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Professional Experience

- Harvard University**
2011- Adjunct Lecturer in Public Policy. Teach courses in microeconomics and benefit-cost analysis.
- Bentley University**
2010-2011 Adjunct Associate Professor. Taught course on Principles of Microeconomics, spring semester of 2009-2010, fall semester of 2010-2011, and fall semester of 2011-2012.
- NERA Economic Consulting**
2009-2013 Special Consultant. Advised on projects in Environment, Energy, and Antitrust.
2008-2009: Vice President. Directed projects in Environment, Energy, and Antitrust.
- LECG, LLC**
2004-2008 Principal to Director. Directed projects in antitrust and competition policy for cases in United States, Europe, and Korea.
- NERA Economic Consulting**
1989-2004 Senior Consultant to Vice President. Directed projects in Environment, Energy, and Antitrust.
- Harvard University**
1988-89 Director, Administrative Planning and Evaluation. Directed economic and financial analyses related primarily to university’s real property holdings (academic, administrative, and commercial).
- Harvard University**
1977-88 Instructor to Assistant and Associate Professor (1985-) of Public Policy in the J.F. Kennedy School of Government. Taught courses in microeconomics, quantitative methods, benefit-cost analysis, and energy and environmental economics. Conducted research in environmental economics. Administrative: Director of Harvard Faculty Project on Regulation, Director Summer Program for Public Administrators, Chair of Admissions Committee, Vice-Chair of Ph.D programs. On leave for government service, 1983-85.

U.S. Environmental Protection Agency
1983-1985 Director, Economic Analysis Division, Office of Policy, Planning and Evaluation. Directed work of three branches responsible for development of methods for evaluating costs and benefits, including university research program; review of regulatory analyses from EPA program office; conduct of benefit cost and cost-effectiveness analyses of selected regulations and policies; analysis of issues related to climate change; and economic impact studies. Received three agency awards for work on lead in gasoline, EDB (pesticide), and risk management policy, respectively.

Education

Harvard University

Ph.D. in Public Policy, 1981

Harvard University

Master in Public Policy (MPP), 1975

Stanford University

BA, with Distinction and Honors in Political Science, 1973

Honors and Professional Activities

Member, American Economic Association.

Member Lead Subcommittee, National Advisory Council Environmental Policy and Technology, 1993.

Silver Medal for analysis of regulatory options for lead in gasoline, U.S. EPA, 1984.

Silver Medal for analysis of regulatory options for ethylene dibromide, U.S. EPA, 1984.

Bronze Medal for work on risk management and risk assessment, U.S. EPA, 1984.

Assistant Editor, Public Policy, 1978-81.

Referee for professional journals.

Phi Beta Kappa, Stanford University, 1973.

Lindsey Peters Memorial Award in American Government, Stanford University, 1970.

National Merit Scholar, 1969.

Publications

“Using Emission Trading to Combat Climate Change: Programs and Key Issues” (with D. Harrison, P. Klevnas, and D. Radov), *Environmental Law Reporter*, v. 38, n. 6 (June 2008), 10367-10384)

“United States v. Microsoft: Did Consumers Win?” (with D. Evans and R. Schmalensee), *Journal of Competition Law and Economics*, 1(2005), 497-539.

“The Rise and Fall of Leaders in Personal Computer Software” (with D. Evans and B. Reddy), in D. Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*. Norwell, MA: Kluwer Academic Publishers, 2002.

“Why Does Microsoft Charge So Little for Windows” (with B. Reddy and D. Evans), in D. Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*. Norwell, MA: Kluwer Academic Publishers, 2002.

“An Analysis of the Government’s Economic Case in *U.S. v. Microsoft*” (with D. Evans and R. Schmalensee), in *Antitrust Bulletin*, Summer 2001, 163-251. (Reprinted in D. Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*. Norwell, MA: Kluwer Academic Publishers, 2002.)

“*U.S. v. Microsoft*: Remedy or Malady?” (with K. Elzinga and D. Evans), in *George Mason Law Review*, 9 (Spring 2001), 633-90. (Reprinted in D. Evans (ed.), *Microsoft, Antitrust and the New Economy: Selected Essays*. Norwell, MA: Kluwer Academic Publishers, 2002.)

“Getting the Facts Straight on Microsoft: A Reply to Stelzer.” *Policy Matters*, 01-13, AEI-Brookings Joint Center for Regulatory Studies, May 2001.

“A Monopolist Would *Still* Charge More for Windows: A Comment on Werden” (with B. Reddy, D. Evans, and R. Schmalensee), in *Review of Industrial Economics*, 18 (May 2001), 263-68.

“A Monopolist Would *Still* Charge More for Windows: A Comment on Werden’s Reply” (with B. Reddy, D. Evans, and R. Schmalensee), in *Review of Industrial Economics*, 18 (May 2001), 273-74.

“*U.S. v. Microsoft*: Hard Competition is Good for Consumers,” *Computer Industry Committee Newsletter*, American Bar Association, v. 5 (Spring 2000), 13-17.

“Environmental Adders in the Real World” (with D. Harrison), in *Resources and Energy Economics*, 1997.

“Lead in Gasoline,” in R. Morgenstern. (ed.), *Economic Analyses at EPA: Assessing Regulatory Impact*. Washington, DC: Resources for the Future, 1997.

“Designing a Trading Program for Emissions of Nitrogen Oxides in the Northeastern United States,” in C. Jeanrenaud (ed.), *Environmental Policy Between Regulation and Market*. Basle, Switzerland: Birkhauser, 1997.

“Demand-Side Management: An Nth-Best Solution?” in R.H. Socolow (eds.), *Annual Review of Energy and the Environment*. Palo Alto, CA: Annual Review, Inc., 1995.

