



CURRICULUM VITA

Joseph Peggs Kalt

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PROFESSIONAL POSITIONS

JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY CAMBRIDGE, MA

Ford Foundation Professor of International Political Economy, 1992-2012; emeritus 2012-present

Areas of specialization include Industrial Organization, Economics of Antitrust and Regulation, Natural Resource Economics, Public Choice and Political Economy, Economic Development, Microeconomic Theory.

Co-Director, The Harvard Project on American Indian Economic Development, 1987-present

Faculty Chair, Harvard University Native American Program, 2000-2006

Chair, Economics and Quantitative Methods Cluster, 1995-2000

Professor of Political Economy, 1986-1992

Faculty Chair and Academic Dean for Research, 1992-1994

Chairman, Environment and Natural Resources Program, Center for Science and International Affairs, 1990-1994

Chairman of Degree Programs, 1990-1992

Chairman of Ph.D. Programs, 1989-1990

Assistant Director for Natural Resources, Energy and Environmental Policy Center, 1985-1990

Co-Director, Harvard Study on the Future of Natural Gas Policy (with Frank C. Schuller), Energy and Environmental Policy Center, 1984-1986

DEPARTMENT OF ECONOMICS, HARVARD UNIVERSITY, CAMBRIDGE, MA

Associate Professor of Economics, 1983-1986

Assistant Professor of Economics, 1980-1983

Instructor in Economics, 1978-1980

THE UNIVERSITY OF ARIZONA, TUCSON, AZ

Visiting Professor, Rogers College of Law, 2008-2013; *Faculty Affiliate*, 2013-present

Visiting Professor, Eller College of Management, 2005-2010

Visiting Professor, School of Government and Public Policy, 2009-2012

Faculty Chair for Nation Building Programs, Native Nations Institute for Leadership, Management, and Policy, Udall Center for Studies in Public Policy, 2005-present

Visiting Professor, American Indian Studies Department, 2005-2006; *Faculty Affiliate*, 2013-present

COMPASS LEXECON

Senior Economist, 2003-present (and since 1983 with predecessor enterprises)

PRESIDENT'S COUNCIL OF ECONOMIC ADVISERS, WASHINGTON DC

Junior Staff Economist, 1974-1975

EDUCATION

University of California, Los Angeles, Ph.D. in Economics, 1980; M.A. in Economics, 1977
Doctoral Dissertation: *Federal Control of Petroleum Prices: A Case Study of the Theory of Regulation*

Stanford University, Stanford, CA, B.A. in Economics (Honors), 1973

PUBLICATIONS AND RESEARCH: BOOKS AND MONOGRAPHS

Universities in Indian Country: Case studies in Tribal-Driven Research (with Dennis Norman), University of Arizona Press, 2015 (forthcoming).

On Improving Tribal-Corporate Relations in the Mining Sector: Strategies for Both Sides of the Table (with Saleem Ali, Sarah Krakoff, Miriam Jorgensen and Anthony McInnis), The Harvard Project on American Indian Economic Development, Harvard University, Cambridge, MA, May 2014.

Constitutional Design (with Jessie M. Mosqueda and C. Falan Yinug), The Native Nations Institute for Leadership, Management and Policy, *Guides for Indigenous Governance*, March 2013.

The State of the Native Nations: Conditions under U.S. Policies of Self-Determination (a principal author, with The Harvard Project on American Indian Economic Development), Oxford University Press, 2008.

American Indians on Reservations: A Databook of Socioeconomic Change Between the 1990 and 2000 Censuses (with Jonathan B. Taylor), The Harvard Project on American Indian Economic Development, January 2005.

Annotated Bibliography: The Social and Economic Impacts of Indian and Other Gaming (with Leigh Gardner and Katherine A. Spilde), The Harvard Project on American Indian Economic Development, January 2005.

The Context and Meaning of Family Strengthening in Indian America: A Report to the Annie E. Casey Foundation by The Harvard Project on American Indian Economic Development (with Amy Besaw, Andrew Lee, Jasmin Sethi, Julie Boatright Wilson, Marie Zemler), The Annie E. Casey Foundation, Baltimore, Maryland, August 2004.

New Horizons in Natural Gas Deregulation, ed. (with Jerry Ellig) and co-author of two chapters, Greenwood Press, 1995.

What Can Tribes Do? Strategies and Institutions in American Indian Economic Development, ed. (with Stephen Cornell), University of California, 1992.

National Parks for the 21st Century: The Vail Agenda, editor and primary author of the Report of the Steering Committee, National Park Foundation, Chelsea Green Publishing Co., 1992.

Cases in Microeconomics (with Jose A. Gomez-Ibanez), Prentice Hall, 1990.

Drawing the Line on Natural Gas Regulation, ed. (with F. C. Schuller) and author of two chapters, Greenwood-Praeger Press/Quorum Books, 1987.

The FACS/Ford Study of Economic and Business Journalism (with James T. Hamilton), Foundation for American Communications and the Ford Foundation, 1987.

The Economics and Politics of Oil Price Regulation: Federal Policy in the Post-Embargo Era, MIT Press, 1981; paperback edition, 1983.

Petroleum Price Regulation: Should We Decontrol? (with Kenneth J. Arrow), American Enterprise Institute, 1979.

PUBLICATIONS AND RESEARCH: ARTICLES

"Trade Corridor Planning Merits Community Input," (with Robin Shamback and Kurt Wadlington), in *Arizona Daily Star*, The Editorial Page, August 30, 2013, p. A17.

"American Indian Self-Determination: The Political Economy of A Successful Policy" (Co-Author with Stephen Cornell), Paper for American Academy of Sciences International Workshop on Minority Groups: U.S. and China, American Academy of Arts and Sciences, Tufts University, June 25-27, 2010.

"Is There Only One Cultural Path to Development? Sustainable Heterogeneity Among Contemporary American Indian Nations" (with Stephen Cornell and Miriam Jorgensen), Conference in Honor of Samuel Huntington, Cultural Change Institute, The Fletcher School, Tufts University, October 2008.

"The U.S. Energy Outlook: Will It Go from Bad to Worse?" in *The Issues Inside the Fishbowl*, FTI Consulting, April 2008.

"Two Approaches to the Development of Native Nations: One Works, the Other Doesn't" (with Stephen Cornell), in M. Jorgensen, ed., *Rebuilding Native Nations: Strategies for Governance and Development*, University of Arizona Press, 2007.

"Development, Governance, Culture: What Are They and What Do They Have to Do with Rebuilding Native Nations?" (with Manley A. Begay, Jr., Stephen Cornell, and Miriam Jorgensen), in M. Jorgensen, ed., *Rebuilding Native Nations: Strategies for Governance and Development*, University of Arizona Press, 2007.

"The Role of Constitutions in Native Nation Building: Laying a Firm Foundation," in M. Jorgensen, ed., *Rebuilding Native Nations: Strategies for Governance and Development*, University of Arizona Press, 2007.

"Seizing the Future: Why Some Native Nations Do and Others Don't" (with Stephen Cornell, Miriam Jorgensen and Katherine Spilde), in M. Jorgensen, ed., *Rebuilding Native Nations: Strategies for Governance and Development*, University of Arizona Press, 2007.

"Competition & Regulation, Part III: Tensions Evolve between Regulation and Competition" (with Charles Augustine and Joseph Cavicchi), in *Electric Light and Power*, www.elc.com, January/February 2006, pp. 24-25.

"Constitutional Rule and the Effective Governance of Native Nations," in Eric D. Lemont, ed., *Contemporary American Indian Constitutionalism and the Rebuilding of Native Nations*, University of Texas Press, 2006.

"Gradualism in Retail Restructuring" (with Charles Augustine and Joseph Cavicchi) in *Electric Light and Power*, www.elc.com, September/October 2005, pp. 26-30.

"Competition & Regulation in the Power Industry: Can the Two Coexist?" (with Charles Augustine and Joseph Cavicchi) in *Electric Light and Power*, www.elc.com, July/August 2005, pp. 28-31.

"Establishing a Tribal Development Corporation," *Forum on Establishing a Tribally Owned Development Corporation*, the United States Senate Committee on Indian Affairs, July 20, 2004.

"Economics, Law, and Politics: What Will Drive Energy's Future," in *Proceedings of the 50th Annual Institute of the Rocky Mountain Mineral Law Foundation*, vol. 50, p. 1-1 (2004), December 2005.

"Myths and Realities of Tribal Sovereignty: The Law and Economics of Indian Self-Rule" (with J. Singer), *Joint Occasional Papers in Native Affairs*, The Harvard Project on American Indian Economic Development, John F. Kennedy School of Government, Harvard University, January 2004.

"Partisan Misperceptions and Conflict Escalation: Survey Evidence from a Tribal/Local Government Conflict" (with Keith Allred and Kessely Hong), in *Third-Party Intervention eJournal*, November 2003.

"Roundtable: Recent Developments in Section 2" (with Aaron Edlin, A. Douglas Melamed, and Gary L. Roberts), *Antitrust Magazine*, vol. 18, No. 1, Fall 2003.

The First Nations Governance Act: Implications of Research Findings from the United States and Canada (with Stephen Cornell and Miriam Jorgensen), Report to the British Columbia Assembly of First Nations, July 2002.

"Public Policy Analysis of Indian Gaming in Massachusetts" (with Kenneth Grant and Jonathan B. Taylor), Faculty Research Working Paper Series #RWP02-019, John F. Kennedy School of Government, Harvard University, May 13, 2002.

"Means-Testing Indian Governments: Taxing What Works" (with Jonathan Taylor), in Richard C. Monk, ed., *Taking Sides: Race and Ethnicity*, McGraw-Hill/Dushkin, 2001.

"Where's the Glue? Institutional and Cultural Foundations of American Indian Economic Development" (with Stephen Cornell), *The Journal of Socio-Economics*, vol. 29, 2000.

"Open Access for Railroads? Implications for a Non-Hub, Congestible Network Industry" (with Amy B. Candell), Advanced Workshop in Regulation and Competition, Center for Research in Regulated Industries, May 2000 (unpublished working paper).

"What Tribes Can Do: An Interview with Joseph P. Kalt," *American Indian Report*, March 1999.

"Sovereignty and Nation-Building: The Development Challenge in Indian Country Today" (with Stephen Cornell), *The American Indian Culture and Research Journal*, vol. 22, no. 3, February 1999.

"Making Research Count in Indian Country: The Harvard Project on American Indian Economic Development" (with Manley A. Begay, Jr., and Stephen Cornell), *Journal of Public Service and Outreach*, vol. 3, no. 1, Spring 1998.

