Power Through Strategic Withholding" (with Scott M. Harvey), April 24, 2001.

"Designing Market Institutions for Electric Network Systems: Reforming the Reforms in New Zealand and the U.S.," paper presented at the Utility Convention, Auckland, New Zealand, March 13, 2001.

"Coordination for Competition: Electricity Market Design Principles," February 15, 2001, Presentation at PUC Texas Workshop on ERCOT Protocols.

"California Electricity Market: Policy Meltdown," February 14, 2001, KSG Faculty Seminar Presentation.

"The RTO Millennium Order: Following Through or Falling Apart?" Presentation, December 8, 2000.

"Electricity Market Reform in California" (with John D. Chandley and Scott M. Harvey), November 22, 2000.

"Issues in the Analysis of Market Power in California" (with Scott M. Harvey), October 27, 2000.

"California Electricity Prices and Forward Market Hedging" (with Scott M. Harvey), October 17, 2000.

"Flowgate Rights and Wrongs," August 20, 2000.

"Regional Transmission Organizations: Millennium Order on Designing Market Institutions for Electric Network Systems," May 2000.

"Market Power in Theory and Practice," (Discussant Comments, POWER Conference, UC Berkeley), March 17, 2000.

"Imperfect Pricing for Imperfect Markets: Nodal and Zonal Congestion Management and the Exercise of Market Power" (with Scott M. Harvey), March 2000.

"Nodal and Zonal Congestion Management and the Exercise of Market Power, Further Comments" (with Scott M. Harvey), February 11, 2000.

"Making Markets in Power," February 21, 2000. Cantor Lecture, London.

"Regional Transmission Organizations: Designing Market Institutions for Electric Network Systems," January 21, 2000.

"Getting the Prices Right in PJM: A Summary: April 1998 through September 1999," October 30, 1999.

"Coordinating Congestion Relief Across Multiple Regions" (with Michael Cadwalader, Scott M. Harvey, and Susan L. Pope), October 7, 1999.

"Electric Transmission Adequacy and Market Institutions," July 1999.

"Market-Based Transmission Investments and Competitive Electricity Markets," August 1999.

"Getting the Prices Right in PJM: Analysis and Summary: April 1998 through March 1999, The First Anniversary of Full Locational Pricing," April 2, 1999.

"Restructuring the Electricity Market: Institutions for Network Systems," April 1999.

"Transmission Congestion: the Nodal-Zonal Debate Revisited," February 8, 1999.

"Enabling the Power of Markets," January 7-8, 1999. EEI CEO Conference Presentation.

"Competitive Electricity Market Design: A Wholesale Primer," December 17, 1998.

"Market Coordination of Transmission Loading Relief Across Multiple Regions" (with Michael Cadwalader, Scott M. Harvey, and Susan Pope), December 1998.

"Market Mechanisms and Decomposition for Coordination of Transmission Line Loading Relief Across Multiple Regions," November 20, 1998.

"Reliability, Scheduling Markets, and Electricity Pricing" (with Michael D. Cadwalader, Scott M. Harvey, and Susan L. Pope), May 1998.

"Getting the Prices Right in PJM: Analysis and Summary: April through September," October 11, 1998.

"Getting the Prices Right in PJM: Analysis and Summary: April through August," September 7, 1998.

"Getting the Prices Right in PJM: Analysis and Summary: April through June," July 12, 1998.

"Independent System Operator (ISO) for a Competitive Electricity Market," June 1998.

"Getting the Prices Right in PJM: Analysis and Summary: April-May, 1998," June 3, 1998.

"Getting the Prices Right in PJM," April 7, 1998.

"A Market Power Model with Strategic Interaction in Electricity Networks," July 15, 1997.

"The Visible Hand in Electricity: Using a Pool to Expand Customer Choice," April 1997.

"Transmission Capacity Reservations and Transmission Congestion Contracts" (with Scott Harvey and Susan Pope), June 6, 1996, revised March 8, 1997.

"Retail Access is Easy, It's Getting Wholesale Access that is Hard," November 15, 1996.

"Transmission Capacity Reservations Implemented Through A Spot Market With Transmission Congestion Contracts" (with Scott M. Harvey and Susan L. Pope), July 9, 1996.

"Governance Structures for an Independent System Operator" (with Carrie Hitt and Janelle Schmidt),

March 1996.

"Poolco: What's the trick? Coordination for Competition, Transmission Pricing and Open Access in the Restructured Electricity Market," July 18, 1995.

"Electricity Transmission and Emerging Competition," April 1995.

"Coordination for Competition in an Electricity Market," March 2, 1995.

"An Efficient Bilateral Market Needs a Pool," Prepared for CPUC Hearing, August 1994.

"A Competitive Electricity Market Model," draft, October 1993.

"Contract Networks for Electric Power Transmission: Technical Reference," September 1990, revised February 1992.

**CONSULTING EXPERIENCE**

Electricity Market Analysis, Competitive Supplier Group, 2009 -

Electricity Market Design, Public Service Electric and Gas Company, 2005, 2007

Electricity Market Design, Commonwealth Edison Company, 2004 -

Electricity Market Design, World Bank, 2004 - 2005

Electricity Market Design, California Independent System Operator, 2004 -

Electricity Market Analysis, Edison Mission Energy, 2003 - 2005, 2006 -

Electricity Market Analysis, Maine PUC et al., 2003

Electricity and Gas Market Analysis, Sempra Energy, 2002

Electricity Market Analysis, El Paso Electric, 2002

Electricity Market Analysis, Avista Energy, 2002 - 2003

Electricity Market Analysis, Reliant Energy, 2002 - 2003

Electricity Market Analysis, Morgan Stanley Capital Group, 2002 - 2003

Electricity Restructuring, California Independent Energy Producers Association, 2002 - 2003

Electricity Market Design, Midwest Independent System Operator, 2001-

Electricity Market Analysis, Mirant, 2001 - 2003

Electricity Market Design, Public Service Electric and Gas, 2001

Electricity Market Reform, California Reform Coalition, 2000

Electricity Transmission Policy, Detroit Edison Company, 2000

Electricity Transmission Policy, TransÉnergie US Ltd., 1999-2002

Electricity Transmission Policy, Sempra Energy, 1999

Gas Transmission Policy, Sempra Energy, 1999

Electricity Transmission Policy, Commonwealth Edison Co., 1999 - 2002

Electricity Market Design, ISO New England, 1999 - 2002, 2004 -

Electricity Restructuring in New England, Westbrook Corporation, 1999-2001

Gas Restructuring: Provider of Last Resort (POLR), New York State Electric and Gas Corporation, Niagara-Mohawk Power Corporation, Rochester Gas and Electric Corporation, 1999 - 2000

Electricity Restructuring, Transpower, New Zealand, 1998 - 2003

Electricity Restructuring, PowerNet, Australia, 1998

Electricity Restructuring, Ontario Hydro, 1996

CO<sub>2</sub> Market Pricing, Exxon Corporation, 1996-1998

Electricity Restructuring, PJM Supporting Companies, 1996

Electric Industry Restructuring, Niagara-Mohawk Power Company, 1996-1997

Oil Pricing, Exxon Corporation, 1995-1997

Electric Power Transmission Pricing and Access, New England Electric System, 1994

Electric Industry Restructuring, Wisconsin Electric Power Company, 1994

Electric Power Transmission Pricing and Access, New York Power Pool, NYISO, 1994-

Electric Industry Restructuring, San Diego Gas and Electric, 1994-1996

Electric Industry Restructuring, Energy Association of New York, 1994-1996

Electric Power Transmission Access and Pricing, Trans Power, New Zealand, 1993-1994

Electric Industry Restructuring, General Public Utilities, 1993-1995.

Generic Cost of Capital and Financial Integrity, New York Utilities Collaborative, 1992-1993

Oil Pricing and Gas Pricing, BHP-Petroleum, Esso Corporation, Australia, 1992-1996

Electric Power Transmission Pricing and Access, National Independent Energy Producers, 1992-1993

Oil Pricing, Amoco, et al., 1992-1993

Oil Pricing, Exxon Corporation, 1991-1992

Natural Gas Procurement Reasonableness, Pacific Gas and Electric Company, 1991-1992

Transmission Pricing and Access, Duquesne Light Company, 1990-1991

Transmission Pricing and Investment Policy, UK National Grid Company, 1991

Privatization and Transmission Pricing, Electricorp, New Zealand, 1990-1991

Evaluation of Gas and Electric Competition, Niagara Mohawk Power Corporation, 1990

Integrated Natural Gas Pipeline Capacity Allocation, Pacific Gas and Electric Company, 1989, 1990

Electric Power Transmission Pricing and Access, Duquesne Light Company, 1989

Gas Inventory Charges, Designated Marketing Companies, 1989

Coal Contracting, BHP-Utah International, Inc., 1989

Load Forecasting, Public Service Company of New Mexico, 1989

Access to Firm Transportation of Natural Gas, Pacific Gas and Electric Company, 1989

Ratemaking for Environmental Costs Incident to Gas Manufacturing, Massachusetts Gas Companies, 1989

Strategic Planning Study, General Public Utilities Corporation, 1988

Load Forecasting, Middle South Utilities, Inc., 1988

Corporate Planning Seminar, General Public Utilities Corporation, 1987

Research and Development Evaluation, Gas Research Institute/ Baltimore Gas and Electric Company, 1987

Interstate Gas Pipeline Construction, California Public Utilities Commission, 1987

Supply Planning Review, Boston Edison Company, 1987

"Used-and-Useful" Issue and Market-Like Regulation, Western Massachusetts Electric Company, 1986

Load Forecast Review, Gulf States Utilities Corporation, 1985

Natural Gas Transportation, FERC Proposed Rulemaking, Maryland People's Counsel, 1985

Load Forecast Review, Philadelphia Electric Company, 1985

Oil Price Econometric Studies, State of Colorado, et al., 1984

Mandatory Contract Carriage, National Association of State Utility Consumer Advocates, 1984

Fuel Forecast Review, Electric Power Research Institute, 1984

Competitive Effects of Payment of Oil Entitlements Exceptions Orders, Foley and Lardner, 1984

Competitive Impacts of Special Marketing Programs on Consumers, Pipelines, and Producers for the Maryland People's Counsel, 1984

Integrated Fuel and Investment Planning, Electric Power Research Institute, 1984

Alaskan Oil Export Policy, Alaska Pulp and Paper, 1983

Alternative Energy Demand and Load Forecasting, U.S. Department of Energy, 1983

Corporate Organization and Regulatory Policy, Public Service Commission of New Mexico and Gas Company of New Mexico, 1983

Domestic Natural Gas Markets and Policy, An Independent Gas Producer, 1983

Load and Rate Forecasting, General Public Utilities Corporation, 1983

Load Forecasting, Public Service Company of New Hampshire, 1983

National Energy Policy and the Reagan Experiment, Urban Institute, 1983

Synthetic Fuels Policy, Synthetic Fuels Corporation, 1982

Integrated Corporate Planning, Pacific Gas and Electric Company, 1981

Energy Conservation and Energy Demand, Carnegie Mellon Foundation, 1981

Corporate Strategy and Organization, Major Regulated Utilities, 1980-1984

Synthetic Fuels Modeling, Electric Power Research Institute, 1980

Corporate Strategy, General Public Utilities Corporation, 1980

Energy Security and International Oil Policy, Department of Energy, 1979-1984

Load Forecasting, Commonwealth Edison Company, 1977

**TESTIMONY**

Before the U.S. Supreme Court, Amicus Brief in NRG Power Marketing, LLC et. al. v. Maine Public Utilities Commission, et. al, On Write of Certiorari to the United States District Court of Appeals for the District of Columbia Circuit (no. 08.674), July 10, 2009.

Before a Panel of the American Arbitration Association, Rebuttal Expert Report in the Matter of California Department of Water Resources vs. Sempra Generation, Case No. 74 Y 198 00196 06 MAVI, Sept. 11, 2008.

Before the State Administrative Tribunal of Western Australia, Statement Regarding the Valuation of Land Included in the Sale of Billiton Aluminum (RAA) Pty Ltd, Case No. DR 177 OF 2007, August 13, 2008.

Before the U.S. Supreme Court, Amicus Brief Regarding Morgan Stanley Capital Group Inc. v. Public Utility District No. 1 of Snohomish County, Washington, D.C., November 28, 2007.

Before the Federal Energy Regulatory Commission, Comments on Behalf of Sempra Generation Regarding the California ISO's Congestion Management Procedures, Docket No. EL07-103-000, Oct. 30, 2007.

Before the Federal Energy Regulatory Commission, Comments in Regions with Organized Electric Markets. Dockets Nos. RM07-19-000 and AD07-000 [with Susan L. Pope].

Before the Federal Energy Regulatory Commission, Comments on Behalf of Exelon Generation Co., LLC in connection with the Illinois Procurement Auction for Full Requirements Service, Docket No. EL07-47-000, June 18, 2007.