“Positive Externalities and Other Benefits from Electricity: Should They be Reflected in Externality Adders?” in *Technical Review of Externalities Issues*. Palo Alto, CA: Electric Power Research Institute, TR-104813, December 1994.

“Demand-Side Management: Overcoming Market Barriers or Obscuring Real Costs?” in *Energy Policy* 22 (October 1994).

“Risk-Based Priorities and Environmental Justice,” in A.M. Finkel and D. Golding (eds.) *Worst Things First?* Washington, DC: Resources for the Future, 1994.

“Comparing Risk Standards: The Superiority of a Benefit-Cost Approach,” in *Regulation* Fall 1991, 85-94.

“Potential Cost Savings and Environmental Effects of Using Emissions Trading to Manage NO_x in Ontario,” (with D. Harrison), in R.E. Clement (Ed.) *Air and Waste Management Through the 90's*, Air and Waste Management Association, Ontario, Canada, April 1991.

“Market-Based Approaches for Environmental Protection,” (with D. Harrison), in B. Gentry (Ed.), *Special Report on Global Environmental Issues*, Washington, DC: Bureau of National Affairs, 1990.

“The Perils of Prudence: How Conservative Assessments Distort Regulation,” (with R. Zeckhauser), *Regulation* Nov/Dec 1986, 13-24. Reprinted in *Regulatory Toxicology and Pharmacology* 8(1988).

“The Dangers of Caution: Conservatism in Assessment and the Mismanagement of Risk,” (with R. Zeckhauser), in V.K. Smith (Ed.), *Advances in Microeconomics*, JAI Press, Greenwich CT, 1986, pp. 55-82. (Earlier version presented at joint session of American Economic Association and Association of Environmental and Resource Economists, Dallas TX, December 1984).

Costs and Benefits of Reducing Lead in Gasoline: Final Regulatory Impact Analysis (coauthor), Economic Analysis Division, U.S. Environmental Protection Agency, Washington, DC, March 1985.

“The Costs and Benefits of the New U.S. Phasedown of Lead in Gasoline,” in M. Baier (Ed.), *Energy and Economy Global Interdependencies*, Volume 9: Implications of Environmental Issues, International Association of Energy Economists, 1985. Presented at IAEE Conference, Bonn, June 3-5, 1985.

“Benefit-Cost Analysis of Environmental Regulation: Case Studies of Hazardous Air Pollutants,” (with D. Harrison and J. Haigh), *Harvard Environmental Law Review* 8(1984). Reprinted in J.M. Gillroy and M. Wade (Eds.), *The Moral Dimensions Of Public Policy Choice: Beyond the Market Paradigm*. Pittsburgh and London: University of Pittsburgh Press, 1992, 15-57.

Targeting Economic Incentives for Environmental Protection, MIT Press, Cambridge, MA, 1984.

“The Regulation of Airborne Benzene,” in T. Schelling (Ed.), *Incentives for Environmental Protection*, MIT Press, Cambridge, MA, 1983. (Revision of report submitted to U.S. Environmental Protection Agency, 1981.)

“The Importance of Exposure in Evaluating and Designing Environmental Regulations: A Case Study,” *American Economic Review, Papers and Proceedings* 72(May 1982). (Presented at meetings of the American Economic Association, Washington, DC, December 1981.)

“Targeting Transfers Through Restrictions on Recipients,” (with R. Zeckhauser), *American Economic Review, Papers and Proceedings* 72(May 1982). (Presented at meetings of American Economic Association, Washington, DC, December 1981.) Reprinted in D. Weisbach (ed.) *Economics of Tax Law*, Edward Elgar Publishing, Cheltenham, U.K., 2008

“Legislative Choice of Regulatory Forms: A Comment on Fiorina,” *Public Choice* 39(1982). (Presented at Carnegie-Mellon Conference on Political Economy, Pittsburgh, PA, May 1981.)

“OSHA After a Decade: A Time for Reason,” (with R. Zeckhauser), in L. Weiss and M. Klass (Eds.), *Case Studies in Regulation*, Little, Brown and Company, Boston, 1981.

Choosing Regulatory Targets and Instruments, with Applications to Benzene, Ph.D. Thesis, Harvard University, 1981.

“Optimal Resource Allocation in Community Hypertension Programs,” (with M. Weinstein), *Management Science* (October 1978). Reprinted in N.K. Kwak et al. (Eds.), *Operations Research: Applications in Health Care Planning*, University Press of America, 1984.

“The Occupational Safety and Health Administration: An Overview,” (with R. Zeckhauser), in *The Study of Federal Regulation of the Senate Committee on Governmental Affairs*, Government Printing Office, 1978. Excerpts reprinted in B. Mintz, *OSHA: History, Law, and Policy*, Bureau of National Affairs, 1984.

“Lessons from the Economics of Safety,” (with R. Zeckhauser), in S. Rottenberg (Ed.), *The Economics of Medical Malpractice*, American Enterprise Institute, Washington, DC, 1978. (Presented at American Enterprise Institute Conference on Medical Malpractice, Washington, DC, December 1976.)

“Coalitions and Learning: Applications to a Simple Game in the Triad,” *Behavioral Science* 22(November 1977).

“Government Comes to the Workplace: An Assessment of OSHA,” (with R. Zeckhauser), *The Public Interest* 49(Fall 1977). Excerpts reprinted in B. Mintz, *OSHA: History, Law, and Policy*, Bureau of National Affairs, 1984.

“Stockpiling Strategies and Cartel Prices,” (with R. Zeckhauser), *Bell Journal of Economics* 8(Spring, 1977). (Earlier version issued as Public Policy Discussion Paper 43D, John F. Kennedy School of Government, Harvard University, June 1976. Preliminary version presented at joint session of the American Economic Association and the Association of Environmental Economists, Dallas, TX, December 1975.)