"Successful Economic Development and Heterogeneity of Governmental Form on American Indian Reservations" (with Stephen Cornell), in Merilee S. Grindle, ed., *Getting Good Government: Capacity Building in the Public Sector of Developing Countries*, Harvard University Press, 1997.

"Cultural Evolution and Constitutional Public Choice: Institutional Diversity and Economic Performance on American Indian Reservations" (with Stephen Cornell), Faculty Research Working Paper Series, John F. Kennedy School of Government, January 1995; reprinted in John Lott, ed., *Uncertainty and Economic Evolution: Essays in Honor of Armen A. Alchian*, Routledge Press, 1997.

"Regulatory Reform and the Economics of Contract Confidentiality: The Example of Natural Gas Pipelines" (with A. B. Jaffe, S. T. Jones, and F. A. Felder), *Regulation*, 1996, No. 1.

"Precedent and Legal Argument in U.S. Trade Policy: Do They Matter to the Political Economy of the Lumber Dispute?" in *The Political Economy of American Trade Policy*, Anne O. Krueger, ed., University of Chicago Press, 1996.

"Do Precedent and Legal Argument Matter in the Lumber CVD Cases?" in *The Political Economy of Trade Protection*, Anne O. Krueger, ed., University of Chicago Press, 1996.

"Introduction: The New World of Gas Regulation" (with Jerry Ellig), J. Ellig and J. P. Kalt, eds., *New Directions in Natural Gas Deregulation*, Greenwood Press, 1995.

"Incentive Regulation for Natural Gas Pipelines" (with Adam B. Jaffe), in J. Ellig and J. P. Kalt, eds., *New Directions in Natural Gas Deregulation*, Greenwood Press, 1995.

"Where Does Economic Development Really Come From? Constitutional Rule Among the Modern Sioux and Apache" (with Stephen Cornell), *Economic Inquiry*, Western Economic Association International, vol. XXXIII, July 1995, pp. 402-426.

"Insight on Oversight" (with Adam B. Jaffe), *Public Utilities Fortnightly*, April 1995.

"The Redefinition of Property Rights in American Indian Reservations: A Comparative Analysis of Native American Economic Development" (with Stephen Cornell), L. H. Legters and F. J. Lyden, eds., *American Indian Policy: Self-Governance and Economic Development*, Greenwood Press, 1994.

"Reloading the Dice: Improving the Chances for Economic Development on American Indian Reservations" (with Stephen Cornell), in J. P. Kalt and S. Cornell, eds., *What Can Tribes Do? Strategies and Institutions in American Indian Economic Development*, University of California, 1992, pp. 1-59.

"Culture and Institutions as Public Goods: American Indian Economic Development as a Problem of Collective Action" (with Stephen Cornell), in Terry L. Anderson, ed., *Property Rights and Indian Economies*, Rowman and Littlefield, 1992.

"The Regulation of Exhaustible Resource Markets" (with Shanta Devarajan), Environmental and Natural Resources Program, Center for Science and International Affairs, Kennedy School of Government, April 1991.

"Comment on Pierce," *Research in Law and Economics*, vol. 13, 1991, pp. 57-61.

"Pathways from Poverty: Economic Development and Institution-Building on American Indian Reservations" (with Stephen Cornell), *American Indian Culture and Research Journal*, 1990.

"The Apparent Ideological Behavior of Legislators: On-the-Job Consumption or Just a Residual?" (with Mark A. Zupan), *Journal of Law and Economics* 33 (April 1990), pp. 103-32.

"How Natural Is Monopoly? The Case of Bypass in Natural Gas Distribution Markets" (with Harry G. Broadman), *Yale Journal on Regulation*, Summer 1989.

"Culture and Institutions as Collective Goods: Issues in the Modeling of Economic Development on American Indian Reservations" (with Stephen Cornell), *Project Report*, Harvard Project on American Indian Economic Development, June 1989.

"Public Choice, Culture and American Indian Economic Development" (with Stephen E. Cornell), *Project Report*, Harvard Project on American Indian Economic Development, July 1988.

"The Political Economy of Protectionism: Tariffs and Retaliation in the Timber Industry," in R. Baldwin, ed., *Trade Policy Issues and Empirical Analysis*, University of Chicago Press, 1988.

"The Impact of Domestic Environmental Regulatory Policy on U.S. International Competitiveness," *International Competitiveness*, A.M. Spence and H.A. Hazard, eds., Ballinger Publishing Co., 1988.

"Re-Establishing the Regulatory Bargain in the Electric Utility Industry," *Discussion Paper Series*, Energy and Environmental Policy Center, Kennedy School of Government, March 1987, published as Appendix V in *Final Report of the Boston Edison Review Panel*, W. Hogan, B. Cherry and D. Foy, March 1987.

"Natural Gas Policy in Turmoil" (with Frank C. Schuller), in J. P. Kalt and F. C. Schuller, eds., *Drawing the Line on Natural Gas Regulation: The Harvard Study on the Future of Natural Gas Policy*, Greenwood-Praeger Press/Quorum Books, 1987.

"Market Power and Possibilities for Competition," in J. P. Kalt and F. C. Schuller, eds., *Drawing the Line on Natural Gas Regulation: The Harvard Study on the Future of Natural Gas Policy*, Greenwood-Praeger Press/Quorum Books, 1987.

"The Political Economy of Coal Regulation: The Power of the Underground Coal Industry," in R. Rogowsky and B. Yandle, eds., *The Political Economy of Regulation*, Federal Trade Commission, GPO, 1986, and in *Regulation and Competitive Strategy*, University Press of America, 1989.

"Exhaustible Resource Price Policy, International Trade, and Intertemporal Welfare," February 1986 (revised June 1988), *Journal of Environmental Economics and Management*, 1989.

"Regional Effects of Energy Price Decontrol: The Roles of Interregional Trade, Stockholding, and Microeconomic Incidence" (with Robert A. Leone), *Rand Journal of Economics*, Summer 1986.

"A Framework for Diagnosing the Regional Impacts of Energy Price Policies: An Application to Natural Gas Deregulation" (with Susan Bender and Henry Lee), *Resources and Energy Journal*, March 1986.

"Intertemporal Consumer Surplus in Lagged-Adjustment Demand Models" (with Michael G. Baumann), *Energy Economics Journal*, January 1986.

"A Note on Nonrenewable Resource Extraction Under Discontinuous Price Policy" (with Anthony L. Otten), *Journal of Environmental Economics and Management*, December 1985.

"Capture and Ideology in the Economic Theory of Politics" (with Mark A. Zupan), *American Economic Review*, June 1984; republished in *The Behavioral Study of Political Ideology and Public Policy Formation*, Carl Grafton and Anne Permaloff, eds., University Press of America, Inc., 2005, pp. 63-103; republished in *The Political Economy of Regulation*, Thomas P. Lyons, ed., Edgar Elger Publishing, 2007, chapter 9.

"A Comment on 'The Congressional-Bureaucratic System: A Principal Agent Perspective,'" *Public Choice*, Martinus Nijhoff Publishers, Dordrecht, The Netherlands, vol. 44, 1984, pp. 193-95.

"The Creation, Growth and Entrenchment of Special Interests in Oil Price Policy," in *Political Economy of Deregulation*, Roger G. Noll and Bruce M. Owen, eds., American Enterprise Institute, 1983.

"The Costs and Benefits of Federal Regulation of Coal Strip Mining," *Natural Resources Journal*, October 1983.

"Oil and Ideology US Senate," *The Energy Journal*, April 1982.

"Public Goods and the Theory of Government," *The Cato Journal*, Fall 1981.

"The Role of Governmental Incentives in Energy Production" (with Robert S. Stillman), *Annual Review of Energy*, vol. 5, Annual Reviews Inc., 1980, pp. 1-32.

"Why Oil Prices Should be Decontrolled" (with Kenneth J. Arrow), *Regulation*, September/October 1979, pp. 13-17.

"Technological Change and Factor Substitution US, 1929-67," *International Economic Review*, Spring/Summer 1977.

“The Capital Shortage: Concept and Measurement” (with George M. von Furstenberg), *The Journal of Economics and Business*, Spring/Summer 1977, pp. 198-210.

“Problems of Stabilization in an Inflationary Environment: Discussion of Three Papers,” *1975 Proceedings of the Business and Economic Statistics Section: American Statistical Association Annual Meetings*, pp. 20-22.

RESEARCH REPORTS

The Mining of Crow Nation Coal: Economic Impact on the Crow Reservation, Big Horn County, and Montana, Report Prepared for the Crow Nation by Prof. Joseph P. Kalt, The Harvard Project on American Indian Economic Development, February 4, 2014.

Tucson's New Prosperity: Capitalizing on the Sun Corridor, A Sun Corridor Legacy Program Concept Paper Prepared by the Sonoran Institute (with Dan Hunting and Luther Propst), Draft, The Sonoran Institute, Tucson Arizona, May 25, 2010.

Economists' Amici Brief to the United States Supreme Court (In re: Long-Term Contracts for Energy Markets, No.08-674; with Blaydon, Colin C., *et al.*), July 14, 2009.

Economic and Public Policy Analysis of the Proposed Western Navajo-Hopi Lake Powell Water Pipeline: Prepared for the Hopi Nation, March 19, 2008.

Economists' Amici Brief to the United States Supreme Court (In re: Long-Term Electric Power Contracts, Nos. 06-1457, 06-1462; with Baumol, Wm. J., *et al.*), November 28, 2007.

“The Links Between Air Quality Policies, Electric Power and Natural Gas Markets, and Macroeconomic Impacts: *Clear Skies Versus The Clean Air Planning Act*” (with Charles Augustine and Stephen Makowka), A Policy Analysis Study by Lexecon, an FTI Consulting Company, March 2004.

Alaska Native Self-Government and Service Delivery: What Works? (with Stephen Cornell), Report to the Alaskan Federation of Natives, The Harvard Project on American Indian Economic Development, John F. Kennedy School of Government, Harvard University, August 2003.

The Costs, Benefits, and Public Policy Merits of the Proposed Western Navajo-Hopi Lake Powell Pipeline (with Jonathan B. Taylor and Kenneth W. Grant II), December 22, 1999.

“A Public Policy Evaluation of the Arizona State Land Department's Treatment of the Island Lands Trust Properties at Lake Havasu City” (with Jonathan B. Taylor and Matthew S. Hellman), August 16, 1999.