Before a Panel of the American Arbitration Association, Expert Report in the Matter of California Department of Water Resources vs. Sempra Generation, Case No. 74 Y 198 00196 06 MAVI, May 14, 2007.

Before the Federal Energy Regulatory Commission, Comments for the Technical Conference on Specific Topics Relating to Competition in Wholesale Power Markets, Docket No. AD07-7-000, May 8, 2007.

Before the Federal Energy Regulatory Commission, Comments for the Technical Conference on Seams Issues for RTOs and ISOs in the Eastern Interconnection, Docket No. AD06-9-000, March 29, 2007.

Before the Federal Energy Regulatory Commission, Initial Comments for the Conference on Competition in Wholesale Power Markets, Docket No. AD0-7-000, February 27, 2007.

Before the United States District Court, Southern District of Texas Houston Division, In re Enron Corporation Securities Derivative & "Erisa" Litigation, MDL Docket No.1446, deposition relating to: Public Utility District No. 1 of Snohomish County, WA, v. Citigroup, Inc. et al. November 10, 2006.

Before the United States District Court Southern District of Texas, Houston Division, In re Enron Corporation Securities Litigation, Expert Report relating to Public Utility District No. 1 of Snohomish County, Washington, Docket No. 05-00974, October 29, 2006.

Before the Federal Energy Regulatory Commission, Reply Comments in connection with the Notice of Proposed Rulemaking on Preventing Undue Discrimination and Preference in Transmission Services, Docket Nos. RM05-25-000 and RM05-17-000, September 20, 2006. (with John D. Chandley)

Before the Federal Energy Regulatory Commission, Comments in connection with the Notice of Proposed

Rulemaking on Preventing Undue Discrimination and Preference in Transmission Services, Docket Nos. RM05-25-000 and RM05-17-000, August 2, 2006.

Attachment: "A Path to Preventing Undue Discrimination and Preference in Transmission Services," with John D. Chandley.

Before the Federal Energy Regulatory Commission, Comments on Behalf of the Midwest Independent Transmission System Operator, Inc. in the matter of the Revenue Sufficiency Guarantee (RSG) and associated cost allocation issues discussed in the Order of April 25, 2006 relating to the MISO tariff, Docket No. ER04-691-065, ER04-691-0\_\_\_, May 25, 2006.

Before the Federal Energy Regulatory Commission, Comments on Behalf of PJM Interconnection L.L.C. at the Post Technical Conference of the PPL Parties, Docket Nos. ER05-1410-000, et al., March 2, 2006.

Attachment: Paper by Professor William W. Hogan, "Resource Adequacy Mandates and Scarcity Pricing ('Belts and Suspenders')."

Before the State of New Jersey Board of Public Utilities, Rebuttal Testimony on Behalf of Public Service Gas and Electric Company and Exelon Corporation in the matter of the Joint Petition of Public Service Electric and Gas Company and Exelon Corporation for Approval of a Change in Control of Public Service Electric Company, and Related Authorizations, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, December 5, 2005.

Before the Federal Energy Regulatory Commission, Comments on Preventing Undue Discrimination and Preference in Transmission Services, Docket No. RM05-17-000, November 22, 2005.

Before the State of Illinois, Illinois Commerce Commission, Rebuttal Testimony on Behalf of Commonwealth Edison Company in the matter of Proposed Tariffs filed pursuant to Article IX of the Public Utilities Act. Docket No. 05-0159, July 6, 2005.

Before the California Public Utilities Commission, on Behalf of the California Independent System Operator, Further Amendments to the California Independent System Operator Corporation's Amended Comprehensive Market Design Proposal, Docket ER02-1656-026, May 12, 2005.

Attachment D, "Comments of Scott M. Harvey and William W. Hogan on the California ISO's Proposed Hour-Ahead Scheduling Process."

Before the State of Illinois, Illinois Commerce Commission, Direct Testimony on Behalf of Commonwealth Edison Company in the matter of Proposed Tariffs filed pursuant to Article IX of the Public Utilities Act defining a competitive supply procurement process and, pursuant to Section 16-112(a) of the Act, establishing a market value methodology to be effective post-2006; providing for Power Purchase Options and for recovery of transmission charges post-2006; and enabling subsequent restructuring of rates and unbundling of prices for bundled service pursuant to Sections 16-109A and 16-111(a) of the Act, Docket No. 05-0159, February 25, 2005.

Before the California Public Utilities Commission, Phase I.A Surrebuttal Testimony on Behalf of Southern California Gas Company in the matter of Gas Price Spikes Experienced at the California Border from March 2000 through May 2001, Investigation No. 02-11-040, June 16, 2004

Before the California Public Utilities Commission, Prepared Rebuttal Testimony on Behalf of Southern California Gas Company in the matter of Gas Price Spikes Experienced at the California Border from March 2000 through May 2001, Investigation No. 02-11-040, April 5, 2004

Before the Federal Energy Regulatory Commission, Comments at the Technical Conference on Compensation for Generating Units Subject to Local Market Power Mitigation in Bid Based Markets, PJM Interconnection, L.L.C., Docket Nos. PL04-2-00, EL03-236-000, February 4, 2004.

Before the Federal Court of Australia, Comments on Behalf of the Australian Gas and Light Company in relation to the assessment of market power in the electricity industry in Australia and the role of the Loy Yang A generator in this industry, Docket No. V880 of 2003, November 14, 2003. Revised, November 22, 2003. Second Supplemental November 29, 2003.

Before the Federal Energy Regulatory Commission, Comments on Behalf of New England Power Pool and ISO New England Inc. in the matter of Transmission Cost Allocation Proposal, Docket No. ER03-1141, August 21, 2003.

Before the Federal Energy Regulatory Commission, Comments on Behalf of American National Power, Inc., PPL Energyplus LLC, and Sempra Energy in the matter of Investigation of Terms and Conditions of Public Utility Market-Based Rate Authorizations, Docket Nos. EL01-118-000, EL01-118-001, August 18, 2003 (with Scott Harvey)

Before the California Public Utilities Commission, Prepared Direct Testimony on Behalf of Southern California Gas Company and San Diego Gas & Electric Company in the matter of the Impact of the Electricity Crisis on Natural Gas Prices During the Subject Period, Investigation No.: 02-11-040, June 11, 2003.

Before the Federal Energy Regulatory Commission, Answering Testimony on Behalf of Morgan Stanley Capital Group Inc., Sempra Energy Resources, and Mirant Americas Energy Marketing, LP., in the matter of the Public Utilities Commission of the State of California et al. v. Sellers of Long-Term Contracts to the California Department of Water Resources et al., Docket Nos. EL02-60-003, EL02-62-003, (Consolidated), March 20, 2003 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Answering Testimony on Behalf of Mirant Americas Energy Marketing, L.P., Mirant California, LLC, Mirant Delta, LLC and Mirant Potrero. LLC in the matters of the San Diego Gas and Electric Company et al. v. Sellers of Energy and Ancillary Services into Markets ... and of Investigations of Practices of the California Independent System Operator.... Docket Nos. EL00-95-075 and EL00-98-063, March 20, 2003 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Testimony on Behalf of Mirant Americas Energy Marketing, L.P., Mirant California, LLC, Mirant Delta, LLC and Mirant Potrero. LLC in the matters of the San Diego Gas and Electric Company et al. v. Sellers of Energy and Ancillary Services into Markets ... and of Investigations of Practices of the California Independent System Operator.... Docket Nos. EL00-95-075 and EL00-98-063, March 3, 2003 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Rebuttal Testimony on Behalf of Morgan Stanley Capital Group Inc., Sempra Energy Resources, Mirant Americas Energy Marketing, LP, and Allegheny Energy Supply Company, in the matter of the Public Utilities Commission of the State of California et al. v. Sellers of Long-Term Contracts to the California Department of Water Resources et al., Docket Nos. EL02-60-003 and EL02-62-003, (Consolidated), November 14, 2002 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Initial Comments regarding the Standard Market Design NOPR, Docket No. RM01-12-000, November 11, 2002 (with John L. Chandley)

Before the Federal Energy Regulatory Commission, Testimony on Behalf of Morgan Stanley Capital Group Inc., Sempra Energy Resources, Mirant Americas Energy Marketing, LP, Williams Energy Marketing & Trading Company and Allegheny Energy Supply Company, in the matter of the Public Utilities Commission of the State of California et al. v. Sellers of Long-Term Contracts to the California Department of Water Resources et al., Docket Nos. EL02-60-003, EL02-62-003, (Consolidated), October 17, 2002 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Answering Testimony on Behalf of Morgan Stanley Capital Group Inc., Mirant Americas Energy Marketing, L.P., American Electric Power Service Corporation and Reliant Energy Services in the matter of Nevada Power Company et al. v. Morgan Stanley Capital Group et al., Docket Nos. EL02-26-000, EL02-28-000, EL02-33-000, EL02-38-000, EL02-29-000, EL02-30-000, EL02-31-000, EL02-32-000, EL02-34-000, EL02-39-000, EL02-43-000, and EL02-56-000, (Consolidated), August 27, 2002 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Testimony on Behalf of Morgan Stanley Capital Group Inc, Mirant Americas Energy Marketing, L.P., Calpine Energy Services, BP Energy Company, Allegheny Energy Supply Company and Reliant Energy Services in the matter of Nevada Power Company v. Morgan Stanley Capital Group et al., Docket Nos. EL02-29-000, EL02-30-000, EL02-31-000, EL02-32-000, EL02-34-000, and EL02-39-000, June 28, 2002 (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Testimony on Behalf of the Independent Energy Producers Association to the California Independent System Operator's May 1, 2002 Comprehensive Market Redesign Filing, Docket No. EL00-95-001 and ER02-1656-0000, June 6, 2002 (with Michael Cadwalader and Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Testimony on Behalf of the Independent Energy Producers Association to the California Independent System Operator's May 1, 2002 Comprehensive Market Redesign Filing, Docket Nos. EL00-95-001 and ER02-1656-0000, May 31, 2002.

Before the Federal Energy Regulatory Commission, Comments on a Working Paper re Standardized Transmission Service, Electricity Market Design and Structure, (with Scott M. Harvey and Susan L. Pope) Docket No. RM01-12-000, May 1, 2002.

Before the Federal Energy Regulatory Commission, Comments on a Working Paper re Standardized Transmission Service, Electricity Market Design and Structure, Docket No. RM01-12-000, April 10, 2002.

Before the Federal Energy Regulatory Commission, Testimony on behalf of Constellation Power Source, Inc. and High Desert Power Project, LLC, Answer to Public Utilities Commission of the State of California v. Sellers of Long-Term Contracts...; and California Electricity Oversight Board v. Sellers of Energy and Capacity Under Long-Term Contracts...; Dockets Nos. EL02-60-000 and EL02-62-000, March 22, 2002.

Before the Federal Energy Regulatory Commission, Testimony on behalf of GWF Energy LLC, Answer to Public Utilities Commission of the State of California v. Sellers of Long-Term Contracts...; and California Electricity Oversight Board v. Sellers of Energy and Capacity Under Long-Term Contracts...; Dockets Nos. EL02-60-000 and EL02-62-000, March 22, 2002.

Before the Federal Energy Regulatory Commission, Workshop on Regional Transmission Organizations, Electricity Market Design and Structure, Docket No. RM01-12-000, October 19, 2001.

Before the U.S. House of Representatives Subcommittee on Energy Policy, Natural Resources, and Regulatory Affairs, Hearing on "FERC: Regulators in a Deregulated Electricity Market," August 2, 2001.

Before the Federal Energy Regulatory Commission, Technical Conference on RTO Regional Coordination, Docket No. PL01-5-000, June 19, 2001.

Before the Committee on Governmental Affairs, United States Senate, Hearing on Economic Issues Associated with the Restructuring of Energy Industries, June 13, 2001

Before the Commerce Select Committee, Parliament of New Zealand, Statement on behalf of Transpower New Zealand Limited, Supplementary Submission re the Electricity Industry Bill, March 27, 2001

Before the Federal Energy Regulatory Commission, Statement on behalf of San Diego Gas & Electric Company v. Sellers of Energy and Ancillary Services Into Markets ...Docket No. EL00-95-000], Comments of San Diego Gas & Electric Company on Order Proposing Remedies for California Wholesale Electric Markets, November 22, 2000

Attachment: "Electricity Market Reform in California," (with John Chandley and Scott M. Harvey), November 22, 2000

Before the Federal Energy Regulatory Commission, Statement on behalf of San Diego Gas & Electric Company v. Sellers of Energy and Ancillary Services .... Docket Nos. EL00-95-000 and EL00-98-000 and v. All Sellers of Energy and Ancillary Services ... Docket No. EL00-104-000 and EL00-107-000, Answer in Support of Joint Motion for Emergency Relief and Further Proceedings, October 19, 2000

Attachment: "California Electricity Prices and Forward Market Hedging," (with Scott M. Harvey), October 17, 2000.