“Optimal Allocation for the Management of Hypertension in a Community,” (with M. Weinstein and W. Stason), in M. Weinstein and W. Stason, *Hypertension: A Policy Perspective*, Harvard University Press, Cambridge, MA, 1976.

“Introduction,” (with R. Zeckhauser), *Benefit-Cost and Policy Analysis Annual*, 1974, Aldine-Atherton, Chicago, IL, 1975.

Selected Testimony and Submissions in Regulatory and Judicial Proceedings

Potential Energy and Environmental Impacts of Denying Indian Point’s License Renewal Application (with D. Harrison, E. Meehan, and others), Submitted to Nuclear Regulatory Commission, March 31, 2012, Docket Nos. 50-247-LR and 50-286-LR.

Review of EPA’s Approach to Aggregating Emissions Across Time in Proposed Revisions of Renewable Fuel Standards (with W.K. Viscusi and D. Harrison). Submitted to U.S. Environmental Protection Agency, Docket ID No. EPA-HQ-OAR-2005-0161, September 25, 2009.

Costs and Benefits of California Draft Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (with D. Harrison and others). Submitted to California State Water Board, September 2009.

Accounting for Differences in the Timing of Emissions in Calculating Carbon Intensity for the California Low Carbon Fuels Standard (with D. Harrison and M. McGuinness). Submitted to California Air Resources Board, April 2009.

Economic Comments on Nuclear Regulatory Commission DSEIS for Indian Point Energy Center (with D. Harrison and others). Submitted to Nuclear Regulatory Commission, March 2009.

Economic Assessment of Installing Wedgewire Screens at Point Beach Nuclear Power Station (with D. Harrison and others). Submitted to Wisconsin Department of Natural Resources, February, 2009.

Evaluation of NHTSA’s Benefit-Cost Analysis of 2011-2015 CAFE Standards (with D. Harrison and others). Submitted to the National Highway Traffic and Safety Administration, June, 2008.

Economic Assessment of Fish-Protection Alternatives at Pilgrim Nuclear Power Station (with D. Harrison and others). Submitted to U.S. Environmental Protection Agency, Region I, June 2008.

Environmental Costs and Economic Benefits of Electric Utility Resource Selection (with D. Harrison and others), submitted to Public Utilities Commission of Nevada, May 2008.

The Behavior of PC OEMs and Growth of Server/Network Computing Five Years after the Final Judgments in U.S. v. Microsoft (with D. Evans). Submitted to U.S. District Court for the District of Columbia in U.S. v. Microsoft, Civil Action No. 98-1233 (CKK), August 30, 2007.

The Commission's Ongoing Failure to Adequately Assess Commercial Viability (with D. Evans). Submitted to the European Commission, August 2007.

Rebuttal of ECIS Comments on Microsoft's Response of 24 April 2007 (with D. Evans, L. Ivanov, and A. Layne-Farrar). Submitted to the European Commission, June 2007.

An Analysis of the Trustee's Business Plan (with D. Evans and L. Ivanov). Submitted to the European Commission, April 2007.

The Relevant Market for Server Operating Systems Is Not Limited to PC Server Operating Systems (with J.S. Yoo). Korean translation submitted to Seoul High Court in Korea, March 2007. (Expanded and revised version of paper submitted to Korean FTC.)

An Economic Analysis of the KFTC Decision's Product Market Definitions for Digital Media Technologies (with S.S. Yi and J.S. Yoo). Korean translation submitted to Seoul High Court in Korea, November 2006.

Adding Features to Operating Systems and Other Products Is Beneficial to Consumers and Is Standard Business Practice (with J.P. Choi). Korean translation submitted to Seoul High Court in Korea, October 2006. (Expanded and revised version of paper submitted to Korean FTC.)

The Examiner's Proposed Remedy Would Impose Costs on Consumers, Developers, and Web Site Owners (with S.H. Shik), Korean translation submitted to Korean Fair Trade Commission, October 2005.

Response to Economic Issues Raised by the Examiners and Complainants in Connection with Our Earlier Submissions and Presentations (with J.P. Choi), Korean translation submitted to Korean Fair Trade Commission, October 2005.

Response to Market Definition Issues Raised by Examiners and Complainants at the En-Banc Meeting in August and September (with S.S. Yi and J.S. Yoo), Korean translation submitted to Korean Fair Trade Commission, October 2005.

Adding Features to Operating Systems and Other Products Is Beneficial to Consumers and Is Standard Business Practice (with J.P. Choi), Korean translation submitted to Korean Fair Trade Commission, July 2005.

The Relevant Market for Server Operating Systems Is Not Limited to Those that Run on Intel X86 Processors (with J. Yoo), Korean translation submitted to Korean Fair Trade Commission, July 2005.

The Relevant Markets Are Worldwide and Not Limited to Korea, (with J. Yoo), Korean translation submitted to Korean Fair Trade Commission, July 2005.

Response to the Economic Annex by Lexecon on the Linux Experience and Its Implications for the Refusal to Supply Case (with D. Evans and A.J. Padilla), submitted to the European Court of First Instance, June 2005.

Response to the Economic Annexes to the Submissions by RealNetworks and SIIA on the Tying Case (with D. Evans and A.J. Padilla), submitted to the European Court of First Instance, June 2005.

Economic Evidence on Indispensability and the Risk of Elimination of Competition in WorkGroup Server Operating Systems (with D. Evans and A.J. Padilla), submitted to the European Court of First Instance, February 2005.

An Economic Analysis of the Decision's Tying Claim (with D. Evans and A.J. Padilla), submitted to the European Court of First Instance, June 2004.