"Reserve-Based Economic Development: Impacts and Consequences for Caldwell Land Claims" (with Kenneth W. Grant, Eric C. Henson, and Manley A. Begay, Jr.), August 10, 1999.

"Policy Recommendations for the Indonesian Petrochemical Industry" (with Robert Lawrence, Henry Lee, Sri Mulyani and LPEM, and DeWitt & Company), March 1, 1999.

"American Indian Gaming Policy and Its Socio-Economic Effects: A Report to the National Gambling Impact Study Commission" (with Stephen Cornell, Matthew Krepps, and Jonathan Taylor), July 31, 1998.

"Public Interest Assessment of the Proposed BLM/Del Webb Land Exchange in Nevada," report submitted to the U.S. Department of the Interior on behalf of Del Webb Conservation Holding Corporation, June 25, 1996.

"Politics Versus Policy in the Restructuring Debate," The Economics Resource Group, Inc., funded by Northeast Utilities System Companies, June 1995.

"Indexing Natural Gas Pipeline Rates" (with Amy B. Candell, Sheila M. Lyons, Stephen D. Makowka, and Steven R. Peterson), The Economics Resource Group, Inc., April 1995.

"An Economic Analysis of Electricity Industry Restructuring in New England" (with Adam B. Jaffe), The Economics Resource Group, Inc., funded by Northeast Utilities System Companies, April 1995.

"Oversight of Regulated Utilities' Fuel Supply Contracts: Achieving Maximum Benefit from Competitive Natural Gas and Emission Allowance Markets" (with Adam B. Jaffe), The Economics Resource Group, Inc., funded by Enron Gas Services Corporation, April 1993.

"Incentives and Taxes: Improving the Proposed BTU Tax and Fostering Competition in Electric Power Generation," Harvard University and The Economics Resource Group, Inc., March 10, 1993.

"An Assessment of the Impact of the PT Chandra Asri Petrochemical Project on Indonesia's Economy" (with Henry Lee, Dr. Robert Lawrence, Dr. Ronald M. Whitefield, and Bradley Blesie), The Economics Resource Group, Inc., December 1991.

"The Federal Energy Regulatory Commission's Proposed Policy Statement on Gas Inventory Charges (PL 89-1-000)" (with Charles J. Cicchetti and William W. Hogan), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, July 1989.

"The Redesign of Rate Structures and Capacity Auctioning in the Natural Gas Pipeline Industry," *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, June 1988.

"A Review of the Adequacy of Electric Power Generating Capacity US , 1985-93 and 1993-Beyond" (with James T. Hamilton and Henry Lee), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, June 1986.

"Energy Issues in Thailand: An Analysis of the Organizational and Analytical Needs of the Thailand Development Research Institute," Harvard Institute for International Development, March 1986.

"Old Gas Decontrol, FERC's Block Billing for Pipelines, and the Winners and Losers in Natural Gas Policy," prepared for the Natural Gas Supply Association (NGSA), December 1985.

"Natural Gas Decontrol, Oil Tariffs, and Price Controls: An Intertemporal Comparison," Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, April 1985.

"Market Structure, Vertical Integration, and Long-Term Contracts in the (Partially) Deregulated Natural Gas Industry," *Discussion Paper Series*, Harvard Institute of Economic Research, Harvard University, April 1985.

"Can a Consuming Region Win under Gas Decontrol?: A Model of Income Accrual, Trade, and Stockholding" (with Robert A. Leone), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, February 1984.

"Natural Gas Decontrol: A Northwest Industrial Perspective" (with Susan Bender and Henry Lee), *Discussion Paper Series*, John F. Kennedy School of Government, Harvard University, November 1983.

"Natural Gas Decontrol: A Northeast Industrial Perspective" (with Henry Lee and Robert A. Leone), *Discussion Paper Series*, John F. Kennedy School of Government, Harvard University, October 1982.

"Television Industry Self-Regulation: Protecting Children from Competition in Broadcasting" (with George J. Holder), Harvard Institute of Economic Research, Discussion Paper No. 896, April 1982.

"The Use of Political Pressure as a Policy Tool During the 1979 Oil Supply Crisis" (with Stephen Erfle and John Pound), *Discussion Paper Series*, John F. Kennedy School of Government, Harvard University, April 1981.

"Problems of Minority Fuel Oil Dealers" (with Henry Lee), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, April 1981.

OTHER PUBLICATIONS AND LEGISLATIVE TESTIMONY

"Tucson must not become bottom feeder underneath Phoenix's sprawl machine," *Arizona Daily Star*, Opinion, May 28, 2010.

Statement to U.S. House of Representatives Committee on Appropriations, Subcommittee on Interior, Environment, and Related Agencies, *The State of Indian America*, March 13, 2007.

"Political Windfall", Review & Outlook editorial, *The Wall Street Journal Opinion*, November 2, 2005.

Statement to U.S. Senate Committee on Indian Affairs, *Lessons in Economic Development*, Hearings Regarding International Lessons in Economic Development, September 12, 2002 (hearings cancelled September 11, 2002); published in U.S. Senate Committee on Indian Affairs, *Forum on Establishing a Tribally Owned Development Corporation*, July 20, 2004.

"Institution Building: Organizing for Effective Management" in *Building Native Nations: Environment, Natural Resources, and Governance*, ed. by Stephanie Carroll Rainie, Udall Center for Studies in Public Policy, The University of Arizona, 2003.

Statement to U.S. House of Representatives Committee on Government Reform, Subcommittee for Energy Policy, Natural Resources and Regulatory Affairs, Hearings Regarding Natural Gas Capacity, Infrastructure Constraints, and Promotion of Healthy Natural Gas Markets, Especially in California, October 16, 2001.

Statement to U.S. Senate Committee on Indian Affairs, *Harvard University Native American Program*, Hearings Regarding Native American Program Initiatives at the College and University Level (with Dr. Ken Pepion), June 21, 2001.

Statement to U.S. Senate Committee on Indian Affairs, *Impact of Federal Development Initiatives in Indian Country*, Hearing Regarding S.2052, of September 27, 2000.

Foreword to *Impossible to Fail*, J.Y. Jones, Hillsboro Press, 1999.

Statement to U.S. House of Representatives, Subcommittee on Energy and Mineral Resources, *Federal Oil Royalty Valuation* (HB 3334), Hearing of May 21, 1998.

Statement to the National Gambling Impact Study Commission, *Economic Impact of Gaming by American Indian Tribes*, Hearing of March 16, 1998.

"Measures Against Tribes Are Counterproductive," editorial (with Jonathan B. Taylor), *Indian Country Today*, September 22-29, 1997.

"American Indian Economic Development," *Tribal Pathways Technical Assistant Program Newsletter*, February 1997, p. 3.

"Tourists' Role Downplayed", Plaintiffs say Crow have no authority to compel them to collect a tax from tourists, *by David Crisp Of The Gazette Staff*, copy dated January 30, 1997.

Statement to U.S. Senate Committee on Indian Affairs, *Economic Development in Indian Country*, Hearing of September 17, 1996.

"A Harvard Professor Looks at the Effects of Allowing U.S. Hunters to Import Polar Bear Trophies," *Safari Times*, April 1994.

Statement to U.S. Congress, Joint Economic Committee, Subcommittee on Trade, Productivity and Economic Growth, *The Economic Impact of Lower Oil Price*, Hearing of March 12, 1986.

"Administration Backsliding on Energy Policy" (with Peter Navarro), *Wall Street Journal*, editorial page, February 9, 1982.

Statement to the Energy and Natural Resources Committee, U.S. Senate, *Government Responses to Oil Supply Disruptions*, Hearing of July 28-29, 1981, U.S. Government Printing Office, 1981, pp. 623-630 and 787-801.

"Staff Report on Effects of Restrictions on Advertising and Commercial Practice in the Professions: The Case of Optometry," Ronald S. Bond, *et al.*, Executive Summary, Bureau of Economics, Federal Trade Commission, September 1980.

"Redistribution of Wealth in Federal Oil Policy," *San Diego Business Journal*, August 18, 1980, pp. 22-23.

"The Energy Crisis—Moral Equivalent of Civil War" (with Peter Navarro), *Regulation*, January/February 1980, pp. 41-43.

"Windfall Profits Tax Will Reap Bonanza—But For Whom?" (with Peter Navarro), *The Miami Herald*, December 23, 1979, editorial page.

SELECTED PRESENTATIONS

"Indigenous Self-Government: The Political Economy of the Only Policy That Has Ever Worked," Ministry of Business, Innovation and Employment, Government of New Zealand, Wellington, NZ, April 18, 2013.

"American Indian Self-Government: The Political Economy of a Policy That's Worked," Dean's Distinguished Speakers Series, University of Auckland (NZ) Business School, April 16, 2013.

Keynote Address: "Harvesting Creosote to Build Houses: Is Arizona's Economic Model Sustainable?" 96th Arizona Town Hall, Tucson, AZ, April 26, 2010.

Keynote Address: "Resurgence and Renaissance in Indian America," Native American Business Association Annual Convention, Mississippi Choctaw Nation, April 29, 2008.

"Standard Oil to Today: Antitrust Enforcement in the Oil Industry," American Bar Association, 56th Antitrust Law Spring Meeting, Washington, D.C., March 27, 2008.

Keynote Address: "Nation Building: Lessons from Indian Country," National Native American Economic Policy Statement, Phoenix, AZ, May 15, 2007.

Keynote Address: "A Conversation on the State of the Native Nations: A Gathering of Leaders," Res 2007, Las Vegas, NV, March 14, 2007.

"Foundations of Nation Building: The Roles of Culture, Institutions, & Leadership Among Contemporary American Indian Nations," a lecture to faculty, staff and students, Marine Corps University, Quantico, VA, March 12, 2007.

Keynote Address: "The Universal Challenge of Nation Building," First Annual Great Lakes Tribal Economic Development Symposium, Traverse City, MI, October 25-26, 2006.

Transcript of Keynote Address, "Setting the Agenda: What Will Drive Energy's Future?" *Congressional Quarterly Forum*, "The Politics of Oil: U.S. Imperatives, Foreign Consequences," Washington, D.C., September 13, 2005.

"The Role of the Tribal Courts and Economic Development," Bureau of Indian Affairs, *Tribal Courts in the 21st Century*, Billings, MT, August 16, 2005.

"Linking Tribal Sovereignty to Economic Self-Determination in Indian Country," *The Tribal Leaders Forum*, "Sovereignty in Crisis," Las Vegas, NV, May 27, 2005.