Before the Federal Energy Regulatory Commission, Statement on Behalf of San Diego Gas & Electric Company in the Investigation of Practices of the California Independent System Operator and the California Power Exchange, Docket Nos. EL00-95-000, EL00-98-000, EL00-107-000, Public Meeting in San Diego, CA, September 12, 2000.

Attachment A: "Congestion Management in California," (with John Chandley and Scott M. Harvey)

Attachment B: "Comments on the Congestion Management Proposal of the California ISO," (with Scott M. Harvey.)

Before the Federal Energy Regulatory Commission, Statement on Behalf of the Independent System Operator, Answer to Complaint of New York State Electric & Gas Corporation to Suspend Market Based Rates in Energy Markets., Docket No. EL00-70-000, May 12, 2000.

Before the Federal Energy Regulatory Commission, Joint Affidavit with Scott M. Harvey on Behalf of ISO New England Inc., Motion to Intervene, Comments, and Protests in the Matter of the Comprehensive Congestion Management System and Multi-Settlement System filed by the Supporting Generators, Docket No. ER00-2016-000, April 21, 2000.

Before the Federal Energy Regulatory Commission, Comments on Behalf of Sempra Energy on the Motion to Intervene and Protest vs. the California Independent System Operator, Tariff Amendment No. 26, Docket No. ER00-1365-000, February 22, 2000

Attachment: "Nodal and Zonal Congestion Management and the Exercise of Market Power: Further Comment," (with Scott M. Harvey).

Before the Federal Energy Regulatory Commission, Supplemental Comments on the California ISO's NewGen Policy (with Scott M. Harvey) on Behalf of Sempra Energy to Amendment No. 19 to the ISO Tariff of the California Independent System Operator Corporation, Docket No. ER00-703-000, February 11, 2000.

Before the Federal Energy Regulatory Commission, Statement on Behalf of Sempra Energy, Motion to Intervene and Comments to Amendment No 19 to the ISO Tariff of the California Independent System Corporation, Docket No. ER00-703-0000, January 10, 2000.

Attachment: "Nodal and Zonal Congestion Management and the Exercise of Market Power," (with Scott M. Harvey)

Before the Federal Energy Regulatory Commission, Statement on Behalf of Sempra Energy in the Matter of Kern River Gas Transmission Company, Docket No. RP99-274-000, November 5, 1999

Before the Federal Energy Regulatory Commission, Statement in Support of the Petition of TransÉnergie US Ltd. for Order Accepting Tariff for Transmission Interconnector and Granting Related Authorizations and Waivers, Docket No. ER00-1-000, October 1, 1999.

Before the Federal Energy Regulatory Commission, Response to the Commission's Inquiry Regarding Regional Transmission Organizations, FERC Policy on Regional Transmission Organizations: Comments in Response to the Notice of Proposed Rulemaking, Docket No. RM99-2-000, August 16, 1999.

Before the Federal Energy Regulatory Commission, Protest of Calpine Corporation to Amendment No. 19 to the ISO Tariff of the California Independent System Operator Corporation, Docket No. ER99-3339-000, July 27, 1999

Before the Federal Energy Regulatory Commission, Protest of the Coalition Supporting Pro-Competitive Interconnection Policies to Amendment No. 19 to the ISO Tariff of the California Independent System Operator Corporation, Docket No. ER99-3339-000, July 27, 1999.

Before the Federal Energy Regulatory Commission, Comments on the California ISO's NewGen Policy, (with Scott M. Harvey) on Behalf of the Coalition Supporting Pro-Competitive Interconnection Policies to Amendment No. 19 of the ISO Tariff of the California Independent System Operator Corporation, Docket No. ER99-3339-000, July 27, 1999.

Before the Federal Energy Regulatory Commission, Statement on the Commission Review of the New England Power Pool Congestion Management System and Multi-Settlement Proposals, Docket No. ER99-2335-000, April 19, 1999.

Before the Federal Energy Regulatory Commission, Statement on Behalf of PJM Interconnection, L.L.C. In the Matter of Old Dominion Electric Cooperative vs. PJM Interconnection, L.L.C., Docket No. EL99-9-000, December 1998.

Before the State of New Jersey Board of Public Utilities, Testimony on Behalf of GPU Energy In the Matter of the Energy Master Plan Phase II Proceedings to Investigate the Future Structure of the Electric Power Industry and In the Matter of the Electric Restructuring Plans Filed by ... GPU Energy, Public Service Electric and Gas Company, and Rockland Electric Company, Respectively, Regarding Their Electric Restructuring Plans. Docket Nos. EX94120585Y, EO97070457, EO97070460, EO97070463, EO97070466, May 1998.

Before the Federal Energy Regulatory Commission, "FERC Policy on Independent System Operators, Supplemental Comments," re the Inquiry Concerning the Commission's Policies on Independent System Operators, Docket No. PL98-5-000, May 1998.

Before the Federal Energy Regulatory Commission, Statement at the Conference on the Commission's Policies on Independent System Operators, Docket No. PL98-5-000, April 1998.

Before the High Court of New Zealand, Auckland Registry, Commercial List, Affidavit on Behalf of Transpower New Zealand Limited In the Matter Between Mercury Energy Limited and Transpower New Zealand Limited, CL No. 1/98, March 1998

Before the Federal Energy Regulatory Commission, Comments on Behalf of the Gas Research Institute, Re the January 21, 1998 Stipulation and Agreement Concerning GRI Funding, Docket Nos. RP97-391-000, RP97-149-002, and RM97-3-000 (Not Consolidated), February 1998.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of the New York Member Systems, Supplemental Filing to the Comprehensive Proposal to Restructure the New York Wholesale Electric Market, Docket Nos. ER97-1523-000, OA97-470-000 and ER97-4234-000 (not consolidated), December 1997.

Before the State of New Jersey Board of Public Utilities, Testimony on Behalf of GPU Energy Restructuring Plan Petition, Docket No. EO97070460, July 1997.

Before the Pennsylvania Public Utility Commission, Testimony in the Case of the Pennsylvania Electric Company, Re: Public Policy Benefits and Issues of Electric Restructuring in Pennsylvania, Docket No. R-00974009, June 1997.

Before the Federal Energy Regulatory Commission, Comments for the Public Conference on the Future Funding of Research and Development (R&D) in the Natural Gas Industry and the Appropriate Role of the Gas Research Institute in Funding R&D, Docket No. RP97-149-000, March 1997.

Before the Department of Revenue, State of Alaska, Testimony on Behalf of Exxon Corporation and Certain Affiliated Companies, Case Load No. 94925, March 1997.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of the Member Systems of the New York Power Pool, in the matter of Agreements to Form an Independent System Operator, New York Power Exchange, and New York State Reliability Council, and to Provide Statewide Transmission Service, Docket No. ER97- , January 1997.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of the PJM Supporting Companies in the matter of Compliance of the Pennsylvania-New Jersey-Maryland Interconnection with Order No. 888, Docket No. OA97-\_\_-000, December 1996.

Before the Federal Energy Regulatory Commission, "Capacity Reservation Open Access Transmission Tariffs," Response to Notice of Proposed Rulemaking, Docket No. RM96-11-000, October 1996.

Before the Federal Energy Regulatory Commission, "Capacity Reservation Open Access Transmission Tariffs," Comments for the Technical Conference Concerning Capacity Reservation Open Access Transmission Tariffs, Notice of Proposed Rulemaking, Docket No. RM96-11-000, September 1996.

Before the Federal Energy Regulatory Commission, "WEPEX: Building the Structure for a Competitive Electricity Market," Comments for the Technical Conference Concerning WEPEX Proposals of Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company, August 1996.

Before the Pennsylvania Public Utility Commission, Testimony re the Investigation into Electric Power Competition, Docket No. I-940032, February 1996.

Before the Federal Energy Regulatory Commission, Comments for the Technical Conference Concerning Independent System Operators and Reform of Power Pools Under the Federal Power Act, Docket Nos. RM95-8-000 and RM94-7-001, January 1996.

Before the Pennsylvania Public Utility Commission, Response to Questions re the Investigation into Electric Power Competition, Docket No. I-940032, November 1995.

Before the Commercial Arbitration Tribunal, Statement on Behalf of Esso Australia Resources Ltd. (A.R.B.N. 000 444 860) and BHP Petroleum (North West Shelf) Pty. Ltd. (A.C.N. 004 514 489) in the Matter of Natural Gas Contracts, October 1995.

Before the Public Utilities Commission of the State of California, Response to Coordinating Commissioner Ruling, Proposed Policies Governing Restructuring California's Electric Service Industry and Reforming Regulation, Docket Nos. R.94-04-031 and I.94-04-032, October 1995.

Before the Federal Energy Regulatory Commission, "Electricity Transmission Policy and Promoting Wholesale Competition." Initial Response to the Notice of Proposed Rulemaking Regarding Promoting Wholesale Competition Through Open-Access Non-Discriminatory Transmission Services by Public Utilities, Docket No. RM95-8-000, August 1995.

Before the Federal Energy Regulatory Commission, "Coordination for Competition in an Electricity Market." Response to an Inquiry Concerning Alternative Power Pooling Institutions Under the Federal Power Act, Docket No. RM94-20-000. March 1995.

Before the Wyoming Oil and Gas Commission, State of Wyoming, Testimony on Behalf of Exxon Company, U.S.A. in the Matter of Venting of CO<sub>2</sub> at the La Barge (Shute Creek) Gas Plant, Lincoln County, Wyoming, 1994.

Before the Commercial Arbitration Tribunal, Testimony on Behalf of Esso Australia Resources Ltd. (A.R.B.N. 000 444 860) and BHP Petroleum (North West Shelf) Pty. Ltd. (A.C.N. 004 514 489), in the matter of Natural Gas Contracts, September 1994.

Before the New Mexico State Legislature, Interim Resource Planning Committee, Comments on Electric Industry Restructuring, September 1994.

Before the California Public Utilities Commission, Hearing on Electric Restructuring, Comments on Market Institutions in the Restructured Electric Industry, "An Efficient Bilateral Market Needs A Pool," August 1994.

Before the Pennsylvania House of Representatives, Consumer Affairs Committee, Comments on Electric Industry Restructuring, July 1994.

Before the United States House of Representatives, Energy and Power Subcommittee Hearing, Comments on Electric Industry Restructuring, July 1994.

Before the California Public Utilities Commission, Comments on the Order Instituting Rulemaking and Order Instituting Investigation: on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, R.94-04-031 and I.94-04-032, June 1994.

Before the Federal Energy Regulatory Commission, Comments for a Technical Conference on Responses to the Inquiry Concerning the Commission's Pricing Policy for Transmission Services Provided by Public Utilities Under the Federal Power Act, Docket No. RM93-19-000, April 1994.

Before the Federal Energy Regulatory Commission, Response to the Inquiry Concerning the Commission's Pricing Policy for Transmission Services Provided by Public Utilities Under the Federal Power Act, Docket No. RM93-19-000, November 1993.

Before the California Public Utilities Commission, Sur-surrebuttal Testimony on Behalf of Pacific Gas and Electric Company in the Matter of the Canadian Gas Reasonableness Proceeding, Application No. 91-04-003, August 1992.

Before the Office of Hearings and Appeals, U.S. Department of Energy, Testimony on Behalf of Amoco Oil Company et al in the matter of Special Refund Procedures: The 341 Tract Unit of the Citronelle Field, Case No. LFX-0006, July 1992. Cross Examination, January 1993.

Before the California Public Utilities Commission, En Banc Session on Core Procurement Issues, Comments on Behalf of Pacific Gas and Electric Company on Evaluating LD.C. Gas Procurement Practices, Applications R.90-02-008 and R.88-08-018, February 1992.

Before the California Public Utilities Commission, Rebuttal Testimony on Behalf of Pacific Gas and Electric Company in the Matter of Canadian Gas Reasonableness Issues, 1988-1990, Application No. 91-04-003, February 1992.

Before the United States Senate Foreign Relations Subcommittee on European Affairs, Testimony at the Hearing on Consolidating Free-Market Democracy in the Former Soviet Union, September 1991.

Before the Department of Revenue, State of Alaska, Testimony on Behalf of Exxon Corporation in the Matter of Exxon Corporation and Certain Affiliated Companies, 1978 Oil and Gas Corporate Income Tax, Case No. 86102, May 1991.

Before the Federal Energy Regulatory Commission, Response to Notice of Public Conference and Request for Comments on Utility Issues, ["Transmission Capacity Rights for the Congested Highway: A Contract Network Proposal"] Docket No. PL91-1-000, April 1991.

Before the Public Utilities Commission of California, Testimony on Behalf of Pacific Gas and Electric Company, Order Instituting Rulemaking 88-08-018, in the Matter of an Integrated Capacity Priority Program Proposal, December 1990.

Before the United States House of Representatives Government Operations Committee, Testimony on the Economic and Energy Security Implications of the Persian Gulf Crisis, September 1990.

Before the United States District Court for the Eastern District of Texas, Tyler Division, Testimony on Behalf of Exxon Corporation in the Matter of Exxon Corporation vs. Jarvis Christian College, et al., Docket No. CA No. TY-80-432-CA, (consolidated action), March 1990.