An Economic Analysis of the Decision's Refusal to Supply Claim (with D. Evans and A.J. Padilla), submitted to the European Court of First Instance, June 2004.

The Commission's Work Group Server Operating Systems Market Definition and Assessment of Dominance Are Flawed (with D. Evans and A.J. Padilla), submitted to the European Court of First Instance, June 2004.

A Review of the Submission to the Commission by Wirsing et al. on Behalf of Sun Microsystems (with S. Madnick), submitted to the European Commission, November 30, 2003.

A Review of the Survey Conducted by CRA and Submitted to the Commission by CCIA (with E. Ericksen), submitted to the European Commission, November 30, 2003.

Survey Evidence in the Commission's Investigation of Interoperability (with D. Evans and A.J. Padilla), submitted to the European Commission, October 31, 2003.

The Commission's Refusal to Supply Case: A Review of the Economic Evidence (with D. Evans and A.J. Padilla), submitted to the European Commission, October 17, 2003.

The Commission's "Tying" Case: A Review of the Economic Evidence (with D. Evans and A.J. Padilla), submitted to the European Commission, October 17, 2003.

Forcing Microsoft to Distribute Competing Media Players with Windows Would Harm Competition (with D. Evans), submitted to the European Commission, May 8, 2003.

Updated Netcraft Data on Media Formats Used by Web Sites (with B. Reddy), submitted to the European Commission, April 30, 2003.

Where Do We Stand? A Summary of the Economic Arguments in the Commission's Case Against Microsoft at the End of the Rebuttal Phase (with D. Evans and A.J. Padilla), submitted to the European Commission, April 17, 2002.

Competition in Media Players: A Response to Submissions by AOL Time Warner's and RealNetworks' Economists in the Commission's Case Against Microsoft (with D. Evans and A.J. Padilla), submitted to the European Commission, April 17, 2002.

Lexecon's Econometric Analysis of Demand for Servers: A Critical Review (with B. Reddy), submitted to the European Commission, December 17, 2001.

An Economic Analysis of The Statement of Objections Filed against Microsoft (Case No. COMP/C-3/37.792 /Microsoft) (with D. Evans and A.J. Padilla), submitted to the European Commission, November 19, 2001.

An Economic Analysis of The Statement of Objections Filed against Microsoft (with D. Evans and A.J. Padilla), submitted to the European Commission, November 2000.

The Costs and Benefits of Alternative Design-Day and Design-Year Standards (with J. Makhholm and J. Farr). Submitted to Massachusetts Department of Public Utilities, December 1996.

Cost-Effectiveness of Residential Carbon Monoxide Detectors: A Review of the Evidence, submitted to the Consumer Product Safety Commission, June 1996.

Surrebuttal Testimony on Sulfur Dioxide, before the Minnesota Public Utilities Commission, Docket No. E-999/CI-93-583, In the Matter of the Establishment of Environmental Cost Values, on June 1995.

Consideration of Environmental Externality Values in Minnesota Electric Utility Resource Planning (with D. Harrison and M. Dreyfus). Submitted to Minnesota Public Utilities Commission In the Matter of the Establishment of Environmental Cost Values, November 1994.

Comments on Economic Costs and Benefits of OSHA's Proposed Rules on Smoking in the Workplace (with M. Dreyfus, B. Reddy, and M. Berkman), submitted to the Occupational Safety and Health Administration, August 1994.

Comments on EPA's Analysis of "The Costs and Benefits of Smoking Restrictions," (with M. Dreyfus and B. Reddy), August 1994.

Benefits and Costs of Underground Conversion of Overhead Distribution Lines in New York State, (with D. Harrison and J. Stavins). Submitted to New York Public Service Commission, July 1994.

Environmental Externality Policies in New York State: Comments on the 1994 Draft State Energy Plan (with D. Harrison and M. Dreyfus). Submitted to New York Public Service Commission, April 1994.

Valuation of Air Pollution Damages in the South Coast Basin (with M. Deming), submitted to the State of California Energy Resources Conservation and Development Commission, Hearing on Residual Emission Values for the South Coast Air Basin, Docket No. 90-ER-92S, in preparation of the 1992 *Electricity Report (ER-92)*, March 1993.

U.S. v. Ottati & Goss et al. Report, deposition, and oral testimony on various economic, risk-management policy, and statistical issues, including cumulative impact of conservative assumptions at multiple stages in EPA's risk assessment. March-June, 1987.

Other Consulting Reports/Papers

An Economic Evaluation of Borrowing as a Method to Contain Costs in a Greenhouse Gas Emissions Cap-and-Trade Program (with D. Harrison). Palo Alto, CA: Electric Power Research Institute, TR-XXX, December 2008.

Windows XP: New Features Worry Competitors, But Would They Harm Consumers? (with R. Cass), August 13, 2001.

Accounting for Location in NO_x Emission Trading Programs: Empirical Results from the OTAG Region. Palo Alto, CA: Electric Power Research Institute, TR-110266, February 1998.

Accounting for Location and Timing in NO_x Emission Trading Programs. Palo Alto, CA: Electric Power Research Institute, TR-109515, December 1997.

The Cost of NO_x Reductions Achieved by Extending RFG Requirements to the Full OTAG Region, report prepared for American Petroleum Institute, November 1997.

Impacts on Pemex of Natural Gas Regulations: Initial Report (with E. Downer, L. Giacchino, and J. Makholm), Report Prepared for Pemex Gas y Petroquimica Basica, April 1997.

The Timing of NO_x Emissions and Emission Trading in the Ozone Transport Region (with J. Farr). Palo Alto, CA: Electric Power Research Institute, TR-107186, December 1996.