"Competition and Regulation in the North American Electricity Industry: Can These Two Seemingly Opposed Forces Coexist?" (with Charles Augustine and Joseph Cavicchi), 24th Annual North American Conference, USAEE/IAEE, Energy, Environment, and Economics in a New Era, Washington, DC, July 8-10, 2004.

"The State of U.S. Railroads and the Challenges Ahead," briefing of Capitol Hill staff, Association of American Railroads, April 17, 2003.

"The State of the Railroad Industry and the Challenges Ahead," briefing of Roger Nober, Chairman, US Surface Transportation Board, Association of American Railroads, January 28, 2003.

"The Wealth of American Indian Nations: Culture and Institutions," Federal Reserve Bank of Boston, December 11, 2002.

"The Roots of California's Energy Crisis: Law, Policy, Politics, and Economics," Regulation Seminar, Center for Business and Government, Kennedy School, Harvard University, November 7, 2002.

"Public Policy Foundations of Nation Building in Indian Country," National Symposium on Legal Foundations of American Indian Self-Governance," Mashantucket Pequot Nation, February 9, 2001.

"Twenty-Five Years of Self-Determination: Lessons from the Harvard Project on American Indian Economic Development," Udall Center for Studies in Public Policy, University of Arizona, November 13-14, 1999.

Proceedings of the Fourth Annual DOE-NARUC Natural Gas Conference, Orlando, FL, February 1995.

Keynote Address, "Sovereignty and American Indian Economic Development," Arizona Town Hall, Grand Canyon, AZ, October 1994.

"Is the Movement Toward a Less-Regulated, More Competitive LDC Sector Inexorable?, (Re)Inventing State/Federal Partnerships: Policies for Optimal Gas Use," U.S. Department of Energy and The National Association of Regulatory Utility Commissioners Annual Conference, Nashville, TN, February 1994.

"Cultural Evolution and Constitutional Public Choice: Institutional Diversity and Economic Performance on American Indian Reservations," Festschrift in Honor of Armen A. Alchian, Western Economic Association, Vancouver, BC, July 1994.

"Precedent and Legal Argument in U.S. Trade Policy: Do they Matter to the Political Economy of the Lumber Dispute?" National Bureau of Economic Research, Conference on Political Economy of Trade Protection, February, September 1994.

"The Redesign of Rate Structures and Capacity Auctioning in the Natural Gas Pipeline Industry," Natural Gas Supply Association, Houston, TX, March 1988.

"Property Rights and American Indian Economic Development," Pacific Research Institute Conference, Alexandria, VA, May 1987.

"The Development of Private Property Markets in Wilderness Recreation: An Assessment of the Policy of Self-Determination by American Indians," Political Economy Research Center Conference, Big Sky, MT, December 4-7, 1985.

"Lessons from the U.S, Experience with Energy Price Regulation," International Association of Energy Economists Delegation to the People's Republic of China, Beijing and Shanghai, PRC, June 1985.

"The Impact of Domestic Regulation on the International Competitiveness of American Industry," Harvard/NEC Conference on International Competition, Ft. Lauderdale, FL, March 7-9, 1985.

"The Welfare and Competitive Effects of Natural Gas Pricing," American Economic Association Annual Meetings, December 1984.

"The Ideological Behavior of Legislators," Stanford University Conference on the Political Economy of Public Policy, March 1984.

"Principal-Agent Slack in the Theory of Bureaucratic Behavior," Columbia University Center for Law and Economic Studies, 1984.

"The Political Power of the Underground Coal Industry," FTC Conference on the Strategic Use of Regulation, March 1984.

"Decontrolling Natural Gas Prices: The Intertemporal Implications of Theory," International Association of Energy Economists Annual Meetings, Houston, TX, November 1981.

"The Role of Government and the Marketplace in the Production and Distribution of Energy," Brown University Symposium on Energy and Economics, March 1981.

"A Political Pressure Theory of Oil Pricing," Conference on New Strategies for Managing U.S. Oil Shortages, Yale University, November 1980.

"The Politics of Energy," Eastern Economic Association Annual Meetings, 1977.

WORKSHOPS PRESENTED

University of Auckland; Ministry of Business, Innovation and Employment, Government of New Zealand; Federal Reserve Bank of Boston; University of Indiana; University of Montana; Oglala Lakota College; University of New Mexico; Columbia University Law School; Department of Economics and John F. Kennedy School of Government, Harvard University; MIT; University of Chicago; Duke University; University of Rochester; Yale University; Virginia Polytechnic Institute; U.S. Federal Trade Commission; University of Texas; University of Arizona; Federal Reserve Bank of Dallas; U.S. Department of Justice; Rice University; Washington University; University of Michigan; University of Saskatchewan; Montana State University; UCLA; University of Maryland; National Bureau of Economic Research; University of Southern California.

TEACHING

Markets and Market Failure with Cases (Harvard Kennedy School of Government, graduate); Native Americans in the 21st Century: Nation Building I & II (Harvard, University-wide, graduate and undergraduate); Competition, Strategy, and Regulation (Harvard Kennedy School of Government, graduate); Introduction to Nation Building/The Law, Policy, and Economics of Contemporary Tribal Economic Development (University of Arizona, Rogers College of Law and Eller College of Management, graduate); Intergovernmental Relations (University of Arizona, Rogers College of Law); Introduction to Environment and Natural Resource Policy (Harvard Kennedy School of Government, graduate); Seminar in Positive Political Economy (Harvard Kennedy School of Government, graduate); Intermediate Microeconomics for Public Policy (Harvard Kennedy School of Government, graduate); Natural Resources and Public Lands Policy (Harvard Kennedy School of Government, graduate); Economics of Regulation and Antitrust (Harvard Department of Economics, graduate); Economics of Regulation (Harvard Department of Economics, undergraduate); Introduction to Energy and Environmental Policy (Harvard Kennedy School of Government, graduate); Graduate Seminar in Industrial Organization and Regulation (Harvard Department of Economics, graduate); Intermediate Microeconomics (Harvard Department of Economics, undergraduate); Principles of Economics (Harvard Department of Economics, undergraduate); Seminar in Energy and Environmental Policy (Harvard Kennedy School of Government, graduate)

OTHER PROFESSIONAL ACTIVITIES

Board of Directors, Fort Apache Heritage Foundation, 2000-present (Chair, 2010-present)

Working Board, National Institute for Civil Discourse, 2011-present

Advisory Board, Community Development Enterprise, Chickasaw Nation, 2014-present

Board of Directors, Sonoran Institute, 2008-present (Vice-Chair, 2014-present)

Honorary Advisory Board, Centro Artistico y Cultural de Huachinera, Sonora, Mexico, 2009-present

National Advisory Board, Big Sky Institute, Montana State University, 2007-present

Board of Trustees, The Communications Institute, 2003-present

Mediator (with Keith G. Allred), Nez Perce Tribe and the North Central Idaho Jurisdictional Alliance, MOU signed December 2002

Mediator, *In the Matter of the White Mountain Apache Tribe v. United States Fish and Wildlife Service*, re: endangered species management authority, May-December, 1994

Steering Committee, National Park Service, 75th Anniversary Symposium, 1991-1993

Board of Trustees, Foundation for American Communications, 1989-2003

Editorial Board, *Economic Inquiry*, 1988-2002

Advisory Committee, Oak Ridge National Laboratory, Energy Division, 1987-1989

Commissioner, President's Aviation Safety Commission, 1987-1988

Principal Lecturer in the Program of Economics for Journalists, Foundation for American Communications, teaching economic principles to working journalists in the broadcast and print media, 1979-2000

Lecturer in the Economics Institute for Federal Administrative Law Judges, University of Miami School of Law, 1983-1991

Research Fellow, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, 1981-1987

Editorial Board, MIT Press Series on *Regulation of Economic Activity*, 1984-1992

Research Advisory Committee, American Enterprise Institute, 1979-1985

Editor, *Quarterly Journal of Economics*, 1979-1984

Referee for *American Economic Review*, *Bell Journal of Economics*, *Economic Inquiry*, *Journal of Political Economy*, *Review of Economics and Statistics*, *Science Magazine*, *Journal of Policy Analysis and Management*, *Social Choice and Welfare*, *Quarterly Journal of Economics*, MIT Press, North-Holland Press, Harvard University Press, *American Indian Culture and Research Journal*

SELECTED HONORS AND AWARDS

Distinguished Visiting Professor, University of Auckland Business School, April 2013.

Public Sector Leadership Award, National Congress of American Indians, Washington, DC, March 1, 2010.

First American Public Policy Award, First American Leadership Awards 2005, "Realizing the Vision: Healthy Communities, Businesses, and Economies," National Center for American Indian Enterprise Development, Phoenix, AZ, June 9, 2005.

Allyn Young Prize for Excellence in the Teaching of the Principles of Economics, Harvard University, 1978-1979 and 1979-1980.

Chancellor's Intern Fellowship in Economics, September 1973 to July 1978, one of two awarded in 1973, University of California, Los Angeles.

Smith-Richardson Dissertation Fellowship in Political Economy, Foundation for Research in Economics and Education, June 1977 to September 1977, UCLA.

Summer Research Fellowship, UCLA Foundation, June 1976 to September 1976.

Dissertation Fellowship, Hoover Institution, Stanford University, September 1977 to June 1978.

Research funding sources have included: Archibald Bush Foundation; Annie E. Casey Foundation; Nathan Cummings Foundation; Department of Indian Affairs and Northern Development (Canada); National Indian Gaming Association; The National Science Foundation; USAID (IRIS Foundation); Pew Charitable Trust; Christian A. Johnson Family Endeavor Foundation; The Ford Foundation; The Kellogg Foundation; Harvard Program on the Environment; The Northwest Area Foundation; the U.S. Department of Energy; the Research Center for Managerial Economics and Public Policy, UCLA Graduate School of Management; the MIT Energy Laboratory; Harvard's Energy and Environmental Policy Center; the Political Economy Research Center; the Center for Economic Policy Research, Stanford University; the Federal Trade Commission; Resources for the Future; and The Rockefeller Foundation.

Four years of undergraduate academic scholarships, 1969-1973; graduated with University Distinction and Departmental Honors, Stanford University.

EXPERT TESTIMONY

American Association of Railroads

Before the Surface Transportation Board, In re Railroad Revenue Adequacy Docket No. EP 722, Verified Statement, September 5, 2014; Reply Statement, November 4, 2014.