Before the Massachusetts Public Utility Commission, Testimony on Behalf of the Petitioning Gas Companies in the Generic Investigation of Ratemaking Treatment of Environmental Costs Incident to Gas Manufacturing, Docket No. DPU 89-161, November 1989; Rebuttal Testimony on Behalf of the Petitioning Gas Companies, Docket No. DPU 89-161, March, 1990.

Before the Federal Energy Regulatory Commission, Comments on the Federal Energy Regulatory Commission's Proposed Policy Statement on Gas Inventory Charges, Docket No. PL-89-1-000, July 1989.

Before the Federal Energy Regulatory Commission, Statement on Behalf of Designated Marketing Companies in the Case of the Natural Gas Pipeline Company of America, Docket No. RP88-209-000, February 1989.

Before the New Mexico Public Service Commission, Testimony on Behalf of the Public Service Company of New Mexico in the Matter of Prudence of Costs Incurred by Public Service Company of New Mexico in Construction of the Palo Verde Generating Station, Case No. 2087, January 1989.

Before the Federal Energy Regulatory Commission, Comments on the Notice of Proposed Rulemaking re Regulations Governing Bidding Programs, Docket No. RM88-5-000, July 1988.

Before the Federal Energy Regulatory Commission, Answering Testimony on Behalf of Citizens Energy Corporation in the case of the Natural Gas Pipeline Co. of America, Docket Nos. RP87-141-000 et al., December 1987.

Before the California Energy Commission, Biennial Fuels Report Hearing on the Impact on Increased U.S. Oil Imports on California's Energy Vulnerability and Security, June 1987.

Before the Louisiana Public Service Commission, Rebuttal Testimony on Behalf of Gulf States Utilities Company, Prudence Phase, Docket No.U-17282, May 1987.

Before the Public Utility Commission of Texas, Rebuttal Testimony on Behalf of the Gulf States Utilities Company for Authority to Change Rates and Inquiry into the Prudence and Efficiency of the Construction of the River Bend Nuclear Generating Station, Docket Nos. 7195 and 6755, April 1987.

Before the United States Department of Energy, Office of Hearings and Appeals, Post Hearing Reply Brief on Behalf of Cities Service Oil and Gas Corporation on the Issue of Restitution, Case Nos. HRO-0285, HRH-0285, April 1987.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of the California Public Utilities Commission in the case of Mojave Pipeline Company, et al., Docket Nos. CP85-437-000, et al., (Phase 1), March 1987.

Before the United States Department of Energy, Office of Hearings and Appeals, Testimony on Behalf of Cities Service Oil and Gas Corporation, Docket No. HR0-0285, December 1986.

Before the Pennsylvania Public Utility Commission, Rebuttal Testimony on Behalf of The Duquesne Light Company, Docket No. R-860378, November 1986.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of Gulf States Utilities Company, Docket No. ER86-558-000, October 1986.

Before the Public Utility Commission of Texas, Testimony on Behalf of Gulf States Utilities Company on the Issue of Prudence in the Construction of the River Bend Nuclear Generating Station, Docket No. 6755, June 1986.

Before the Massachusetts Department of Public Utilities, Comments on Behalf of Western Massachusetts Electric Company on Pricing and Ratemaking Treatment to be Afforded New Generating Facilities Which Are Not Qualifying Facilities, Docket No. DPU 86-36, April 1986.

Before the Pennsylvania Public Utility Commission, Rebuttal Testimony on Behalf of the Philadelphia Electric Company, Docket No. R-850152, February 1986; Sur-Surrebuttal Testimony on Behalf of the Philadelphia Electric Company, Docket No. R-850152, March 1986.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of New England Power Company, Docket Nos. ER85-646-001, ER85-647-001, January 1986.

Before the Public Utility Commission of Texas, Testimony on Behalf of Gulf States Utilities Company on the issue of Rate Changes, et al., Docket Nos. 6477, 6525, and 6660, September 1985.

Before the United States Senate Committee on Energy and Natural Resources, Comments on Future Electricity Needs, July 1985.

Before the Federal Energy Regulatory Commission, Comments on Behalf of The Maryland People's Counsel

on Notice Requesting Supplemental Comments Re: Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol, Docket No. RM85-1-000, July 1985.

Before the Federal Energy Regulatory Commission, Testimony on Behalf of Maryland People's Counsel in the case of Columbia Gas Transmission Company, et al., Docket No. TA 82-1-21-000, February 1985.

Before the Pennsylvania Public Utilities Commission, Testimony on Behalf of the Philadelphia Electric Company, Docket No. 1-840381, December 1984; Rebuttal Testimony on Behalf on Philadelphia Electric Company, Docket No. 1-840381, March 1985.

Before the United States Department of Energy, Office of Hearings and Appeals, Comments on Behalf of Beacon Oil Co. et al, on Market Effects of Payment of Exception Orders, September 1984.

Before the United States Department of Energy, Office of Hearings and Appeals, Testimony on Behalf of the States of Colorado et al, Stripper Well Exemption Litigation/ Refiner Evidentiary Hearing, Case No. HFH-0026, September 1984.

Before the Federal Energy Regulatory Commission, Comments on Behalf of The Maryland People's Counsel, Inquiry on Impact of Special Marketing Programs on Natural Gas Companies and Consumers, Docket No. RM84-7-000, August 1984.

Before the Federal Energy Regulatory Commission, Comments at Hearings on Special Marketing Programs, Docket No. RM84-7-000, February 1984.

Before the United States Senate, Subcommittee on East Asian and Pacific Affairs, Comments on the Export of Alaska Oil, July 1983.

Before the Public Utility Commission, State of New Hampshire, Testimony on Behalf of the Public Service Company of New Hampshire, Docket No. DE 81-312, May 1983.

Before the Interstate Commerce Commission, Testimony on Behalf of Delmarva Power and Light Company v. Consolidated Rail Corporation, Docket Nos. 38329, 38330, January 1983.

Before the United States Senate Committee on Finance, Comments on Recycling and Oil Shocks, December 1981.

Before the United States Senate Committee on Finance, Comments on Oil Taxes and Oil Emergencies, December 1980.

**SPEECHES, CONFERENCES AND OTHER ACTIVITIES**

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, Cambridge, MA, October, 2009.

Speaker, Elforsk Market Design and SAEE conference, "Design of Competitive Electricity Markets, Stockholm, Sweden, September 17-18, 2009.

Speaker, EUCI Conference on "FTRs – Where are We Now?," Washington, D.C., July 2009.

Speaker, White House Council on Environmental Quality, Washington, D.C., July 2009.

Lecturer, Infrastructure in a Market Economy, Harvard Kennedy School, Cambridge, MA, July 2009.

Speaker, Aspen Institute: 2009 Energy Policy Forum, "The Goals: An Electricity Grid for 21<sup>st</sup> Century," July 2009.

Conference Co-Chair, Harvard Electricity Policy Group 55<sup>th</sup> Plenary Session, Cambridge, MA, May 2009.

Panelist, "Scarcity Pricing and Solutions," Exelon Power Team, Kennett Square, PA, May 2009.

Panelist, "Disrupting the Status Quo in Electric Energy Management," Boston University, Brookline, MA, May 2009.

Presenter, "Smart Grid Regulation," GE Energy, Atlanta, GA, May 2009.

Keynote speaker, "Stimulating Energy Symposium", Harvard University, Cambridge, MA, May 2009

Panelist, "Regulation and Electricity Markets," Western Power Trading Forum, New York, NY, April 2009.

Press release of study: Alternative Power Market Proposals Reflect Fundamental Misunderstandings of RTO Markets, FERC, Washington, DC, April 2009.

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, La Jolla, CA, March 2009.

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, Atlanta, GA, December, 2008.

Panelist, "Energy Policy and Energy Interdependence," Hudson Institute, Washington, DC, November 18, 2008.

Moderator, "Challenges in Energy Law and Litigation," LECG XPRT Forum, Santa Barbara, CA, November 14, 2008.

Participant, "Dubai, Summit on the Global Agenda," Dubai, United Arab Emirates, November 7-9, 2008.

Panelist, "NECA 2008 Power Markets Conference, Westboro, MA, October 30, 2008.

Panelist, "Energy Policy Challenges: Is the Past Prologue?," Resources for the Future, Washington, DC, October 29, 2008.

Participant, Harvard University Sustainability Celebration with Harvard President Drew Faust and Al Gore, Cambridge, MA, October 22, 2008.

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, Chicago, IL, October, 2008.

Panelist, "Powering the Future: Key Energy Issues for the Next Administration," Technology Policy Institute, Washington, D.C., September 26, 2008.

Steering Committee Co-Chair and Panelist, Harvard Kennedy School workshop, "Acting in Time on Energy Policy," Cambridge, MA, September 18-19, 2008.

Speaker, NYISO Annual Board Retreat, Rye, NY, September 14, 2008.

Keynote Presenter, PSEG Executive Session, "Electricity Market Design: Regulation and Market Reforms," Newark, NJ, August 11, 2008.

Speaker, Aspen Institute: 2008 Energy Policy Forum, "Climate Change and the Electricity Sector," July 2008.

Panelist, "Advancing Sustainability in the Oil and Gas Industry," World Petroleum Congress, Madrid, Spain, July 2, 2008.

Keynote Presenter, IDEI Conference: The Economics of Energy Markets, "Market-Clearing Electricity Prices and Energy Uplift," Toulouse, France, June 20, 2008.

Presenter, "Acting in Time: Regulating Wholesale Electricity Markets," Federal Energy Regulatory Commission Conference on Competition in Wholesale Power Markets, May 8, 2007.

Speaker, "Electricity Market Design: Coordination, Pricing and Incentives," ERCOT Energized Conference, Austin, TX, May 2008.

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, Cambridge, MA, May 2008.

Panelist, "Challenges for Long-Term Energy Models," Energy Information Administration Conference, Washington, DC, April 6-8, 2008.

Keynote Speaker, 15<sup>th</sup> Annual U.S.-Japan Symposium, "Stability and Sustainable Growth in the Asia/Pacific Region," Harvard Kennedy School, Cambridge, MA, March 18, 2008.

Panelist, "Reliability and Competition: The Price of Reliability?," Independent Power Producers of Alberta 2008 Annual Conference, Banff, Alberta, Canada, March 10, 2008.

"Electricity Market Design: Coordination, Pricing and Incentives," Faculty Research Seminar, Harvard Kennedy School, Cambridge, MA, March 5, 2008.

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, Boulder, CO, February 28-29, 2008.

"Electricity Market Design: Coordination, Pricing and Incentives," Energy Policy Research Seminar, Harvard Kennedy School, Cambridge, MA, February 12, 2008.

Keynote Presenter, La Asociación Española para la Economía Energética (AEEE), Bilbao, Spain, January 2008.

Conference Co-Chair, Harvard Electricity Policy Group Plenary Session, Los Angeles, CA, December 2007.

Co-Chair, Kennedy School of Government, Harvard University, "Populism and Natural Resources" workshop, Cambridge, MA, November 2007.

Panelist, Harvard University, "Climate Engineering" workshop, Cambridge, MA, November 2007.

Speaker, Kennedy School of Government Alumni Refresher, Harvard University, "Electricity Market Design(s): Public Purposes and Policy Analysis," Cambridge, MA, November 2007.

Speaker, Club de Madrid "Energy and Democracy" conference, "Democratizing Energy," Madrid, Spain, November 2007.

Speaker, 27<sup>th</sup> USAEE/IAEE North American Conference, "Electricity Hybrids: Mixed Market Designs and Infrastructure Investments," Houston, TX, September 2007.

Speaker, Edison Electric Institute, 2007 Transmission and Wholesale Markets School, Madison, WI, July 2007.

Speaker, Real Colegio Complutense en Harvard, "Energy Industry Restructuring," Cambridge, MA, July 2007.

Speaker, 2007 Aspen Energy Policy Forum, "Electricity Markets - Where Are We Going?" July 2007.

Conference Co-Chair, Harvard Electricity Policy Group 47<sup>th</sup> Plenary Session, Cambridge, MA, June 2007.

Speaker, 14<sup>th</sup> Annual New England Energy Conference and Exposition, "Moving Into a Secure and Competitive Future," Mystic, CT, May 2007.

Discussant, 15<sup>th</sup> Economía Panel Meeting, Yale University, New Haven, CT, May 2007.

Conference Co-Chair, Harvard Electricity Policy Group 46<sup>th</sup> Plenary Session, Laguna Beach, CA, March 2007.

Speaker, Institut D'Economie Industrielle, Toulouse, Conference on the Economics of Energy Markets, Toulouse, France, January 2007.

Conference Co-Chair, Harvard Electricity Policy Group 45<sup>th</sup> Plenary Session, Dallas, TX, December 2006.

Speaker, University of Massachusetts INFORMS Seminar, Electricity Market Restructuring and Operations Research, Amherst, MA, October 2006.