Key Issues in the Design of Emission Trading Programs to Reduce Ground-Level Ozone (with D. Harrison). Palo Alto, CA: Electric Power Research Institute, TR-104245, July 1994.

Recent Evidence on the Appropriate Timing of Reductions in Greenhouse Gas Emissions (with D. Harrison), report prepared for the Global Climate Coalition, July 1996.

The Timing of Plant Replacement and the Cost-Effectiveness of CO₂ Reductions from Two Canadian Utilities (with J. Farr and D. Harrison), report prepared for Ontario Hydro and TransAlta Corporation, July 1996.

Cost-Effectiveness of Mobile-Source Controls: Modeling Framework and Demonstration Data (with J. Farr, E. Andelman, and D. Rowland), draft report prepared for the Electric Power Research Institute, June 1996.

Economic Evaluation of Alternative Regulations of Exhaust Emissions from Small Utility Engines, (with J. Farr, D. Harrison, B. Ligon, A. Meade, and B. Reddy), prepared for Briggs & Stratton Corporation, February 1996.

Issues in Designing a Banking program for NO_x in the OTR (with G. Hester), prepared for the Electric Power Research Institute, November 1995.

The New York State Environmental Externalities Cost Study: An Overview of Key Elements and Issues (with D. Harrison and M. Dreyfus), prepared for the Electric Power Research Institute, April 1995.

The Timing of NO_x Emissions and Emission Trading in the Ozone Transport Region: An Analysis of the New England Power Pool (with J. Farr), prepared for the Electric Power Research Institute, April 1995.

Tradable Permits for Water Use: An Overview of Concepts and Experience, prepared for TransAlta Utilities Corporation, March 1995.

Benefits and Costs of Underground Conversion of Overhead Distribution Lines in New York State, (with D. Harrison and J. Stavins), prepared for New York Electric Utilities, July 1994.

Environmental Externality Policies in New York State: Comments on the 1994 Draft State Energy Plan (with D. Harrison and M. Dreyfus), prepared for the New York Power Pool, April 1994.

Demand-Side Management: Alternative Approaches to Estimating Participants' Benefits, prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Energy Policy Branch, March 1994.

Comments on RCG/Hagler, Bailly, Inc. Revised Draft Task 3 Methodological Report (with D. Harrison), prepared for Empire State Electric Energy Research Company, March 1994.

The Benefits of Reducing Emissions of Nitrogen Oxides Under Title IV of the 1990 Clean Air Act Amendments (with D. Harrison, B. Reddy, and S. Bittenbender-Aggarwal), prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Air Policy Branch, March 1994.

Scoping Study For a Regional Visibility Trading Program (with D. Harrison), prepared for Electric Power Research Institute, Energy Analysis Program, February 1994.

A Framework for the Empirical Evaluation of Externality Adders for Electric Utilities (Draft) (with D. Harrison), prepared for Electric Power Research Institute, Integrated Systems Division, January 1994.

The Environmental and Economic Benefits of Electricity: Positive Externalities and Other Impacts (with D. Harrison, B. Reddy, and M. Dreyfus), prepared for Electric Power Research Institute, Integrated Systems Division, December 1993.

External Costs of Electric Utility Resource Selection in Northern Nevada (with D. Harrison, M. Dreyfus, and S. Aggarwal), prepared for Sierra Pacific Power Company with assistance from Systems Applications International, December 1993.

Consideration of Environmental Externalities in New York Electric Utility Decisions (with D. Harrison, P. Joskow, and S. Aggarwal), prepared for the New York Power Pool, October 1993.

Revealed Preference and the Net Benefits of Electricity Demand-Side Management, prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Energy Policy Branch, September 1993.

Contributions of the Chicago Airport System to the Chicago Regional Economy (with D. Harrison), prepared for the City of Chicago Department of Aviation, March 1993.

Internalization of Externalities from Electric Utility Generation in Alberta (with D. Harrison, S. Bittenbender-Aggarwal, and Bovar Environmental Services), draft prepared for TransAlta Utilities Corporation, March 1993.

Diffusion of Innovation and the Demand for Energy-Saving Technologies (with B. Reddy), prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Energy Policy Branch, March 1993.

External Costs of Electric Utility Resource Selection in Nevada (with D. Harrison, S. Bittenbender-Aggarwal, M. Berkman, and Systems Applications International), prepared for Nevada Power Company, March 1993.

Estimating the Net Benefits of DSM Programs Based on Limited Information, prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Energy Policy Branch, January 1993.

How Much Energy Do DSM Programs Really Save: Engineering Estimates and Free Riders, draft prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Energy Policy Branch, December 1992.

An Emission Trading Program for Sulphur Dioxide Sources in Canada, prepared for the Canadian Council of Ministers of the Environment, with Assistance from Concord Environmental, 1992.

Emission Trading Program for Stationary Sources of NO_x in Ontario, prepared for the Advisory Group on Emissions Trading, Toronto, Ontario, with assistance from Goodfellow Consultants, Inc. and VHB HICKLING, October 1992.

How Well Do Market Failures Support the Need for Demand Side Management?, prepared for the U.S. Environmental Protection Agency Office of Policy, Planning and Evaluation, Energy Policy Branch, August 1992.

Valuation of Air Pollution Damages (with D. Harrison, J. Evans, and J.D. Zona), prepared for Southern California Edison Company, March 1992.

An Economic Analysis of the RECLAIM Trading Program for the South Coast Air Basin (with D. Harrison), prepared for the Regulatory Flexibility Group and the California Council for Environmental and Economic Balance, March 1992.

Tradable Permits for Water Use: An Overview of Concepts and Experience, prepared for TransAlta Utilities, January 1992.