Future Foam, Inc.

In the United States District Court for the Northern District of Ohio, Western Division, MDL No. 2196, In re: Polyurethane Foam Antitrust Litigation, Expert Report, May 15, 2014; Deposition, June 9-10, 2014.

Burlington Resources Oil & Gas Company

In the State of New Mexico, County of Santa Fe, First Judicial District Court, Docket No. D-0101-CV-2003-02309, Phillis Ideal, Jose E. and Clara Gomez Living Trust, and J. Fidel Candelaria v. Burlington Resources Oil & Gas Company, Successor in Interest to Burlington Resource Oil and Gas Company, Expert Report, March 5, 2014; Deposition, March 11, 2014; Affidavit, March 31, 2014.

TTX Company

Before the Surface Transportation Board, In re Finance Docket No. 27590 (Sub-No. 4), Application for Approval of Pooling Of Car Service with Respect to Flatcars, Verified Statement of Joseph P. Kalt, January 16, 2014.

Apple Inc.

In the United States District Court for the Southern District of New York, Docket No. 11-md-02293 (DLC) ECF Case, In Re: Electronic Books Antitrust Litigation v. Apple Inc., Declaration, November 15, 2013; Deposition, December 4, 2013; Sur-Reply Declaration, January 21, 2014.

Lao Holdings, N.V.

Lao Holdings, N.V., Claimant, v. The Government of the Lao People's Democratic Republic, Respondent, ICSID Case No. ARB/(AF)12/6, Witness Statement, July 22, 2013; Witness Statement, October 1, 2013; Rebuttal Witness Statement, May 9, 2014.

Tri-State Generation and Transmission Association, Inc.

Before the Public Utility Commission of the State of Colorado, Docket No. 13F-0145E, La Plata Electric Association, Inc., et al. v. Tri-State Generation and Transmission Association, Inc., Witness Statement, July 5, 2013; Oral Testimony, August 1, 2013.

United Parcel Service Company

In the United States District Court for the Central District of California, Western Division, AFMS, LLC v. United Parcel Service Company and FedEx Corporation, Expert Report, February 8, 2013.

BNSF Railway Company, CSX Transportation, Inc., Norfolk Southern Railway Company, and Union Pacific Railroad Company

United States District Court for the District of Columbia, In Re: Rail Freight Fuel Surcharge Antitrust Litigation, MDL No. 1869, All Direct Purchaser Cases, Expert Report, January 22, 2013; Deposition, May 28, 2013; Declaration, March 31, 2014; Deposition, May 7, 2014; Sur-Reply Declaration, July 21, 2014; Deposition, August 8, 2014.

Equilon Enterprises, LLC, Motiva Enterprises LLC, Shell Oil Company, Shell Oil Products Company LLC, and Shell Trading (US) Company

In the United States District Court for the Southern District of New York, Case No. 08 Civ. 00312 (SAS), New Jersey Department of Environmental Protection, et al., Plaintiffs, against Atlantic Richfield Company, et al., Defendants, Expert Report, November 15, 2012; Deposition, May 14, 2013.

The Hershey Company

In the United States District Court for the Middle District of Pennsylvania, In Re: Chocolate Confectionary Antitrust Litigation: MDL Docket No. 1935 (Civil Action No. 1:08-MDL-1935), Expert Report, August 3, 2012; Deposition, August 20, 2012; Declaration, November 5, 2012; Expert Report, May 31, 2013; Deposition, June 20, 2013; Supplemental Expert Report, September 16, 2013.

Atlantic Richfield Company

In the United District Court for the Western District of Pennsylvania, Classes of Plaintiffs v. Babcock & Wilcox Power Generation Group, Inc., et al., Defendants, Civil Action No. 2:10-cv-00368-RCM, et al., Deposition, May 4, 2012; Expert Report of Joseph P. Kalt, February 28, 2013; Videotaped Deposition, June 12, 2013.

Perenco Ecuador Ltd.

International Centre for Settlement of Investment Disputes: In The Arbitration Under The Convention on The Settlement of Investment Disputes Between States and Nationals of Other States and The Treaty Between The Republic of France and The Republic of Ecuador Concerning The Encouragement and Reciprocal Protection of Investment; Perenco Ecuador Limited, Claimant v. The Republic of Ecuador, Respondent, ICSID Case No. ARB/08/6, Statement, April 12, 2012; Supplemental Statement, November 7, 2012; Oral Testimony, November 15, 2012.

Electronic Arts, Inc.

In the United States District Court for the Northern District of California, Geoffrey Pecover and Andrew Owens, on behalf of themselves and all others similarly situated, Plaintiffs, v. Electronic Arts Inc., a Delaware Corporation, Defendant: Case No. 08-cv-02820 CW, Expert Report, March 8, 2012; Reply Report, April 12, 2012.

The PPL Companies, The Calpine Companies, Exelon Generation Company, NAEA Ocean Peaking Power, and The PSEG Companies

In the United States District Court for the District of New Jersey. PPL EnergyPlus et al., Plaintiffs, v. Lee A. Solomon et al., Defendants. Case 2:11-cv-00745-PGS-ES, Declaration, February 6, 2012.

MPS Merchant Services, Inc. (F/K/A Aquila Power Corporation) and Illinova Energy Partners, Inc.

Before the Federal Energy Regulatory Commission. Exh. No. MI-1, San Diego Gas & Electric Company, Complainant v. Sellers of Energy and Ancillary Services Into Markets Operated by the California Independent System Operator Corporation and the California Power Exchange, Respondents, Docket No. EL00-95-248, Prepared Direct Testimony, October 25, 2011; Oral Testimony, July 10, 2012.

Motiva Enterprises LLC, Shell Oil Company, and TMR Company

In the State of New Hampshire Superior Court, Case No. 03-C-550, State of New Hampshire, Plaintiff, against Hess Corporation et al., Defendants, Expert Report, October 17, 2011; Deposition, December 6, 2011.

BP Exploration (America) Inc.

In the Superior Court for the State of Alaska at Anchorage, The State of Alaska, Plaintiff, v. BP Exploration (Alaska) Inc., a Delaware Corporation, Defendant, IN Case No. 3AN-09-6181 CI, Expert Report (with W. David Montgomery), September 30, 2011; Deposition, January 18, 2012; Supplemental Expert Report, March 15, 2012; Oral Testimony, June 13, 2012.

Mobil Oil Corporation

In the Twenty-Sixth Judicial District, District Court, Stevens County, Kansas, Willie Jean Farrar, et al. Plaintiffs, vs. Mobil Oil Corporation, Defendant, Affidavit, September 14, 2011; Expert Report, March 23, 2012; Affidavit, June 1, 2012.

In the United States District Court, for the District of Kansas, Jimmie Hershey, on behalf of himself and all others similarly situated, Plaintiffs, v. ExxonMobil Oil Corporation, Defendant, Affidavit, June 1, 2012.

Intercontinental Terminals Company, LLC

In the District Court, Harris County, Texas, 133rd District; Cause No. 2010-66657; Port Terminal Railroad Association, Plaintiff, vs. Intercontinental Terminals Company, LLC, Vopak North American, Inc., and Vopak Terminal Deer Park, Inc., Defendants, vs. Mitsui & Col. USA, Inc., Third-Party Defendant; Expert Report, September 2, 2011.

Motiva Enterprises, LLC

In the Circuit Court of the Eleventh Judicial Circuit in and for Miami-Dade County, Florida, Bay Point Oil Corp., et al, Plaintiffs, vs. Motiva Enterprises, LLC, Defendant, Case No. 03-03572, and Hollywood Hills Service Center, Inc., et al, Plaintiffs, vs. Motiva Enterprises, LLC, Defendant, Case No. 04-13857 CA (30), Declaration, July 15, 2011; Affidavit, May 25, 2012.

Kaiser-Francis Oil Company

In the United States District Court for the Western District of Oklahoma, J.C. Hill, et al., Plaintiffs, v. Kaiser-Francis Oil Company, Defendant, Case No. CIV-09-07-R, Affidavit, June 7, 2011; Expert Report, December 2, 2011; Supplemental Expert Report, August 13, 2012; Affidavit, October 19, 2012; Affidavit, November 7, 2012.

Progress Energy and Duke Energy

Before the Public Service Commission of South Carolina, Docket No. 2011-158-E, In the Matter of Application of Duke Energy Corporation and Progress Energy, Inc. to Engage in a Business Combination Transaction, Direct Testimony, September 14, 2011; Rebuttal Testimony, November 30, 2011; Oral Testimony, December 12, 2011.

North Carolina Utilities Commission, Docket Nos. E-2, Sub 998 and E-7 Sub 986, In the Matter of Application of Duke Energy Corporation and Progress Energy, Inc. to Engage in a Business Combination Transaction and Address Regulatory Conditions and Codes of Conduct, Testimony, May 20, 2011; Rebuttal Testimony, September 15, 2011; Oral Testimony, September 21, 2011.

Before the Public Service Commission of South Carolina, In the Matter of Application of Duke Energy Carolinas to Engage in a Business Combination Transaction, Docket No. 2011-158-E., Rebuttal Testimony, December 8, 2011.

United States Soccer Federation Inc. and Major League Soccer LLC

In the United States District Court, Northern District of Illinois Eastern Division, Champions World LLC, Plaintiff, v. United States Soccer Federation Inc. and Major League Soccer LLC, Defendants, Case No. 06-CV-5724, Expert Report, May 13, 2011; Deposition, September 22-23, 2011.

The AES Corporation, Tau Power B.V.

At the International Centre for Settlement of Investment Disputes, Case No ARB/10/16, The AES Corporation, Tau Power B.V. and The Republic of Kazakhstan, Expert Report of Joseph P. Kalt and Howard N. Rosen (FTI Consulting Inc.), April 28, 2011; Rebuttal Expert Report of Joseph P. Kalt and Howard N. Rosen (FTI Consulting Inc.), March 30, 2012; Supplemental Expert Report of Joseph P. Kalt, August 6, 2012; Oral Testimony, September 14, 2012; Expert Report of Joseph P. Kalt and Howard N. Rosen (FTI Consulting Inc.), November 2, 2012; Oral Testimony, February 6-7, 2013.