Speaker, EUCI Conference on Transmission Reliability, Washington D.C., October 2006.

Conference Co-Chair, Harvard Electricity Policy Group 44<sup>th</sup> Plenary Session, Cambridge, MA, September 2006.

Conference Co-Chair, XVI Repsol YPF - Harvard Seminar on Energy Policy, Energy Markets, Security, Transparency, Barcelona, Spain, September 2006.

Keynote Speaker, 26<sup>th</sup> USAEE/ IAEE Annual North American Conference, Ann Arbor, MI, September 2006

Speaker: Edison Electric Institute, Transmission Market and Design Course, University of Wisconsin-Madison, Madison, WI, July 2006.

Keynote Speaker, Independent Power Producers Society of Alberta, Canada (IPPSA), Roundtable re Electricity Restructuring, Long-term Adequacy, Market Design, Calgary, Canada, June 2006.

Conference Co-Chair, Harvard Electricity Policy Group 43<sup>rd</sup> Plenary Session, Cambridge, MA, June 2006.

Speaker, Real Colegio Complutense - Harvard, Seminar on Government Restructuring: Privatization,

Regulation and Competition, Cambridge MA, June 2006.

Speaker, Plenary Session, New England Conference of Public Utility Commissioners (NECPUC), Rockport, ME, June 2006.

Keynote Speaker, Infocast Conference on Open Access Transmission Tariff (OATT) Reform, Washington, D.C., June 2006.

Commentator, Conference on Venezuelan Economic Growth 1970-2005, Center for International Development, Harvard University, Cambridge MA, April 2006.

Speaker, University of California Energy Institute, POWER Conference, Berkeley, CA, March 2006.

Conference Co-Chair, Harvard Electricity Policy Group 42<sup>nd</sup> Plenary Session, La Jolla, CA, March 2006.

Speaker, Florence School of Regulation, Workshop on the Role and Status of Power Exchanges, European University Institute, Florence, Italy, January 2006.

Speaker, New York Independent System Operator, Workshop on Transmission Investments in Deregulated Markets, Albany, NY, December 2005.

Conference Co-Chair, Harvard Electricity Policy Group 41<sup>st</sup> Plenary Session, Atlanta, GA, December 2005.

Speaker, The Association of Power Exchanges [APEX] 2005 Annual Conference, Orlando, FL, November 2005.

Speaker, EUCI Conference on "Open Access: Are We There Yet?" Washington, D.C., October 2005.

Speaker, EUCI Conference on Transmission Investments and Reliability, Brewster, MA, September 2005.

Conference Co-Chair, Harvard Electricity Policy Group 40<sup>th</sup> Plenary Session, Cambridge, MA, September 2005.

Speaker, IAEE European Energy Conference, European Energy Markets in Transition, Bergen, Norway, August 2005.

Speaker, NARUC Electricity Committee Summer Conference, Austin, TX, July 2005.

Conference Co-Chair, Speaker, XV Repsol YPF - Harvard Seminar on Energy Policy, Making Energy Policy Work, Lisbon, Portugal, June 2005.

Speaker, IDEI Conference on the Economics of Electricity Markets, Toulouse, France, June 2005.

Conference Co-Chair, Harvard Electricity Policy Group 39<sup>th</sup> Plenary Session, Cambridge, MA, May 2005.

Speaker, McDermott, Will & Emery Energy Conference, Washington, D.C., April 2005.

Conference Co-Chair, Harvard Electricity Policy Group 38<sup>th</sup> Plenary Session, San Diego, CA, March 2005.

Speaker, American Antitrust Institute, Conference on Open Access Revisited: Lessons Learned, Arlington, VA, January 2005.

Speaker, Carnegie-Mellon University, Workshop on Electricity Transmission in Deregulated Markets, Pittsburgh, PA, December 2004.

Conference Co-Chair and Speaker, Harvard Electricity Policy Group Plenary Session, Austin TX, December 2004.

Conference Co-Chair, Harvard Electricity Policy Group 37<sup>th</sup> Plenary Session, Austin, TX, December 2004.

Speaker, IEEE/PSCE Power Systems Conference & Exposition, New York, NY, October 2004.

Conference Co-Chair, Harvard Electricity Policy Group 36<sup>th</sup> Plenary Session, Cambridge, MA, October 2004.

Speaker, IAEE European Conference on Modeling Energy Economics and Policy, Zurich, Switzerland, September 2004.

Speaker, EEI Market Design and Transmission Pricing School, Madison, WI, July 2004.

Conference Co-Chair, XIV Repsol YPF-Harvard Seminar on Energy Policy, Managing Energy Markets, A Coruña, Spain, June 2004.

Conference Co-Chair, Harvard Electricity Policy Group 35<sup>th</sup> Plenary Session, Cambridge, MA, May 2004.

Speaker, EUCI Conference on Preventing the Next Blackout, Washington D.C., April 2004.

Speaker, Panel Chair, U. Richmond Law School, Merhige Center of Environmental Law, Conference on The Blackout of 2003: What's Next? Richmond, VA, April 2004.

Conference Chair, Speaker, IEA Workshop on Transmission Network Reliability in Competitive Electricity Markets, Paris, France, March 2004.

Conference Co-Chair, Harvard Electricity Policy Group 34<sup>th</sup> Plenary Session, San Diego, CA, March 2004.

Speaker: CIDE-CRE Seminar: Energy Regulatory Developments in North America, Mexico City, Mexico, January, 2004.

Speaker, Infocast Transmission Executive Forum: Unlocking Transmission Investment, Washington D.C., January, 2004.

Speaker, IDEI Conference on Competition and Coordination in the Electricity Industry, Toulouse, France, January 2004.

Conference Co-Chair, Harvard Electricity Policy Group 33<sup>rd</sup> Plenary Session, Point Clear, AL, December 2003.

Session Chair, Conference on Wholesale Power Markets in New England, NECA, Boston, MA, November, 2003.

Speaker, New Directions in Regulation Seminar, Kennedy School of Government, Cambridge MA, October 2003.

Conference Co-Chair, Harvard Electricity Policy Group 32<sup>nd</sup> Plenary Session, Cambridge, MA, September 2003.

Speaker, EEI Market Design and Transmission Pricing School, Madison, WI, July 2003.

Session Chair, Aspen Institute Summer Energy Forum, Aspen, CO, July 2003.

Speaker, Standard and Poors 2003 Utility and Energy Conference, New York, NY, June 2003.

Speaker, ESAI Northeast Locational Energy Roundtable, Wakefield, MA, June 2003.

Speaker, 10<sup>th</sup> Annual Spring Energy Conference, NECA, Mystic, CT, June 2003.

Keynote Speaker, VII Latin American Energy Regulatory Entities Association (ARIAE) annual meeting, Oaxaca, Mexico, May 2003.

Conference Chair, XIII Repsol YPF-Harvard Seminar on Energy Policy, Salamanca, Spain, May 2003.

Conference Co-Chair, Harvard Electricity Policy Group 31<sup>st</sup> Plenary Session, Cambridge, MA, May 2003.

Speaker: 20<sup>th</sup> Annual Platts User Conference, Amelia Island, FL, April 2003.

Speaker, Conference on Deregulation in a Turbulent World, Maguire Energy Institute, Southern Methodist University, Dallas TX, April 2003.

Speaker, Conference on Electricity Deregulation: Where to From Here? Bush Presidential Conference Center, Texas A&M University, College Station, TX, April 2003.

Conference Co-Chair, Harvard Electricity Policy Group Special Session on Transmission, Cincinnati, OH, April 2003.

Speaker, EIA 2003 National Energy Modeling System, Annual Energy Outlook Conference, Washington D.C., March 18, 2003.

Speaker, U.S. Department of State-sponsored videoconference from Australia, "Creating a Competitive Electricity and Gas Market." Cambridge, MA, USA and Canberra, Australia, February 2003.

Conference Co-Chair, Harvard Electricity Policy Group 30<sup>th</sup> Plenary Session, Palm Springs, CA, January 2003.

Speaker, Center for Energy and Environmental Policy Research, MIT, Workshop, Cambridge, MA, December 2002.

Session Co-Chair, Harvard Electricity Policy Group Special Session on Western Issues, Denver CO, December 2002.

Speaker, Nordic Energy Research Council, Conference on Electricity Market Reforms, Experiences and Lessons for the Future, Copenhagen, Denmark, November 2002.

Keynote Speaker, US Combined Heat and Power Association, 3d Annual Conference, Boston, MA, October 2002.

Panel Chair, ABA Section of Environment, Energy and Resources, Fall Meeting. Panel on FERC Rulemaking and Orders on RTO Development and Wholesale Electricity Market Structure," Portland, OR, October 2002.

Conference Co-Chair, Harvard Electricity Policy Group 29<sup>th</sup> Plenary Session, Cambridge, MA, September 2002.

Speaker, Harvard Business School Senior Executive Program/ E.ON Academy, Boston, MA, August 2002.

Speaker, Christensen Associates Conference on Connecting Wholesale and Retail Electricity Markets, Denver, CO, August 2002.

Speaker, EEI Market Design and Transmission Pricing School, Madison, WI, July 2002.

Speaker, 25<sup>th</sup> Annual IAEE International Conference, Aberdeen, Scotland, June 2002.

Conference Co-Chair, Harvard Electricity Policy Group 28<sup>th</sup> Plenary Session, Cambridge, MA, May 2002.

Speaker, Platts RDI User Conference, Amelia Island, Florida, April 2002.

Speaker, ABA Antitrust Section Spring Meeting, Washington, D.C., April 2002.

Conference Co-Chair, Harvard Electricity Policy Group Special Session, Atlanta, GA, April 2002.

Speaker, Carnegie-Mellon-Stanford Workshop on Energy Research Programs, Washington D.C. April 2002.

Keynote Speaker, USAEE /SAIS Washington Energy Policy Conference: New Developments in Electric Market Restructuring" Washington D.C., May 2002.

Speaker, Center for Research in Regulated Industries, Rutgers University, Advanced Workshop in Regulation and Competition, 21<sup>st</sup> Annual Eastern Conference, Newport, RI, May 2002.

Speaker, Harvard-Japan Project on Energy and the Environment, Tokyo Conference, Tokyo, Japan, January 2002.

Conference Co-Chair, Harvard Electricity Policy Group 27<sup>th</sup> Plenary Session, San Diego, CA, January 2002.

Keynote Speaker, ESAI Roundtable on Northeast Power Prices, Wakefield, MA, January 2002.

Keynote Speaker, Iberdrola Group Conference on Ten Years of Electricity Liberalization and Restructuring: Lessons Learned and Future Challenges, Madrid, Spain, December 2001.

Speaker, Commission de Regulation de l'Electricite, France, Conference on Market Design in Restructured Electricity Markets, Paris, France, November 2001.

Conference Co-Chair, Harvard Electricity Policy Group Special Session on Market Design, Cambridge, MA, September 2001.

Session Chair, National Association of Attorneys General, Energy Conference, Boston, MA, November 2001.

Speaker, Eighth Annual Kentucky Utility Conference, Lexington, KY, October 2001.

Conference Co-Chair, Harvard Electricity Policy Group, 26<sup>th</sup> Plenary Session, Washington, D.C., September 2001.

Speaker, Conference on Reform in the Mexican Electricity Industry, CIDE, Mexico City, September 2001.

Speaker, N.E. Environmental Protection Agency, Conference on "Keeping the Lights On and the Air Clean: Making the Energy-Environment Connection in New England," Cambridge, MA, July 2001.

Seminar Co-Chair, XII Repsol YPF - Harvard Seminar on Energy Policy, Energy Liberalization and Regulation: Revisiting Objectives and Results, Palma de Mallorca, Spain, July 2001.

Conference Co-Chair, Aspen Institute Program on Energy, the Environment, and the Economy, Forum on Energy Supplies and the Infrastructure, Aspen, CO, June 2001.

Conference Co-Chair, Harvard Electricity Policy Group 25<sup>th</sup> Plenary Session, Cambridge, MA, June 2001.

Speaker, Hale and Dorr Energy Group, Session on California and the Lessons for Massachusetts, Boston, MA, June 2001.

Speaker, Princeton University International Workshop on Privatization, Regulatory Reform, and Corporate Governance, Princeton, NJ, June 2001.

Speaker, EEI Transmission Policy Task Force Workshop, Milwaukee, WI, June 2001.

Speaker, 20th Annual Conference, Center for Research in Regulated Industries, Rutgers University, Tamiment, PA, May 2001.

Speaker, Conference on the Texas Electric Market and How It Compares to the California Market, University of Texas at Austin, TX, May 2001.

Speaker, NY State Associated Press Conference, Syracuse, N.Y., April 2001.

Speaker, American Power Conference, Chicago, IL, April 2001.

Conference Co-Chair, Harvard Electricity Policy Group Special Session, Cambridge, MA, April 2001.

Speaker, National Energy Marketers Conference, Washington, D.C., April 2001.