Tax Impacts of Alternative Future Airport Systems for the Chicago Region (with K. Case, D. Harrison, and E. Shaw), prepared for the City of Chicago Department of Aviation, January 1992.

Issues in the Valuation of Reduced Risks of Fatality and Injury, prepared for the U.S. Department of Transportation, November 1991.

Economic Impacts of Alternative Future Airport Systems for the Chicago Region (with D. Harrison), prepared for the City of Chicago Department of Aviation, November 1991.

The Lake Calumet Airport and Chicago's Economic Future (with D. Harrison), prepared for the Lake Calumet Airport Advisory Committee, September 1991.

Updated Economic Impacts of Alternative Future Airport Systems (with D. Harrison), prepared for the City of Chicago Department of Aviation, September 1991.

Demand Forecasts for the Chicago Area (with D. Harrison and Landrum & Brown), prepared for the City of Chicago Department of Aviation, May 1991.

The Cost of Delay at Chicago O'Hare International Airport (with M. Mauldin), prepared for the City of Chicago Department of Aviation, May 1991.

Market-Based Approaches to Managing Air Emissions in Alberta (with D. Harrison), prepared for Alberta Energy, Alberta Environment and Canadian Petroleum Association, Final Report, February 1991.

Market-Based Approaches to Reduce the Cost of Clean Air in California's South Coast Basin (with D. Harrison), prepared for California Council for Environmental and Economic Balance, Final Report, November 1990.

The Impact on Ontario Hydro of Emissions Trading for Nitrogen Oxides: A Preliminary Analysis (with D. Harrison), prepared for Ontario Hydro, November 1990.

Using Emissions Trading to Reduce Ground-Level Ozone in Canada: A Feasibility Analysis (with D. Harrison), prepared for Environment Canada, November 1990.

Tradable Permits and Other Economic Incentives for Environmental Protection (with D. Harrison), prepared for The Canadian Electrical Association and presented at a *Workshop on Tradable Permits*, June 1990.

Addressing Canada's Ozone Problem: Recommendations for a Cost-Effective Strategy for Controlling Emissions of Nitrogen Oxides and Volatile Organic Compounds (with D. Harrison), prepared for TransAlta Utilities Corporation and submitted to the Federal/ Provincial Long Range Transport of Air Pollutants Steering Committee, April 1990.

Benefits of the 1989 Air Quality Management Plan for the South Coast Air Basin: A Reassessment (with D. Harrison), prepared for the California Council for Environmental and Economic Balance, March 1990.

The Economic Impacts of Locating a New Airport in the Lake Calumet Area (with D. Harrison), prepared for the City of Chicago Department of Aviation, January 1990.

Supplementary Analysis of the Existence of a Potential "Anticipation Effect" on Property Values From the Proposed Clean Harbors Rotary Kiln Incinerator, prepared for Clean Harbors, Inc., January 1990.

Preliminary Comments on Economic Assessment of the Health Benefits from Improvements in

Potential Impacts of the Clean Harbors Proposed Rotary Kiln Incinerator on Aesthetics, Recreation, Tourism and Property Values (with D. Harrison), prepared for Clean Harbors, Inc., Final Report, June 1989.

Economic Incentives to Encourage Hazardous Waste Minimization and Safe Disposal (with R. Belzer), report to U.S. Environmental Protection Agency, Washington, DC, November 1988.

The Value of Acquiring Information Under Section 8(a) of the Toxic Substances Control Act: A Decision-Analytic Approach (with L. Boden, D. Harrison, and R. Terrell), report to U.S. Environmental Protection Agency, August 1983. *Issues in Designing a Banking program for NO_x in the OTR* (with G. Hester), prepared for the Electric Power Research Institute, November 1995.

Selected Oral Presentations

"*U.S. v. Microsoft: The Incredible Shrinking Case and Consumer Harm*," guest lecture, Boston University Law School, course in Antitrust (Professor Keith Hylton), April 2005, March 2006.

"Government Policy Toward Open Source Software," presented to *Seminar on Recent Trends in Protection of Computer Programs: Copy-right, Copy-left*, Korean Intellectual Property Association, Seoul, Korea, July 10, 2002.

“Limits of Knowledge and Antitrust Economics,” presented to *Competition in the European Union*, International Centre for Economic Research, Asti, Italy, December 2001.

“Antitrust, the New Economy, And Some Lessons from U.S. v. Microsoft,” presented to *e-Commerce Antitrust & Trade Practices*, Practising Law Institute, New York, NY, March 5, 2001.

“Reducing Lead-in-Gasoline,” presented to executive course in *Economics and the Environment*, John F. Kennedy School of Government, Cambridge, , Massachusetts, May 1999, 2000.

“Benefit-Cost Analysis of Reducing Lead-in-Gasoline,” presented to executive course in *Benefit-Cost Analysis for Environmental, Health and Safety Regulation*, Harvard School of Public Health, Boston, Massachusetts, March 1998, 1999, 2000.

“Regional Emission Trading for NO_x,” presented to the EPRI Air Quality Area Council, New Orleans, Louisiana, October 13, 1998.

“Emission Trading for NO_x: Extending to a Larger Region,” presented at the MIT Center for Energy and Environmental Policy Research Seminar, Cambridge, Massachusetts, April 30, 1998.

“The Cost of NO_x Reductions in OTAG Achieved with Reformulated Fuels,” presented to Ozone Transport Assessment Group Workgroups, Atlanta, Georgia, May 6, 1997.

“Temporal Targeting for Trading Plans to Reduce Ground-Level Ozone,” (with J. Farr), presented at the Harvard University Environmental Economics and Policy Seminar, Cambridge, Massachusetts, October 2, 1996.

“Cost-Effectiveness and the Timing of Reductions in Greenhouse Gas Emissions,” presented to meeting of business and government officials, hosted by the Canadian Electrical Association, Ottawa, Ontario, September 30, 1996.