Dairy Farmers of America, Inc. and Dairy Marketing Services, LLC

In the US District Court for the District of Vermont, Alice H. Allen and Laurence E. Allen d/b/a/ Al-Lens Farm et al, Plaintiffs, v. Dairy Farmers of America Inc., Dairy Marketing Services, LLC, and Dean Foods Company, Defendants, Docket No. 5:09-cv-00230-cr, Expert Report, April 5, 2011; Declaration, April 12, 2011; Deposition, May 6, 2011; Reply Report, July 6, 2011; Expert Report, December 16, 2011; Deposition, February 14, 2012; Expert Report, May 11, 2012; Reply Report, July 26, 2013.

Devon Energy Corporation, BP America Production, and Conoco Phillips Co.

In the First Judicial District Court, State of New Mexico, County of Santa Fe, Phillis Ideal and Collins Partners, Ltd., a Texas Limited Partnership, Plaintiffs, v. BP America Production Company, Defendant, Case No.: D-0101-CV-2003-02310, Affidavit, June 27, 2011; Expert Report, October 22, 2012; Deposition, August 28, 2014; Affidavit, November 14, 2014.

In the First Judicial District Court, State of New Mexico, County of Santa Fe, F. Ferrell Davis, Plaintiff, v. Devon Energy Corporation, et al., Defendants, No. D-0101-CV-200301590, Affidavit, March 30, 2011; Affidavit, June 26, 2011; Expert Report, July 6, 2012; Deposition, August 6, 2012; Affidavit, October 22, 2012.

In the First Judicial District Court, State of New Mexico, County of Santa Fe, Smith Family, LLC, Plaintiff, v. ConocoPhillips Company, Defendant, No. D-0101-CV-200302311, Affidavit, May 18, 2012; Affidavit, August 24, 2012.

ICM Assurance Ltd. and Nexen Inc.

In the Matter of the Arbitration Pursuant to the UK Arbitration Act 1996 Between ICM Assurance Ltd. and Nexen Inc., Claimants, v. Oil Insurance Limited, Respondent, Expert Report, December 17, 2010.

Atlantic Richfield Company

Superior Court for the State of California, County of Santa Clara, Case No. 1-00-CV-788657, the People of the State of California vs. Atlantic Richfield Company, et al., Deposition, September 26, 2011; Deposition, December 19, 2012.

In the US District Court for the Eastern District of Wisconsin, Glenn Burton, Jr., Plaintiff, Case No. 07-CV-0303, vs. American Cyanamid Co., et al., Defendants; and in the State of Wisconsin Circuit Court: County of Milwaukee, Yasmin Clark, Minor, by her guardian ad litem, Susan M. Gramling, Plaintiff, Case No. 06-CV-012653, vs. American Cyanamid Co., et al., Defendants, Telephonic Deposition of Joseph P. Kalt, September 28, 2010.

State of Wisconsin Circuit Court, Milwaukee County, No. 99-CV-6411, Steven Thomas v Atlantic Richfield Co., et al., Deposition, April 5-6, 2006; Affidavit, April 27, 2007; Videotaped Deposition, May 3, 2007.

Superior Court of the State of Rhode Island, No. 99-5226, State of Rhode Island, Attorney General v Lead Industries Association, Inc., et al., Deposition, May 11-12, 2005; Deposition, August 18-19, 2005.

New England Power Generators Association

Before the Federal Energy Regulatory Commission. RE: ISO New England Inc. and New England Power Pool, Docket No. ER10-787-000, EL10-50-000, EL10-57-000, Second Brief of the New England Power Generators Association Inc., Written Testimony, September 1, 2010.

PPL Corporation and E.ON U.S. LLC

Before the Federal Energy Regulatory Commission, In re Docket No. EC10-__-000, Application for Approval Pursuant to Section 203 of the Federal Power Act, Volume 1 of 3; Affidavit filed with Joseph Cavicchi, June 28, 2010.

BNSF Railway Company

Before the Surface Transportation Board, In re STB Finance Docket No. 35305, Petition of Arkansas Electric Cooperative Corporation for a Declaratory Order, Rebuttal Verified Statement of Joseph P. Kalt and Glenn Mitchell, June 4, 2010.

Cypress Semiconductor Corporation

In the US District Court for the Northern District of California Oakland Division, In re SRAM Antitrust Litigation, MDL No. 1819, Expert Report, May 4, 2010; Deposition, June 8, 2010.

Dean Foods Company, et al.

In the US District Court for the Eastern District of Tennessee Greenville Division, Sweetwater Valley Farm, Inc., et al., Plaintiffs, vs. Dean Foods Company, et al., Defendants, MDL No. 1899, Expert Report, May 3, 2010; Deposition, June 23-24, 2010; Expert Report, August 12, 2011.

In the US District Court for the Eastern District of Tennessee Greenville Division, Sweetwater Valley Farm, Inc., et al., No. 2:07-cv-208, Plaintiffs, vs. Dean Foods Company, et al., Defendants, Case No. 2:08-MD-01000, Declaration, March 30, 2011; Supplemental Declaration, March 15, 2012.

In the US District Court for the Eastern District of Tennessee Greenville Division, Food Lion, LLC, et al., Plaintiffs, vs. Dean Foods Company, et al., Defendants, Case No. 2:07-CV-188, Expert Report, May 3, 2010; Deposition, June 11, 2010.

McKesson Corporation

In the US District Court for the District of Massachusetts, San Francisco Health Plan individually and on behalf of the State of California, et al., Plaintiffs v McKesson Corporation, Defendant in C.A. No. 1:08-cv-10843-PBS; Responsive Expert Report, September 19, 2011.

In the US District Court for the District of Massachusetts, the State of Connecticut v. McKesson Corporation in Civil Action No. 08-10900-PBS, Responsive Expert Report, April 14, 2010.

In the US District Court for the District of Massachusetts, New England Carpenters Health Benefits Fund, et al. v First Databank, Inc. and McKesson Corporation, No. 05-11148-PBS, Report, January 28, 2008; Rebuttal Report, October 1, 2008.

CITGO Petroleum Corporation

In the United States District Court, Northern District of Oklahoma, in Re: Stephenson Oil Company, on behalf of itself and all others similarly situated, Plaintiff, vs. CITGO Petroleum Corporation, Defendant, Case No. 08-CV-380-TCK-TLW, Expert Report, November 20, 2009; Oral Testimony, February 25, 2010.

Confederated Tribes of the Chehalis Reservation

In the United States District, Western District of Washington at Tacoma, in Re: Confederated Tribes of the Chehalis Reservation, Plaintiffs, v. Thurston County Board of Equalization, Defendants, Civil Action No. C08 5562, Expert Report, October 15, 2009; Deposition, December 4, 2009.

Rio Tinto

In the Australian Competition Tribunal, Application for the Review of the Deemed Decision by the Commonwealth Treasurer of 23 May 2006 Under Section 44H(9) of the Trade Practices Act in Relation to the Application for Declaration of Services Provided by The Mount Newman Railway Line; Application for Review of the Decision by the Commonwealth Treasurer of October 27, 2008 Under Section 44h(1) of Trade Practices Act in Relation to the Application for Declaration of a Service Provided by the Robe Railway; Application for Review of the Decision by the Commonwealth Treasurer of October 27, 2008 Under Section 44h(1) of Trade Practices Act in Relation to the Application for Declaration of a Service Provided by the Hamersley Rail Network; and Application for Review of the Decision by the Commonwealth Treasurer of October 27, 2008 Under Section 44h(1) of Trade Practices Act in Relation to the Application for Declaration of a Service Provided by the Goldsworthy Railway, Affidavit, July 3, 2009.

North West Shelf Gas Party Ltd.

In the Matter of the Commercial Arbitration Act and an Arbitration Between Woodside Energy Ltd. and Others, Sellers, and Alinta Sales Party Ltd., Buyer, Statement and Expert Report on Behalf of the Sellers, July 3, 2009; Oral Testimony, August 26-27, 2009.

Gunnison Energy Corporation, SG Interests I, Ltd., and SG Interests VII, Ltd.

In the United States District Court for the District of Colorado In re: Riviera Drilling & Exploration Company, Plaintiff, v. Gunnison Energy Corporation, SG Interests I, Ltd., and SG Interests VII, Ltd., Defendants, Civil Action No. 08-cv-02486-REB-CBS, Expert Report, June 24, 2009; Expert Rebuttal Report, August 24, 2009; Deposition, October 20, 2009.

Gannett Company, Inc. *et al.*

In the United States District Court for the District of Arizona, State of Arizona ex rel. Terry Goddard, Attorney General, Plaintiff, v. Gannett Company, Inc.; Citizen Publishing Company; Lee Enterprises, Inc.; Star Publishing Company; and TNI Partners, Defendants, Affidavit, May 18, 2009.

Hyundai Heavy Industries Co., Ltd., *at al.*

International Chamber of Commerce, Court of Arbitration Case No. 15521/JEM/CYK, Hyundai Heavy Industries Co., Ltd., et al., Claimants v. International Petroleum Investment Company, et al., Respondents, Witness Statement, February 20, 2009; Oral Testimony, May 27, 2009.

Shell Oil Company; Shell Oil Products Company; Shell Trading (US) Company, LLC; Shell Enterprises, LLC; Motiva Enterprises, LLC; and TMR Company

In the United States District Court for the Southern District of New York, MDL No. 1358, Case No. 04-CV-3417 (SAS), In re: Methyl Tertiary Butyl Ether ("MTBE"), City of New York, Plaintiff v Amerada Hess Corporation, et al., Defendants, Expert Report, February 13, 2009; Supplemental Expert Report, March 30, 2009.

City of Los Angeles, California, *et al.*

US District Court, District of Columbia, Federal Maritime Commission v. City of Los Angeles, California, et al. Civil Action No. 1:08-cv-010895-RJL, Declaration, November 26, 2008.

PPL Companies

Federal Energy Regulatory Commission, Docket No. EL08-67-00 Protest of the PPL Companies to the Complaint of the RPM Buyers, Affidavit (with A.J. Cavicchi), July 11, 2008; Answer of the PPL Companies to the Motion for Leave to Answer and Answer of the RPM Buyers, Suppl. Affidavit (with A.J. Cavicchi), August 12, 2008.

Federal Government of Canada

London Court of International Arbitration, In the Matter of Arbitration No. 111790, The United States of America v. Canada, Expert Witness Report of Joseph P. Kalt, November 9, 2011; Rebuttal Expert Report, Ex. R-151, February 3, 2012; Oral Testimony, March 6, 2012.

London Court of International Arbitration, In the Matter of Arbitration No. 81010, The United States of America v. Canada, Expert Witness Statement of Joseph P. Kalt,

February 20, 2009; Rebuttal Expert Witness Report, May 8, 2009; Second Rebuttal Expert Witness Report, July 7, 2009; Oral Testimony, July 22-23, 2009; Expert Report (with Robert H. Topel), June 22, 2010.