Speaker, Utilicon Conference, Auckland, New Zealand, March 2001.

Speaker, AEI/ Brookings Joint Center Conference, "The California Electricity Market Meltdown: The End of Deregulation?" Washington, D.C., March 2001.

Conference Co-Chair, Harvard Electricity Policy Group 25<sup>th</sup> Plenary Session, San Diego, CA, February 2001.

Conference Co-Chair, Speaker, Harvard-Japan Project on Energy and the Environment, Tokyo, January 2001.

Conference Co-Chair, Speaker, XI Repsol YPF - Harvard Seminar on Energy Policy, Buenos Aires, Argentina, December 2000.

Conference Co-Chair, Harvard Electricity Policy Group Special Session on RTOs, Houston, TX, December 2000.

Speaker, Infocast Conference on Congestion and Parallel Path Issues, Washington, D.C., November 2000.

Speaker: Energy Bar Association MidYear Meeting, Washington D.C., November 17, 2000.

Speaker, Northeast Power Coordinating Council, General Meeting 2000 on Restructuring Reliably, Boston, MA, September 2000.

Conference Co-Chair, Harvard Electricity Policy Group 23<sup>rd</sup> Plenary Session, Boston, MA, September 2000.

Speaker, IAEE Conference "Towards an Integrated European Energy Market," Bergen, Norway, August 2000.

Speaker, Workshop for Markets for Electricity Economics and Technology (MEET), Palo Alto, CA, August 2000.

Conference Co-Chair, Aspen Institute Energy Forum on the Future Structure of the Energy Industry, Aspen, CO, July 2000.

Speaker, Conference on "Market Surveillance in Ontario's Wholesale Electricity Market," Toronto, Ontario, Canada, June 2000.

Speaker, Conference on "The New Energy in the New Millennium in Asturias," Oveido, Spain, June 2000.

Speaker, Northeast Energy and Commerce Association Annual Conference: "Emerging Energy Markets: the Future is Now," Boxborough, MA, May 2000.

Conference Co-Chair, Harvard Electricity Policy Group 22<sup>nd</sup> Plenary Session, Cambridge, MA, May 2000.

Discussant, Brookings Conference on Economic Activity in Latin America, New York University, New York, NY, May 2000.

Speaker, EEL/ Energy Daily Conference on Market Monitoring, Washington, D.C., May 2000.

Keynote Speaker, National Regulatory Agency on Electrical Energy (ANEEL), Brazil, International Teleconference on Strategic Development, Belo Horizonte, Brazil and Cambridge, MA, April 2000.

Speaker, IIT/ American Power Conference 2000, "What Is the Optimum Structure for the Midwest Grid?" Chicago, Illinois, April 2000.

Speaker, International Bar Association, Section on Energy and Natural Resources Law 2000, Hong Kong, April 2000.

Speaker, Infocast Conference on Maximizing the Value of Transmission Assets," Washington, D.C., April 2000.

Speaker, POWER Research Conference on Electricity Industry Restructuring, University of California, Berkeley, CA, March 2000.

Conference Co-Chair, Harvard Electricity Policy Group Special Session on Transition, Dallas, TX, March 2000.

Speaker, Christian A. Johnson Distinguished Lecture Series, "Making Markets for Power," Colby College, Waterville, ME, March 2000.

Speaker, Cantor Lecture Series 2000 on Energy and Society, Royal Society for the Encouragement of Arts, Manufactures & Commerce (RSA), London, UK, February 2000.

Speaker, Harvard-Japan Project on Energy and the Environment, Tokyo Conference, Tokyo, Japan, January 2000.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group 21<sup>st</sup> Plenary Session, St. Helena, CA, January 2000.

Conference Co-Chair, Speaker: Harvard Electricity Policy Group Special Session on the State of the Wholesale Market: Reliability and Regional Trade, Chantilly, VA, November 1999.

Speaker, EEI Transmission Policy Task Force Meeting, Denver, CO, November 1999.

Speaker, Conference on the Impacts of Congestion Pricing on Competitive Markets, Washington, D.C., November 1999.

Speaker, Northeast Interregional ISO Coordination Conference, Albany, NY, October 1999.

Speaker, ISO New England Board of Directors Meeting, Chatham, MA, October 1999.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group 20<sup>th</sup> Plenary Session, Newport, RI, September 1999.

Speaker, Utility Futures Group Seminar, Energy Foundation, Chicago, IL, September 1999.

Speaker, Session Chair, XX USAEE North American Conference, Orlando, FL, August 1999.

Speaker, XVII Latin American Meeting of the Econometric Society, Latin American Electricity Restructuring, Cancun, Mexico, August 1999.

Speaker, NARUC Summer Meeting, Electricity Committee Session, San Francisco, CA, July 1999.

Speaker, Executive Session on Infrastructure in a Market Economy, Kennedy School of Government, Harvard University, Cambridge, MA, July 1999.

Speaker, Executive Session on Environmental Economics and Policy Analysis, Harvard Institute for International Development, Harvard University, Cambridge, MA, July 1999.

Speaker, International Program on Privatization and Regulatory Reform, Harvard Institute for International Development, Harvard University, Cambridge, MA, July 1999.

Speaker, Workshop on the Introduction to Energy Economics and Policy, sponsored by the Department of Energy, Mexico, Mexico City, Mexico, June 1999.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group 19<sup>th</sup> Plenary Session, Cambridge, MA, May 1999.

Speaker, Session Chair, Hudson Institute International Forum on Regulatory Policy: Regulators and the Regulated -- Making the Regulatory Process Work, Washington, D.C., April 1999.

Speaker, Conference on Independent Transmission Companies: A Better Alternative to ISOs? Las Vegas, NV, April 1999.

Speaker, Infocast Conference on Congestion Management, Washington, D.C., March 1999.

Conference Co-Chair, Harvard Electricity Policy Group, Special Session on Retail and Wholesale Transmission Markets, Washington, D.C., March 1999.

Speaker, Massachusetts Electric Restructuring Roundtable, Boston, MA, March 1999.

Speaker, New England Conference of Public Utilities Commissioners, Conference on Congestion Management, Nashua, NH, March 1999.

Speaker, ITAM Conference on Electricity Restructuring, Mexico City, Mexico, February 1999.

Speaker, EEL/Energy Daily Conference on Grid Regionalization, Washington, D.C., February 1999.

Speaker: IEEE Power Engineering Society Winter Meeting, New York, NY, February 1999.

Conference Co-Chair, Session Chair, Harvard Electricity Policy Group 18th Plenary Session: Retail Competition in Theory and in Practice, Carmel, CA, January 1999.

Speaker, Harvard-Japan Project on Energy and the Environment, Annual Conference, Tokyo, January 1999.

Speaker, Edison Electric Institute Chief Executive Conference, Phoenix, AZ, January 1999.

Session Chair, Speaker: Federal Energy Bar Association Mid Year Meeting, Washington, D.C., December 1998.

Conference Co-Chair, Speaker: Harvard Electricity Policy Group Special Seminar on Regional Boundaries, Regional Markets and Regional Institutions, Milwaukee, WI, November 1998.

Speaker, ICM Conference on ISOs, Chicago, IL, November 1998.

Speaker, Massachusetts Electric Utility Restructuring Roundtable, Boston, MA, October 1998.

Speaker, GPU Rate Conference, Short Hills, NJ, October 1998.

Keynote Speaker, Conference on Pricing and Tariffs: How Transmission Pricing and Constraints Will Impact Competitive Markets, Washington, D.C., September 1998.

Conference Co-Chair, Harvard Electricity Policy Group 17<sup>th</sup> Plenary Session, Cambridge, MA, September 1998.

Speaker, FACS Conference on Covering Electricity Restructuring, Bedford, MA, September 1998.

Speaker, Workshop on Environmental Economics & Policy Analysis, Harvard Institute for International Development, Cambridge, MA, July 1998.

Speaker, International Program on Privatization and Regulatory Reform, Harvard Institute for International Development, Cambridge, MA, July 1998.

Session Chair, Aspen Institute Program on Energy, the Environment, and the Economy, Aspen, CO, July 1998.

Speaker, Seminar on Electricity Deregulation, Universita della Svizzera Italiana, Lugano, Switzerland, June 1998.

Conference Co-Chair, Session Chair, IX Repsol-Harvard Seminar on Energy Policy: "Geopolitics, Energy and the Future," Santiago de Compostela, Spain, June 1998.

Keynote Speaker, Conference on Transmission Pricing, Denver, CO, June 1998.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group 16<sup>th</sup> Plenary Session, on Looking to National Electric Restructuring Legislation, Cambridge, MA, May 1998.

Keynote Speaker, GE MAPS Users' Conference, Washington, D.C., May 1998.

Speaker, Province of Ontario, Market Design Committee, International Workshop on Electricity Restructuring, Toronto, Canada, May 1998.

Speaker, Conference on Antitrust and Anticompetitive Behavior: The New Rules of the Game for Electric Power, Washington, D.C., May 1998.

Conference Co-Chair, Harvard Electricity Policy Group and Managing the Atom Project: Workshop on Utility Restructuring and Nuclear Power, Boston, MA, April 1998.

Conference Co-Chair, Harvard Electricity Policy Group, Special Seminar on Independent System Operators, Portland, OR, April 1998.

Speaker, American Power Conference, 60th Annual Meeting, Technology: Focus for Competition and Globalization, Chicago, IL, April 1998.

Speaker, Progress and Freedom Foundation Conference on Creating Competitive Markets in Electricity: Progress in the States, Washington, D.C., March 1998.

Speaker, IEEE Power Engineering Society Winter Meeting, Tampa, FL, February 1998.

Speaker, LeBoeuf Lamb Greene & MacRae Seminar on the Introduction of Independent Power and the Restructuring of the Electricity Sector, San Francisco, CA, January 1998.

Conference Co-Chair, Harvard Electricity Policy Group, 15<sup>th</sup> Plenary Session, San Diego, CA, January 1998.

Speaker, Harvard-Japan Project on Energy and the Environment Tokyo Seminar, Tokyo, Japan, January 1998.

Speaker, NARUC-DOE Fifth National Electricity Forum, "Creating a New Industry," Washington, D.C., December, 1997.

Speaker, Conference on Antitrust and Anticompetitive Behavior, Washington, D.C., December 1997.

Speaker, Harvard-Ukrainian National Security Program, Harvard University, Cambridge, MA, December 1997.

Conference Co-Chair, Harvard Electricity Policy Group, Special Session on "Looking Ahead to the New Electricity Market: What Should Regulators Do?" Washington, D.C., November, 1997.

Speaker, USAEE North American Conference on International Energy Markets, Competition and Policy, San Francisco, CA, September 1997.

Conference Co-Chair, Harvard Electricity Policy Group 14<sup>th</sup> Plenary Session, San Diego, CA, September 1997.

Speaker, Energy Daily Annual Retail Competition Conference: Defining Yourself in the Retail Marketplace, Washington, D.C., September 1997.

Speaker, International Program on Privatization and Regulatory Reform, Harvard Institute for International Development, Cambridge, MA, July 1997.

Speaker, Workshop on Environmental Economics and Policy Analysis, Harvard Institute for International Development, Cambridge, MA, July 1997.

Conference Co-Chair, VIII Repsol-Harvard Seminar on International Energy Markets, Seville, Spain, June 1997.

Keynote Speaker, Midwest Governors' Conference Annual Meeting, Kansas City, KN, June 1997.

Speaker, Seminar on International Electricity Restructuring, University of Zurich, Zurich, Switzerland, May 1997.

Speaker, New England Conference of Public Utility Commissioners, 50th Symposium, Newport, RI, May 1997.

Speaker, Meeting on Locational Marginal Pricing, Electric Clearing House, Houston, TX, May 1997.

Speaker, *The Electricity Journal* and National Economic Research Associates, Conference on Restructuring '97, Amelia Island, FL, April 1997.

Speaker, University of California Energy Institute, POWER Conference on Electricity Restructuring, Berkeley, CA, March 1997.

Speaker, Electric Power Research Institute, Workshop on Markets for Electricity: Economics and Technology, Stanford, CA, March 1997.

Conference Co-Chair, Harvard Electricity Policy Group, Seminar on Public Sector Strategies in a Restructured Electricity Industry, Nashville, TN, March 1997.

Speaker, Asia-Pacific Energy Forum, Sixth East Asia Electricity and Gas Forum, Tokyo, Japan, January 1997.

Speaker, Harvard-Japan Project on Energy and the Environment, Tokyo Conference, Tokyo, Japan, January 1997.

Conference Co-Chair, Harvard Electricity Policy Group, Plenary Session on ISO Governance, La Quinta, CA, January 1997.

Speaker, Massachusetts General Court Special Committee on Electric Utility Restructuring, Conference on Massachusetts Restructuring, Cambridge, MA, December 1997.

Speaker, Michigan State University Institute of Public Utilities, Conference on Surviving Regulatory Change and Competition, Williamsburg, VA, December 1997.