“Emission Trading: Alternative Approaches, Experience, and Implications for CO₂” (with D. Harrison), presented at a meeting of the American Automobile Manufacturers Association Climate Change Task Force, Washington, DC, September 27, 1996.

“NO_x Emission Trading: Is There a Daily Problem?” presented to the Economic Subcommittee of the U.S. Environmental Protection Agency Clean Air Advisory Committee, Crystal City, Virginia, July 30, 1996.

“Case Study: The RIA for the 1985 Lead-in-Gasoline Phasedown,” presented to *Benefit-Cost Analysis and Environmental Regulation: Lessons and Issues*, Resources for the Future, Washington, DC, June 13-14, 1996.

“Emission Trading for Ozone Control: How It Can Work,” presented to a workshop of the MIT Center for Energy and Environmental Policy Research, Boston, Massachusetts, April 11, 1996.

“Update on Banking Issues in the Proposed OTR NO_x Trading Program,” presented to members of Electric Power Research Institute, Washington, DC, October 20, 1995.

“Issues in Designing an Emission Trading Program for Nitrogen Oxides in the Northeastern United States,” presented to Conference on Environmental Policy Between Market and Regulation, Neuchâtel, Switzerland, June 19-20, 1995.

“Daily Considerations and Banking Restrictions: Are They Needed in the OTR NO_x Trading Program?” (with J. Farr and G. Hester), presented to the NESCAUM/ MARAMA NO_x Budget Advisory Group, Baltimore, Maryland, May 11, 1995.

“Is a ‘Daily Consideration’ Needed for NO_x Trading in the OTC?” (with J. Farr and G. Hester), presented to the OTC Stationary Source Committee, Washington, DC, April 21, 1995.

“Daily NO_x Emissions and Emission Trading: Analysis of NEPOOL Data, 1990-94” (with J. Farr and B. Ligon), presented to NESCAUM/MARAMA NO_x Budget Task Force, Boston, Massachusetts, April 3, 1995.

“Daily NO_x Emissions and Emission Trading: Analysis of NEPOOL Data, 1990-94,” (with J. Farr), presented to New York Power Pool, Schenectady, New York, March 15, 1995.

“Daily NO_x Emissions and Emission Trading: Analysis of NEPOOL Data, 1990-94,” (with J. Farr), presented to NEPOOL Environment Committee, Holyoke, Massachusetts, March 8, 1995.

“The Economics of Ozone: Emission Trading and Benefit-Cost Analysis,” presented to the EPRI Air Quality Target Committee, San Francisco, California, January 10, 1995.

“Comments on OSHA’s Cost Estimates for Proposed ETS Rules,” presented to the Occupational Safety and Health Administration Hearings on Proposed Rules on Indoor Air Quality, Washington, DC, December 6, 1994.

“Environmental Externalities: Basic Concepts and Issues,” presented at Hawaiian Electric Company Workshop on Externalities, Honolulu, Hawaii, November 29-30, 1994.

“Emission Trading for NO_x in the Ozone Transport Region,” presented to a meeting at the MIT Center for Energy and Environmental Policy Research, Cambridge, Massachusetts, November 4, 1994.

“Emission Trading for NO_x: An Analytic Framework,” (with D. Harrison), presented to the Electric Power Research Institute, Washington, DC, June 15, 1994.

“Emission Trading for NO_x: Experience with RECLAIM,” (with D. Harrison), presented to Edison Electric Institute Meeting, Washington, DC, May 26, 1994.

“Emission Trading for NO_x: Overview of Issues and the RECLAIM Experience,” (with D. Harrison), presented to Edison Electric Institute Meeting, Washington, DC May 13, 1994.

“Do U.S. DSM Programs Really Pay for Themselves?” presented to the U.S. AID seminar on *DSM/IRP in the U.S. and Developing Countries*, Washington, DC, May 5, 1994.

“DSM: The Lunch You Pay Others to Eat,” presented at the Energy Policy Workshop, Massachusetts Institute of Technology, Cambridge, Massachusetts, April 28, 1994.

“The Net Benefits of DSM: Economists v. Technologists, Round II,” presented to Energy Modeling Forum, Stanford University, Stanford, California, March 10, 1994.

“Can DSM and Environmental Adders Survive in a Competitive World?” presented to EPRI’s Innovative Electricity Pricing Conference, Tampa, Florida, February 10, 1994.

“Projecting the Price of RECLAIM Trading Credits for NO_x,” (with D. Harrison), presented to a California Energy Commission Workshop, Sacramento, California, February 4, 1994.

“Is DSM Cost Effective?” Presented to Edison Electric Institute’s Economics Committee Meeting, Tucson, Arizona, January 27, 1994.

“How Much Value Do Participants Receive from DSM?” presented to JFK School of Government Environmental Economics and Policy Seminar, Harvard University, Cambridge, Massachusetts, October 13, 1993.

“The Net Benefits of DSM: Participants’ Implicit Values v. Estimated Net Savings,” presented at the Energy Modeling Forum, Portland, Maine, October 7, 1993.

“Revealed Preference and the Net Benefits of Electricity Demand-Side Management,” presented at the Western Economic Association Meetings, Lake Tahoe, Nevada, June 23, 1993.

“Market Barriers to Energy Efficiency: An Economist’s View,” presented at the White House Conference on Global Climate Change, Washington, DC, June 10-11, 1993.

“External Costs of Electricity Generation in Southern Nevada,” (with D. Harrison), presented at a workshop sponsored by the Nevada Public Service Commission on behalf of Nevada Power Company, Las Vegas, Nevada, May 19, 1993.