London Court of International Arbitration, In the Matter of Arbitration No. 91312, The United States of America v. Canada, Expert Witness Statement of Joseph P. Kalt and David Reishus, May 12, 2009; June 11, 2009.

London Court of International Arbitration, In the Matter of Arbitration No. 7941, The United States of America v. Canada, Statement (with D. Reishus) June 29, 2008; Rebuttal Statement (with David Reishus), August 11, 2008; Oral Testimony, September 22-23, 2008.

ExxonMobil Corporation; *et al.*

US District Court, District of Columbia, Cause No. 1:04CV00940, City of Moundridge, Kansas et al. v ExxonMobil Corporation, et al., Affidavit, January 11, 2006; Report, June 5, 2008.

City of Las Cruces, New Mexico

State of New Mexico, et al. Plaintiffs, v. City of Las Cruces, New Mexico, and Dona Ana Mutual Domestic Water Consumers Association, Defendants, No. CV-06-1289, Declaration, May 16, 2008.

Association of American Railroads

Surface Transportation Board, Petition of the Association of American Railroads to Institute a Rulemaking Proceeding to Adopt a Replacement Cost Methodology to Determine Railroad Revenue Adequacy, Statement (with J. Klick), May 1, 2008.

Chevron USA, Inc., *et al.*

US District Court, Eastern District of Texas, Texarkana Division, United States of America ex rel. Harrold E. (Gene) Wright v Chevron USA, Inc., et al., No. 5:03cv264, Reports, April 1, 2008 (Unocal, Mobil), April 11, 2008 (Mobil); Depositions, April 14, 20-21, 2008.

Infineon Technologies AG

US District Court, Northern District of California, Dynamic Random Access Memory (DRAM) Antitrust Litigation (Dockets No. 06-cv-1665, 07-cv-1200, 07-cv-1207, 07-cv-1212, 07-cv-1381), Report, March 7, 2008; Deposition, April 26, 2008.

Exxon Mobil Corporation

State of Alaska Department of Natural Resources and Alaska Department of Revenue, Call for Public Comments Regarding the TransCanada Alaska Company, LLC..., Statement, March 6, 2008; *Before the Alaska State 25th Legislature Third Special Session, Regarding the TransCanada Application Pursuant to the Alaska Gasoline Inducement Act*, Statement, July 10, 2008.

Tyco Healthcare Group L.P. and Mallinckrodt Inc.

US District Court, Central District of California, Western Division, Allied Orthopedic Appliances, Inc., et al. v Tyco Healthcare Group L.P. and Mallinckrodt Inc., No. V-05-6419-MFP (AJWx), Report, February 1, 2008; Deposition, March 4, 2008.

P3 Group

Federal Energy Regulatory Commission, Docket No. EL08-34-000, Maryland Public Service Commission v PJM Interconnection, L.L.C., Affidavit (with A.J. Cavicchi), February 19, 2008.

Tractebel Energy Marketing, Inc.

Tractebel Energy Marketing, Inc. v AEP Power Marketing, Inc., et al., Nos. 03 CV 6731, 03 CV 6770, Report, January 21, 2008.

Cabot Corporation

US District Court, District of Massachusetts, AVX Corporation and AVX Limited v Cabot Corporation, C.A. No. 04 CV 10467 RGS, Report, January 15, 2008; Deposition, March 12, 2008.

Columbia Gas Transmission Corporation, et al.

US District Court, Southern District of West Virginia, Stand Energy Corp., et al. v Columbia Gas Transmission Corp., et al., No. 2:04-0867, Report, December 18, 2007; Civil Action Nos. 2:04-0868 through 0874, Videotaped Deposition, February 7, 2008; Civil Action No. 2:04-0867, Expert Report, September 30, 2008.

Nissan North America, Inc.

US District Court, District of Maine, MDL Docket No. 03-md-1532, ALL CASES, In Re: New Motor Vehicles Canadian Export Antitrust Litigation, Report, October 26, 2007; Deposition, December 13, 2007.

Energy Transfer Partners, L.P.

Federal Energy Regulatory Commission, Docket No. IN06-3-002, Answer of Energy Transfer Partners, L.P., Affidavit (with John R. Morris), October 9, 2007; Suppl. Affidavit Docket No. IN06-3-003 (with John R. Morris), March 31, 2008; Prepared Answering Testimony, March 31, 2009; Deposition, April 21-22, 2009.

Equilon Enterprises LLC, et al.

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APPENDIX B

IEU Set 1
Witness: Jay A. Ruberto

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

IEU Set 1 – On page 9, lines 4-5, of the Direct Testimony of Jay A. Ruberto, he states, “the
INT-25 Companies have the right to audit the costs charged to the Companies.” Identify the
agreement or contracts that define or provide these audit rights to the Companies.

Response: The Companies’ right to audit costs is by agreement in principle of the parties. See attached
term sheet related to the transaction. See Attachment “IEU Set 1-INT-25 Attachment 1.”

Term Sheet	
1. <i>Buyers:</i>	Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company; provided that each Buyer's obligation will be several (and not joint) and provided further that the Buyer's several <i>pro rata</i> obligations will be updated on June 1 st of each year during the term hereof based on each Buyer's average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of the prior year.
2. <i>Seller:</i>	FirstEnergy Solutions Corp.
3. <i>Product:</i>	All of Seller's rights in the Capacity of each Facility, together with the associated Energy, Ancillary Services, and Environmental Attributes
4. <i>Facilities:</i>	<ul style="list-style-type: none"> i. W. H. Sammis Plant, a 2,220 MW coal-fired and 13 MW diesel-fired power plant located in Stratton, Jefferson County, Ohio ii. Davis-Besse Power Station, a 908 MW nuclear power plant located in Oak Harbor, Ottawa County, Ohio; subject to condition that the NRC renews the operating license for Davis-Besse Facility for a 20-year term iii. Seller's 4.85% entitlement in Ohio Valley Electric Corporation ("OVEC")¹
5. <i>Quantity/Buyers' Contractual Capacity:</i>	One hundred percent (100%) of Sellers rights to the Capacity of each Facility together with Sellers rights to the Energy and

¹ Representing the rights and obligations associated with OE's 0.85% and TE's 4.00% OVEC ownership interests that were transferred to FE Generation and subsequently to Seller.

	Ancillary Services output associated with such 100% of each Facility's Capacity; provided that this term "Buyers' Contractual Capacity" includes one hundred percent (100%) of Sellers' rights to any capacity derates, uprates or capacity expansions at any Facility during the term of this Agreement.
6. <i>Delivery Points for Energy and Ancillary Services</i>	The unit-specific LMP Points at each Facility (PJM Pnodes to be specified in PPA).
7. <i>Obligation to Deliver/Receive:</i>	Seller agrees to sell and deliver, and Buyers agree to purchase, receive, and pay for, Buyers' Contractual Capacity and the Energy and Ancillary Services associated with Buyers' Contractual Capacity delivered by Seller to the Delivery Points during each hour of the Delivery Period. Seller also agrees to sell and deliver, and Buyers agree to purchase and receive and pay for all Environmental Attributes associated with the Facilities; provided that at termination of the Agreement Buyers will assign to Seller, and Seller will accept without recourse, all Environmental Attributes for the Facilities and that are owned or controlled by Buyer that are effective or in effect for time periods after the termination date.
8. <i>Unit Contingent:</i>	<p>All Energy, Capacity and Ancillary Services associated with each Facility and all of (i) Seller's obligation to sell and deliver, and (ii) Buyers' obligation to purchase, receive, and pay for, the Energy, Capacity and Ancillary Services associated with each Facility are Unit Contingent.</p> <p>Unit Contingent means, with respect to Energy, Capacity or Ancillary Services, that such Energy, Capacity or Ancillary Services is intended to be supplied from a given Facility and Seller's failure to deliver such Energy, Capacity or Ancillary Services is excused to the extent that a given Facility or portion of a Facility is unavailable; provided that Seller's failure to</p>

	<p>delivery Capacity, Energy or Ancillary Services will not be excused if the Seller could have avoided such failure by exercise of Good Utility Practice; and provided further that if Seller's failure to deliver Capacity, Energy or Ancillary Services could not have been avoided by exercise of Good Utility Practice then the failure to deliver such Energy, Capacity and Ancillary Services will be excused for the first 180 consecutive days of such unavailability period, and for any remaining unavailability period beyond the initial 180 day period Seller will provide replacement Capacity, Energy, Ancillary Services and Environmental Attributes (as the case may be), delivered to the ATSI zone, or the financial equivalent thereof for such remaining unavailability period; and provided further that in the event that a Capital Expenditure is required for Facility operations but such Capital Expenditure would render the affected Facility to be uneconomic then upon Buyers and Seller's written agreement Seller will either replace the Facility's output of Energy, Capacity, Ancillary Services and Environmental Attributes (all to be delivered to the ATSI zone at Seller's cost), or the Facility will be dropped from the PPA and Seller's obligations under the PPA for supply with regard to such Facility will be reduced to reflect that the Facility was dropped from the PPA.</p>
9. <i>Effective Date:</i>	The date the Agreement is executed by all Parties.
10. <i>Delivery Period:</i>	June 1, 2016 to May 31 st , 2031.
11. <i>Operating Work:</i>	During the Delivery Period, Seller has an obligation to perform the Operating Work in accordance with Good Utility Practice.
12. <i>Capital Expenditures:</i>	As pertains to the W.H. Sammis Plant and Davis-Besse Power Station, from time to time during the Delivery Period as deemed

	<p>necessary by Seller, Seller shall perform, or cause to be performed, Capital Expenditures Work related to such W.H. Sammis Plant and such Davis-Besse Power Station.</p> <p>By 120 days prior to the 12-month period that starts on June 1st of each year during the term of this agreement, Seller will develop and submit to Buyer for Buyer's review and comment an annual written Capital Expenditures plan for all Capital Expenditures Work deemed necessary by Seller that is scheduled to be performed at the Sammis Plant and the Davis-Besse Power Station during the referenced 12-month period. Within twenty (20) days of Buyer's receipt of the referenced plan, Buyer shall provide in writing to Seller any comments or queries to such plan, and Seller shall respond in writing (including where appropriate with documents as attachments or exhibits) to Buyer's queries (if any) within twenty (20) days of receipt of the Buyer's comments or queries. By 90 days prior to the referenced 12-month period, Seller and Buyer shall meet and discuss Buyer's comments and queries, and Seller's responses thereto. By 60 days prior to the referenced 12-month period, Seller shall issue a revised annual written Capital Expenditure plan that to the extent reasonable takes into account, or responds to, Buyer's comments and queries, including for each instance where the Seller did not accept or adopt one or more of Buyer's comments, an explanation for such non-acceptance or non-adoption.</p>
<p>13. <i>Contract Price:</i></p>	<p>The Monthly Payment will be Seller's sole compensation for Seller's sale and delivery to Buyers of the Energy, Capacity and Ancillary Services and Environmental Attributes associated with the Facilities.</p>

The Monthly Payment will comprise the sum of monthly charges for: (1) the W.H. Sammis Plant and Davis Besse Power Station; and (2) the OVEC entitlement interest.