Speaker, Commonwealth of Virginia State Corporation Commission, Virginia Electricity Forum, Charlottesville, VA, November 1996.

Conference Co-Chair, Harvard Electricity Policy Group, Seminar on Regional Regulation, Cincinnati, OH, November 1996.

Keynote Speaker, Conference on Strategies for Structuring, Governing, and Operating Independent System Operators, Chicago, IL, October 1996.

Speaker, Southern Company College, Course on Emerging Competitive Energy Markets, Atlanta, GA, September 1996.

Conference Co-Chair, Harvard Electricity Policy Group, Plenary Session on Electricity Restructuring, Boston, MA, September 1996.

Speaker, Stockholm School of Economics, Conference on the Transition to a Deregulated and International Market for Electricity, Stockholm, Sweden, August 1996.

Speaker, National Association of Regulatory Utility Commissioners, Conference on ISOs and Regulation, Los Angeles, CA, July 1996.

Speaker, American Gas Association, Conference on Electric Industry Restructuring and FERC Order 888, Arlington, VA, July 1996.

Speaker, Aspen Institute Summer Energy Policy Forum, Aspen, CO, July 1996.

Speaker, Harvard Institute for International Development, Workshop on Environmental Economics and Policy Analysis, Cambridge, MA, June 1996.

Conference Co-Chair, Harvard Electricity Policy Group, Plenary Session on ISO Governance, Boston, MA, June 1996.

Speaker, Mid-America Regulatory Commissioners Conference, Assessing the Winds of Change, Chicago, IL, June 1996.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group, Plenary Session, Boston, MA, June 1996.

Speaker, Special Libraries Association, Annual Meeting, Boston, MA, June 1996.

Conference Co-Chair, Speaker, Repsol-Harvard Seminar on Energy Policy, Granada, Spain, May 1996.

Speaker, New England Conference of Public Utilities Commissioners, Annual Symposium, Manchester, VT, May 1996.

Speaker, Federal Energy Bar Association, Annual Meeting, Washington, D.C., May 1996.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group, Session on Residual Monopoly Services, Pittsburgh, PA, April 1996.

Speaker, U.S. Department of Justice/ Federal Trade Commission Workshop on Electricity Restructuring, Washington, D.C., April 1996.

Speaker, Centre for Global Energy Studies, Sixth Annual Conference, London, UK, April 1996.

Speaker, Electric Policy Research Institute, Conference on Innovative Approaches to Electricity Pricing, La Jolla, CA, March 1996.

Speaker, Harvard-Japan Project on Energy and the Environment, Tokyo Conference, Tokyo, Japan, January 1996.

Speaker, East Asian Electricity Restructuring Forum Conference, Bangkok, Thailand, December 1995.

Speaker, IEEE International Forum on Deregulation and Re-structuring in the Electric Power Sector, Belo Horizonte, Brazil, November 1995.

Speaker, Seminar on the Revolution in the Electric Power Industry, Carnegie Mellon University, Pittsburgh, PA, November, 1995.

Speaker, The New Hampshire General Court, The Retail Wheeling and Restructuring Study Committee, Concord, NH, November, 1995.

Speaker, Energy Policy Seminar, American Enterprise Institute, Washington, D.C., November, 1995.

Speaker, 1995. Indiana Energy Conference, Indianapolis, IN, November 1995.

Speaker: INFORMS National Meeting, New Orleans, LA, October 1995.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group Plenary Session, Chicago, IL, October 26-27, 1995.

Speaker, MIT Conference on Keeping the Lights On: Technical and Institutional Issues in a Restructured Electricity Industry, Cambridge, MA, October 1995.

Speaker, The Energy Council of Rhode Island, Annual Membership Meeting, Warwick, RI, October 1995.

Session Chair, Ninth Annual Northeast Electricity Policy Executive Session, Lenox, MA, October 1995.

Speaker, EPRI Conference on Achieving Success in Evolving Electricity Markets, Atlanta, GA, October 1995.

Speaker, North American Electric Reliability Council, Board of Trustees Meeting, Princeton, NJ, October 1995.

Speaker, National Conference of State Legislatures, Videoconference on Fuel for a Competitive Northeast, Washington, D.C., September 1995.

Speaker, Center for Business Intelligence, Conference on Valuing and Recovering Stranded Costs in the New Age of Competitive Power, Washington, D.C., September 1995.

Speaker, Jefferson Energy Foundation, Conference on Energy and Power: Succeeding in the New Competitive Era, Washington, D.C., September 1995.

Speaker, Institute for International Research, Conference on Transmission Access and Pricing: Responding to the FERC Mega NOPR, Washington, D.C., September 1995.

Speaker, Energy Generation Association, Summer 1995. Meeting, White Sulfur Springs, WV, July 1995.

Speaker, Aspen Institute on Energy, Environment, Economy, Conference on Electric Utility Industry Restructuring, Aspen, CO, July 1995.

Session Chair, International Association for Energy Economics, 18th International Conference, Washington, D.C., July 1995.

Speaker, Harvard Institute for International Development, Workshop on Energy Economics and Policy Analysis, Cambridge, MA, June 1995.

Conference Co-Chair, Speaker, Repsol-Harvard Seminar on International Energy Markets, S'Agaro, Spain, June 1995.

Speaker, University of Zurich, Institute for Economic Research, Seminar on Electricity Markets, Zurich, Switzerland, June 1995.

Speaker, East Asian Electricity Restructuring Forum, Beijing, China, May 1995.

Speaker, American Enterprise Institute, Energy Policy Forum, Washington, D.C., May 1995.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group Plenary Session, Cambridge, MA, May 1995.

Keynote Speaker, Public Utilities Research Center, University of Florida, Annual Conference on Market and Technological Convergence: Implications for Regulation, Gainesville, Florida, April 1995.

Speaker, Oak Ridge National Laboratories, Seminar on Electricity Transmission and Emerging Competition, Oak Ridge, Tennessee, April 1995.

Speaker, New Jersey Board of Public Utilities, Electric Power Industry Conference, Newark, N.J., March 1995.

Speaker, Electricity Consumers Resource Council, Workshop on Pools, Washington, D.C., February 1995.

Speaker, DOE National Energy Modeling Systems/ AEO Conference, Washington, D.C., February 1995.

Speaker, East Asian Electricity Restructuring Forum, Tokyo, January 1995.

Speaker, Harvard-Japan Conference on Energy and Environment, Tokyo, January 1995.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group Plenary Session, New Orleans, Louisiana, January 1995.

Speaker, New Jersey Board of Public Utilities, Conference on Electric Utility Restructuring, Newark, New Jersey, December 1994.

Speaker, Michigan State University, Institute of Public Utilities, 1994. Annual Conference, Williamsburg, VA, December 1994.

Speaker, New England Governors' Conference, Inc., Power Planning Committee, Meeting with New England Conference of Public Utilities Commissioners, Durham, NH, November 1994.

Speaker, University of Toronto, Faculty of Law, Seminar and Presentations, Toronto, Canada, November 1994.

Speaker, Federal Energy Bar Association, Mid Year Meeting on Turmoil for the Utilities, Washington, D.C., November 1994.

Speaker, U.S. Department of Energy/National Association of Regulatory Utility Commissioners, National Electricity Forum, Washington, D.C., November 1994.

Speaker, Association of Edison Illuminating Companies, Power Generation Committee, Meeting, Boston,

MA, October 1994.

Speaker, Edison Electric Institute, Fall Legal Conference, New Orleans, Louisiana, October 1994.

Speaker, National Independent Energy Producers, Fall Conference, White Sulfur Springs, West Virginia, October 1994.

Speaker, Wisconsin Public Utility Institute, Conference on Public Policies toward Competition in the Electric Power Industry, Madison, Wisconsin, October, 1994.

Speaker, American Enterprise Institute, Energy Policy Forum, Washington, D.C., September 1994.

Speaker, Energy Daily Conference on The Impact of Retail Competition on the Electric Markets, San Diego, CA, September 1994.

Speaker, Southern Company Executive Forum, Atlanta, Georgia, September 1994.

Session Chair, Aspen Institute Workshop on the Electric Industry Moves Into Competitive Markets, Aspen, Colorado, July 1994.

Speaker, National Association of Regulatory Utility Commissioners Committee on Electricity, Summer Meeting, San Diego, CA, July 1994.

Speaker, New York State Energy Research and Development Authority and Niagara Mohawk Conference on The Electric Industry in Transition, Albany, New York, June 1994.

Co-Chair, Speaker, Repsol-Harvard Conference on World Oil Markets, Barcelona, Spain, June 1994.

Speaker, TAPS Conference on Transmission, Washington, D.C., May 1994.

Speaker, Exnet Conference on Transmission Access and Pricing, Washington, D.C., April 1994.

Speaker, Joint Institute for Energy & Environment, University of Tennessee, Conference on Twenty Years After the Energy Shock: How Far Have We Come? Where Are We Headed? Knoxville, Tennessee, April 1994.

Speaker, Digital Equipment Corporation and Duke Engineering Conference on Utilities 2000, The Challenge of Change, Charlotte, North Carolina, March 1994.

Session Chair, National Independent Energy Producers Winter Meeting, Washington, D.C., January 1994.

Speaker, Harvard-Japan Project Conference on Energy and the Environment, Tokyo, Japan, January 1994.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group Plenary Session, San Diego, CA, January 1994.

Speaker, California Foundation on the Environment and the Economy, Executive Briefing on the British Electrical Energy System, San Francisco, CA, January 1994.

Speaker, Northeast Utilities Executive Planning Conference, Westbrook, Connecticut, November 1993.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group Plenary Session, Cambridge, MA, October 1993.

Session Chair, Harvard Northeast Utility Policy Executive Session, Southbury, Connecticut, October 1993.

Speaker, Canadian Association of Members of Public Utility Tribunals, Annual Conference, Ottawa, Canada, September 1993.

Speaker, Harvard University Fairbank Center Meeting, Economic Development in Southeast Asia, New York, September 1993.

Speaker, Session Chair, International Association for Energy Economics, Annual International Conference, Bali, Indonesia, July 1993.

Session Chair, Aspen Institute, Policy Issue Forum on Energy, Environment, and the Economy, Aspen, Colorado, July 1993.

Conference Co-Chair, Speaker, Harvard Electricity Policy Group Plenary Session, Cambridge, MA, July 1993.

Speaker, Center for Regulatory Studies, University of Illinois, Conference on Electric Transmission in the 1990s, Oak Brook, Illinois, May 1993.

Speaker, American Enterprise Institute, Energy Policy Forum, Washington, D.C., May 1993.

Speaker, Edison Electric Institute, Finance Committee Annual Meeting, New York, May 1993.

Participant, U.S. Office of Technology Assessment, Conference on Climate Treaties and Models, Washington, D.C., April 1993.

Speaker, Conference on Regional Transmission Groups: Creation, Regulation, Access, and Pricing, Washington, D.C., March 1993.

Speaker, American Bar Association Conference on Electricity Law and Regulation, Denver, Colorado, February 1993.

Speaker, Harvard-Japan Project Conference on Energy and the Environment, Tokyo, Japan, January 1993.

Speaker, Coopers & Lybrand Electric and Gas Industry Key Issues Forum, McLean, Virginia, December 1992.

Speaker, University of Rochester, W. Allen Wallis Institute of Political Economy, Inaugural Lecture Program, Rochester, New York, December 1992.

Speaker, Digital Equipment Corporation Conference on Achieving Business Excellence in Utilities, Atlanta, Georgia, November 1992.

Speaker, University of Toronto, Conference on The Post-Communist Transformation: Emerging Economic, Legal, and Business Implications, Toronto, October 1992.

Session Chair, Center for Business and Government, Harvard University, Northeast Electric Utility Policy Executive Session, Cooperstown, New York, October 1992.

Panel Member, Brookings Panel on Economic Activity, Brookings Institute, Washington, D.C., September 1992.

Speaker, Conference on Energy Cooperation in Central Asia and the Caucasus, Teheran, Iran, September

1992.

Speaker, Aspen Institute Forum on Environmental Policy and Governance: Economic Implications and Energy System Impacts, Aspen, Colorado, August 1992.

Speaker, Conference on Ukraine: The New Business Partner, Kiev, Ukraine, June 1992.

Speaker; Session Chair, IAEE Conference on Coping with the Energy Future: Markets and Regulations, Tours, France, May 1992.

Speaker, POWER Conference on Innovative Approaches to Energy and Environmental Planning in CA, Sacramento, CA, April 1992.

Speaker, International Bar Association, Section on Energy and Natural Resources Law Conference, Washington D.C., April 1992.

Session Chair Conference on Market-Based Mechanisms for Addressing Global Climate Change, Washington D.C., March 1992.

Speaker, National Independent Energy Producers Membership Meeting, Washington, D.C., January 1992.

Speaker, Harvard-Japan Conference on Energy and the Environment, Tokyo, Japan, January 1992.

Speaker, Symposium on Strategic Security of Ukraine, Kiev, Ukraine, December 1991.