“The Experience with Electricity DSM and Its Implications for Gas IRP,” presented at the NARUC/DOE National Conference on Natural Gas Use, New Orleans, Louisiana, April 26, 1993.

“Valuation of Air Pollution Damages in the South Coast Air Basin,” (with M. Hertel), presented at the California Energy Commission ER-92 Hearings in association with Southern California Edison Company, Sacramento, California, March 22, 1993.

“Valuation of Air Pollution Damages,” presented to a workshop sponsored by the California Energy Commission on behalf of Southern California Edison Company, Sacramento, California, March 16, 1993.

“Risk-Based Priorities and Environmental Justice,” presented at Resources for the Future Center for Risk Management Conference, *Setting National Environmental Priorities: The EPA Risk-Based Paradigm and Its Alternatives*, Annapolis, Maryland, November 15-17, 1992.

“Emission Trading for Air Pollutants: An Economic Instrument to Encourage Pollution Prevention,” presented to the Ontario Ministry of Environment 1992 Technology Transfer Conference, Toronto, Canada, November 6, 1992.

“Emission Trading for NO_x in Ontario: Program Design and Estimated Savings,” presented to the Advisory Group on Emission Trading, Toronto, Canada, July 14, 1992.

“Issues in the Design of Economic Instruments for Environmental Protection,” presented to *Workshop of the Economic Instruments Collaborative*, Calgary, Canada, June 29, 1992.

“Emission Trading for NO_x in Ontario: An Alternative to Traditional Source Standards,” presented to Air and Waste Management Association Meetings, Toronto, Canada, April 27, 1992.

“Potential Gains from Using Emissions Trading to Manage Emissions of NO_x and Other Ozone Precursors,” presented at the 1992 Spring Meeting of the Canadian Electrical Association, Vancouver, Canada, April 1, 1992.

“Designing Tradable Permits to Limit Emissions of CO₂,” presented to the Meetings of North American Economic and Finance Association, New Orleans, Louisiana, January 5, 1992.

“Economic Instruments for Protecting the Environment: Lessons From the U.S. Experience,” presented to *Workshop on Economic Instruments and Sustainable Development*, Canadian National and Provincial Round Tables on the Environment and the Economy, Vancouver, Canada, November 23, 1991.

“Valuing Programs to Reduce Risk to Life and Health,” presented to seminar with officials from the Department of Transportation and other agencies, Washington, DC, November 14, 1991.

Workshop on Economic Instruments (with D. Harrison), prepared for Imperial Oil Ltd., Toronto, Canada, October 1-2, 1991.

“Key Issues in Designing Incentives to Manage Emissions of CO₂,” prepared for *Global Warming: The Search for Cost-Effective Action*, Calgary, Canada, May 27-28, 1991.

“Emission Trading for NO_x in Ontario,” presented at Air and Waste Management Association Meetings, Hamilton, Canada, April 30, 1991.

“Using Benefit-Cost Analysis to Help Set Health and Environmental Standards,” presented at *Making Sense of Safety*, Cato Institute Conference, Washington, DC, March 21-22, 1991.

“Market-Based Approaches to Managing Air Emissions in Alberta,” presented to the Governing Board, Canadian Petroleum Association, Calgary, Canada, January 23, 1991.

“Emission Trading for NO_x in Ontario,” presented to Ontario Ministry of the Environment, Toronto, Canada, January 17, 1991.

“Market-Based Approaches to Managing Air Emissions in Alberta,” presented to Legislative Review Panel: Alberta Environmental Protection and Enhancement Act, Edmonton, Canada, November 30, 1990.

“The Acid Deposition Program: Exploring Market-Based Regulation,” presented at the *Clean Air Act Amendments of 1990 Conference*, Arlington, Virginia, November 16, 1990; January 30, 1991; and May 1, 1991.

“The U.S. Experience with Economic Instruments,” presented at *Seminar on Market Instruments*, Ontario Ministry of the Environment, Toronto, Canada, October 18, 1990.

“Emissions Trading: Concepts and Experience,” presented to the Environmental Advisory Panel of Ontario Hydro, Toronto, Canada, September 13, 1990.

“The Experience with Market-Based Incentives,” prepared for The Conference Board of Canada and presented at the *Seminar on Using Market Forces to Protect the Environment*, Toronto, Canada, June 19, 1990 and Edmonton, Alberta, October 2, 1990.

“Economic Incentives for Environmental Protection: An Overview of Concepts and Experience,” prepared for Imperial Oil, Ltd. and presented at the *Seminar on Economic Incentives*, Toronto, Canada, June 14, 1990.

“Emissions Trading: Concepts and Experience,” (with D. Harrison), prepared for The Canadian Electrical Association and presented at the *Workshop on Tradable Permits*, Toronto, Canada, June 13, 1990.

“Prototypical Trading Policy: Prototypical Flexible Policy: VOC Emissions From Solvents and Related Uses,” prepared for NO_x/VOC Task Force and presented at the *Workshop on Flexible Mechanisms*, Montreal, Canada, June 6-7, 1990.

“Emissions Trading: An Overview of Concepts and Experience,” (with D. Harrison), prepared for NO_x/VOC Task Force and presented at the *Workshop on Flexible Mechanisms*, Montreal, Canada, June 6-7, 1990.

“Socioeconomic Impacts of Proposed Rule 431.2,” (with D. Harrison), presented to the South Coast Air Quality Management District, Los Angeles, California, May 4, 1990.

“Recent Developments in Canadian Environmental Policy,” presented to Energy Research Group, Washington, DC, March 14, 1990.

“Clear Thinking on Clear Air: Agenda for the 1990’s,” panel discussion at the American Enterprise Institute’s Thirteenth Annual Policy Conference, Washington, DC, December 4, 1989.