Speaker, Royal Institute of International Affairs, Conference on Energy Policy: Market-Led or Government-Driven? London, December 1991.

Speaker, International Association of Energy Economics, North American Conference, Chicago, Illinois, November 1991.

Speaker, Edison Electric Institute, Strategic Planning Services Committee, Fall Conference, Washington D.C., November 1991.

Session Chair, Center for Business and Government, Harvard University, Northeast Electric Utility Policy Executive Session, Killington, Vermont, October 1991.

Speaker, Institute for East-West Security Studies Meeting on Economic Reform in Ukraine, New York, October 1991.

Speaker, Brookings Panel on Economic Activity, Symposium on the Soviet Economy after Communism, Brookings Institute, Washington, D.C., September 1991.

Speaker, American Bar Association, Section on Public Utility, Communications, and Transportation Law, Atlanta, Georgia, August 1991.

Speaker, Aspen Institute Forum on Oil, Energy Policy and National Security--After the Gulf Crisis, Aspen, Colorado, July 1991.

Speaker, Harvard-Repsol Conference on Oil Markets in the 1990s, Segovia, Spain, June 1991.

Conference Co-Chair, Project on Economic Reform in Ukraine, Conference on Military Conversion, Kiev, Ukrainian SSR, May 1991.

Speaker, Workshop on Social and Political Consequences of Decentralization and Privatization, Gdansk,

Poland, April 1991.

Speaker, Harvard-Japan Project Conference on Energy and the Environment, Tokyo, Japan, January 1991.

Speaker, Conference on Infrastructure for the 1990.s, Harvard University, Cambridge, MA, November 1990.

Conference Co-Chair, Conference on Economic Reform in Ukraine, Harvard University, Cambridge, MA, November 1990.

Speaker, Workshop on Economic/Energy/Environmental Modeling for Climate Policy Analysis, MA Institute of Technology, Washington, D.C., November 1990.

Speaker, California Foundation on the Environment and the Economy, Conference on Electricity, Monterey, CA, May 1990.

Speaker, Independent Petroleum Association of America, Conference on Supply and Demand, Boston, MA, May 1990.

Speaker, Vinson & Elkins Seminar on Oil Markets, Houston, Texas, April 1990.

Speaker, American Gas Association Seminar on Gas Demand Modeling and Forecasting, Houston, Texas, February 1990.

Speaker, Harvard-Japan World Oil Market Study Seminar, Tokyo, Japan, January 1990.

Speaker, Harvard-Repsol Conference on International Energy, Toledo, Spain, November 1989.

Speaker, International Symposium on Petroleum Economics, Laval University, Quebec, September 1989.

Speaker, IAEE Conference on North American Natural Gas Supply and Markets, Denver, Colorado, September 1989.

Speaker, Harvard Utility Forum/ Harvard Gas Forum Seminar, Energy and Environmental Policy Center, Harvard University, Cambridge, MA, June 1989.

Speaker, California Public Utilities Commission, Workshop on Capacity Priority Allocation, San Francisco, CA, June 1989.

Conference Chair, Speaker, International Oil and Gas Conference, Energy and Environmental Policy Center, Harvard University, Cambridge, MA, June 1989.

Speaker, U.S. House of Representatives Energy Security Working Group meeting, Washington, D.C., May 1989.

Speaker, Federal Energy Regulatory Commission Hearings on Firm Natural Gas Transportation and Priority Capacity Allocation, Washington, D.C., March 1989.

Speaker, First Boston/Putnam, Hayes & Bartlett Utility CEO Forum, Key Largo, Florida, February 1989.

Speaker, Harvard Utility Forum/Harvard Gas Forum Seminars, Energy and Environmental Policy Center, Harvard University, Cambridge, MA, February 1989.

Speaker, American Bar Association, Electric Utilities Group, Conference on Electricity Pricing, San Francisco, CA, January 1989.

Speaker, Institut Francais du Petrole, Seminar on World Oil Markets, Paris, France, December 1988.

Speaker, Southwestern Legal Foundation, National Institute on Natural Gas Law, Dallas, Texas, November 1988.

Speaker, Putnam, Hayes and Bartlett Seminar on Law and Economics, Phoenix, Arizona, September 1988.

Speaker, Harvard-Japan World Oil Market Study Seminar, Tokyo, Japan, September 1988.

Session Chair, Gas Research Institute Energy Seminar, Hilton Head, South Carolina, August 1988.

Speaker, Oklahoma Independent Petroleum Association Conference, Tulsa, Oklahoma, July 1988.

Speaker, National Academy of Engineering Symposium on An Energy Agenda for the 1990s, Beckman Center, Irvine, CA, May 1988.

Speaker, Harvard-Repsol Seminar on International Energy, Toledo, Spain, April 1988.

Speaker, EEP/ Texas Oil and Gas Seminar, Dallas, Texas, March 1988.

Speaker: University of Houston Conference on Oil Tariff Policy, Houston, Texas, March 1988.

Speaker, Harvard Utility Forum/ Harvard Gas Forum Seminar, Palm Beach, Florida, February 1988.

Speaker, Southern Economic Association Conference, Session on the Future of OPEC, Washington, D.C., November 1987.

Speaker, Boston Gas Company Planning Conference, New Seabury, MA, October 1987.

Speaker, Ashland Exploration Company Conference on Oil Market Development, San Antonio, Texas, October 1987.

Speaker, Harvard-Japan Project on International Oil, Seminar, Tokyo, Japan, October 1987.

Session Chair, Harvard Executive Session on Northeast Electric Power Policy, Martha's Vineyard, MA, September 1987.

Speaker, American Jewish Congress Governing Council, Effects of an Oil Tariff, New York, New York, September 1987.

Speaker, Stockholm School of Economics Seminar on International Energy Demand, Stockholm, Sweden, August 1987.

Session Chair, International Association of Energy Economists North American Conference on The Growth of Risk, Calgary, Canada, July 1987.

Speaker, South Texas College of Law, Advanced Oil and Gas Course, Houston, Texas, June 1987.

Speaker, New York University Energy Forum on U.S. and World Oil Reserves, New York, New York, June 1987.

Speaker, Potomac Electric Power Company Conference on Future Fuel Prices, Washington D.C., May 1987.

Speaker, International Oil and Gas Conference on Energy Security Revisited, Energy and Environmental Policy Center, Harvard University, Cambridge, MA, May 1987.

Speaker, Harvard/Federal Energy Regulatory Commission Seminar on Natural Gas Regulation, Cambridge, MA, May 1987.

Speaker, Northwestern University Conference on Petroleum Economics and Management, Evanston, Illinois, April 1987.

Speaker, Harvard Japan Oil Market Study Workshop, Harvard University, Cambridge, MA, March 1987.

Speaker, Washington Energy Conference on U.S. Energy Security, Johns Hopkins University School of Advanced International Studies, Washington, D.C., March 1987.

Panelist: Conference on Venezuela/ Energy Issues, Harvard Institute for International Development, Cambridge, MA, March 1987.

Speaker, Conference on Oil Tariff Policy, Washington D.C., December 1986.

Speaker, Session Chair, International Association of Energy Economists Eighth Annual North American Conference on the Changing World Energy Economy, Cambridge, MA, November 1986.

Speaker: Cabot Corporation Seminar on International Investments and Operations, Boston, MA, October 1986.

Session Chair, World Energy Conference, 13th Congress, on Energy: Needs and Expectations, Cannes, France, October 1986.

Speaker, Session Chair, Harvard Executive Session on Northeast Electric Power, Martha's Vineyard, MA, September 1986.

Speaker, Aspen Institute Summer Forum on the Policy Implications of Declining Oil Prices, Aspen, Colorado, August 1986.

Speaker, The Johns Hopkins School of Advanced International Studies/ IAEE Workshop on The Oil Price Collapse: Impact on Demand, Washington, D.C., June 1986.

Speaker, Electric Power Research Institute Conference, Williamsburg, Virginia, May 1986.

Session Chair, Harvard International Oil Conference on Managing Oil Market Risk, Cambridge, MA, May 1986.

Speaker, RAND Conference on International Economic Surprises, Santa Monica, CA, December 1985.

Session Chair, EPRI/Harvard Workshop on Risk Management: Charting A Research Agenda for the Future, Cambridge, MA, October 1985.

Speaker, Executive Seminar at Stanford University: Energy Decisionmaking in the 80s, Stanford, CA, July 1985.

Speaker, Industrial Bank of Japan, Middle East Seminar, Tokyo, June 1985.

Speaker, International Association of Energy Economists Conference, Bonn, Federal Republic of Germany,

June 1985.

Speaker, Interstate Natural Gas Association of America Conference, Colorado Springs, April 1985.

Speaker, Synfuels '85 Conference, sponsored by the National Council on Synthetic Fuels Production and Synthetic Fuels Research Institute, Hilton Head, South Carolina, April 1985.

Participant, Stanford University Trinational Energy Policy Workshop, Stanford CA, February 1985.

Speaker, Brookhaven Conference on Energy Planning Under Uncertainty, Brookhaven, New York, August 1984.

Speaker, RFF Conference on Energy Security, Washington, D.C., June 1984.

Speaker, Nordic Council Meeting on Energy Planning Under Uncertainty, Kungälv, Sweden, June 1984.

Speaker, Energy Bar Association, Washington, D.C., January 1984.

Speaker, American Economics Association, December 1983.

Speaker, ORSA/TIMS Meeting, Chicago, Illinois, November 1983.

Speaker, National Defense University, Washington, D.C., 1983.

Speaker, Stanford University Executive Session on Energy Investments in the 1980s, Stanford, CA, 1982.

Speaker, ORSA/TIMS, Joint National Meeting, CA, 1982.

Speaker, Brookings Institute Seminar, Washington, D.C., 1982.

Speaker, Workshop on Energy Policy in the US and China, Peoples Republic of China, 1982.

Speaker, Energy and Security Workshop, Tokyo, Japan, 1982.

Speaker, Department of Energy Symposium on DOE's New Integrated Forecasting System, Washington, D.C., 1982.

Speaker, Harvard University, Kennedy School of Government, Conference on Energy and Security in the 1980s, Cambridge, MA, 1982.

Speaker, Harvard University, Kennedy School of Government Executive Session on Nuclear Power and Energy Availability, Cambridge, MA, 1982.

Member, Synthetic Fuels Study Panel, Synthetic Fuels Corporation, 1982.

Speaker, Institute of Gas Technology, Conference on Energy Modeling, 1982.

Speaker, IAEE Panel on Synthetic Fuels Policy, Houston, Texas, 1982.

Speaker, European American Institute, 1981.

Speaker, Security Conference on Asia and the Pacific, 1981.

Speaker, Volvo Conference on European Energy Needs, 1981.

Speaker, Stanford Conference on Energy Productivity, Stanford, CA, 1981.

Speaker, Symposium on Modeling of Large-scale Systems, IIASA, Laxenburg, Austria, 1980.

Speaker, University of Southern CA, Center for the Study of the American Experience, Annenberg School of Communications, Conference on America in an Era of Plentiful But Higher-Priced Energy, 1979.

Speaker, TIMS/ORSA Meeting, New Orleans, Louisiana, 1979.

Discussant, Resources for the Future/NSF Conference on the Implications of Potential Resource and Environmental Constraints for Growth, San Francisco, CA, 1979.

Session Chair, The Institute of Management Sciences XXIV International Meeting, Honolulu, Hawaii, 1979.

Speaker, Alliance to Save Energy, Symposium, Dumbarton Oaks, Virginia, 1979.

Program Co-Chair, IAEE/RFF Conference on International Energy Issues, Washington D.C., 1979.

Speaker, Aspen Institute Conference on Governmental Issues Concerned with the Siting of Nuclear Waste, Aspen, Colorado, 1979.

Speaker, Triennial Meeting of the International Federation of Operations Research Societies, Toronto, Canada, 1978.

Speaker, Bay Area Chapter, International Association of Energy Economists, San Francisco, CA, 1978.

Speaker, 5th Annual Energy Technology Conference, Washington, D.C., 1978.

Speaker, IEEE Conference, New Orleans, 1977.

Speaker, American Economics Association Conference, New York, 1977.

Speaker, Annual Meeting of National Association of Business Economists, 1977.

Participant, Program Committee, Lawrence Symposium on Systems and Decision Sciences, 1977.

Speaker, TIMS Conference on Energy and the Economy, San Francisco, 1977.

Speaker, American Mathematical Society Short Course on Energy, 1976.

Participant, Washington Operations Research Council, 1976.

Participant, National Petroleum Refiners Association, 1975.

Participant, TIMS New York Regional Chapter, 1975.

Speaker, Energy Analysis Meeting of International Federation of Institutes of Advanced Study, 1975.

Participant, Friends of Optimization, 1975.

Participant, ORSA/TIMS Conference, Panel on Energy Use, New York, 1975.

Session Chair, ORSA/TIMS Conference, Panel on Large Energy Models, Las Vegas Nevada, 1975.