(1) For the W.H. Sammis Plant and Davis-Besse Power Station, the Monthly Payment will be equal to the sum of (i) a Fuel Payment, (ii) an O&M Payment, (iii) a Depreciation Payment, (iv) a Capacity Payment, and (v) a Tax Reimbursement Payment.

- i. Fuel Payment: amount of Fuel Expenses incurred by Seller to operate some or all of the Facilities for each calendar month during each Contract Year.
- ii. O&M Payment: amount of Operation and Maintenance Expenses of each Facility incurred by Seller for each calendar month during each Contract Year.
- iii. Depreciation Payment: for each calendar month during each Contract Year, amount of depreciation, accretion and decommissioning expenses actually incurred by Seller during the relevant month and directly related to its ownership interest in each Facility. Except as may be required by law, adverse Governmental Authority action or due to an impairment of the asset due to Governmental Authority action(s) or change in law, Seller agrees not to charge accelerated depreciation (*i.e.*, advance the useful life of an asset) without Buyers' written agreement.
- iv. Capacity Payment: an amount for each calendar month during each Contract Year equal to:

	<p><u>SIC x WACOC</u></p> <p>12</p> <p>v. Tax Reimbursement Payment: amount of Income Taxes applicable to Buyers' Capacity Payment based on the effective tax rate of the Seller. The effective tax rate will be updated annually. .</p> <p>(2) For the OVEC entitlement interest, the Monthly Payment will be equal to those costs related to and deriving from Seller's 4.85% entitlement in OVEC, as provided for in the Amended and Restated Inter-Company Power Agreement ("ICPA") dated as of September 10, 2010 among OVEC and its Sponsoring Companies (as such ICPA is amended from time to time).²</p>
<p>14. <i>Planned Outage Schedule:</i></p>	<p>Seller will develop and implement, or cause to be developed and implemented, an annual scheduled outage program for each Facility. Seller will review with Buyers the annual scheduled outage program for each Facility by no later than 120 days prior to the 12-month period that starts on June 1st during each year of the agreement. Seller agrees to notify Buyers of changes to the scheduled outage program as soon as reasonably practicable.</p>
<p>15. <i>Scheduling and Dispatch:</i></p>	<p>Buyers will Schedule and Dispatch 100% of the Energy and Ancillary Services associated with each Facility in accordance with the Agreement and within the operating parameters of each of the Facilities, as such operating parameters are determined by Seller from time to time.</p>

² As that term is defined in the ICPA, and which includes FirstEnergy Generation, LLC.

Upon the Effective Date, but no later than five (5) business days after the Effective Date, Seller will effect in PJM's eRPM system the transfer of capacity rights to Buyers for the Delivery Period. Buyers will be solely responsible for offering Buyers' Contractual Capacity into the PJM capacity auctions occurring after the Effective Date and covering PJM capacity delivery years within the Delivery Period.

Seller assigns to Buyers, and Buyers accept, all rights and obligations for any portion of Buyers' Contractual Capacity in respect of the Delivery Period that has been offered or otherwise committed to PJM or another third party as of the Effective Date of the Agreement. Seller acknowledges Buyers' rights after the Effective Date to offer into the PJM capacity auctions Buyers' Contractual Capacity in respect of the Delivery Period that has not been offered or otherwise committed as of the Effective Date of the Agreement. Buyers assign to Seller, and Seller accepts without resource, all rights and obligations for any portion of Buyers' Contractual Capacity in respect of the Delivery Period that has been offered or otherwise committed to PJM or another third party for time periods at or after termination of the Agreement.

All Energy and Ancillary Services associated with Buyers' Contractual Capacity and made available at a given Delivery Point will be allocated to Buyers in accordance with their respective Shares and will be recorded by the Parties in PJM's scheduling and settlement systems. All credits and charges (including Imbalance Charges) associated with the Capacity, and Energy and Ancillary Services associated therewith and made available at a given Delivery Point will be settled in the

	<p>respective PJM accounts of Buyers by means of the PJM settlement process.</p>
<p>16. <i>Force Majeure:</i></p>	<p>To the extent any Party is prevented by Force Majeure from carrying out, in whole or in part, its obligations under the Agreement (other than an obligation to pay money), and such Party (the "Affected Party") gives notice and details of the Force Majeure to the other Parties as soon as practicable (but not later than thirty (30) days thereafter to the extent such details are then available) then the Affected Party shall be excused from the performance of its obligations under the Agreement (other than the obligation to make payments and, in the case of Seller, Seller's obligation to supply Capacity) so long as the Affected Party shall be using all reasonable efforts to overcome the Force Majeure and resume performance as soon as possible; provided that such term "Force Majeure" will not include any event, circumstance or occurrence which could have been avoided through the exercise of Good Utility Practice; and provided further that such term "Force Majeure" will not apply to Seller's obligation to cover the capacity supply obligation associated with each facility as such obligation is reflected in PJM's eRPM system. The non-Affected Parties shall not be required to perform or resume performance of its obligations (excluding payment obligations) to the Affected Party corresponding to the obligations of the Affected Party excused by Force Majeure, until such time and to the extent the Affected Party resumes its performance.</p>
<p>17. <i>Payments and Netting:</i></p>	<p>As soon as practicable after the end of each month, but no later than fifteen (15) days before payment is due, Seller will render to Buyers an invoice for the payment obligations incurred during the preceding month. All invoices shall be due and payable on or before the twentieth (20th) day of each month.</p>

	<p>The Parties shall discharge mutual debts and payment obligations due and owing to each other under the Agreement through netting, in which case all amounts owed by each Party to the other Party, including any related damages, interest, and payments or credits, shall be netted so that only the excess amount remaining due shall be paid by the Party who owes it.</p>
<p>18. <i>Books and Records; Audit:</i></p>	<p>Seller shall keep all necessary books of record, books of account, and memoranda of all transactions involving each Facility, in conformance, where required, with GAAP and the FERC's Uniform System of Accounts. Seller shall make all computations relating to the Facility and all allocations of the costs and expenses of each Facility.</p> <p>Buyers have the right to examine the Seller's records to the extent reasonably necessary to verify the accuracy of any statement, charge or computation. If requested, Seller shall provide to Buyers statements evidencing the quantities delivered to the Buyers at the Delivery Points. If any such examination reveals any inaccuracy in any statement, the necessary adjustments in such statements and the payments thereof will be made promptly, provided, however, that any claim by a Party for overpayment or underpayment with respect to an invoice is waived unless the other Party is notified of the claim within ninety (90) days after the invoice is rendered or any specific adjustment to the invoice is made.</p> <p>Seller shall reasonably and timely provide all data and information requested by Buyers: (i) to respond to a Governmental Authority request for information; (ii) to prepare for and make other regulatory filings; and (iii) as required by law with respect to Buyers.</p>

<p>19. <i>Limitations of Liability:</i></p>	<p>For breach of any provision of the Agreement, obligor's liability shall be limited to direct damages only, such direct damages shall be the sole and exclusive remedy and all other remedies or damages are waived.</p> <p>No Party shall be liable for consequential, incidental, punitive, exemplary, or indirect damages, lost profits or other business interruption damages, by statute, in tort or contract, under any indemnity provision or otherwise.</p>
<p>20. <i>Conditions:</i></p>	<p>Seller's obligation to consummate the transaction is subject to the Seller having obtained any and all Approvals required with respect to its obligations under the Agreement and such Approvals shall be in form and substance satisfactory to Seller in its sole and absolute discretion; provided that, in the event that Seller learns that a required Governmental Approval is lacking and after reasonable effort is not and will not be forthcoming (such reasonable effort to be determined by Seller), then Seller may upon ten (10) days written notice to Buyers terminate the Agreement.</p>
<p>21. <i>Representations and Warranties:</i></p>	<p>Each Party represents and warrants that:</p> <ul style="list-style-type: none">(i) It is duly organized, validly existing, and in good standing(ii) The execution, delivery and performance of the Agreement are within its powers, have been duly authorized by all necessary action and do not violate any of the terms and conditions in its governing documents, and any contracts to which it is a party(iii) The Agreement is a legally valid and binding obligation enforceable against it(iv) It is not bankrupt

	<p>(v) There is not pending against it legal proceedings that could materially adversely affect its ability to perform its obligations under this Agreement</p> <p>(vi) No material breach of the Agreement has occurred and would not occur as a result of its entering into or performing its obligations under the Agreement</p> <p>(vii) It has entered into the Agreement in connection with the conduct of its business and it has the capacity or ability to make or take delivery of the Buyers' Contractual Capacity and associated Energy and Ancillary Services</p>
<p>22. <i>Risk of Loss:</i></p>	<p>Title to and risk of loss related to the Capacity and associated Energy and Ancillary Services shall transfer from Seller to Buyers at the Delivery Points.</p>
<p>23. <i>Indemnification:</i></p>	<p>Each Party shall indemnify, defend and hold harmless the other Parties and such Parties' partners, directors, officers, employees, agents and representatives from and against any Claims arising from or out of any event, circumstance, act or incident first occurring or existing during the period when control of, risk of loss related to, and title to the Capacity and associated Energy and Ancillary Services is vested in such Party.</p>
<p>24. <i>Assignment:</i></p>	<p>No Party shall assign the Agreement without the prior written consent of the other Parties, which consent may be withheld in a Party's sole discretion; provided, however, that any Party may, without the consent of the other Parties (and without relieving itself from liability), (i) transfer, sell, pledge, encumber or assign the Agreements or the accounts, revenues or proceeds thereof in connection with any financing or other financial arrangements, (ii) transfer or assign the Agreement to an</p>

	Affiliate which shall agree in writing to be bound to the terms and conditions of the Agreement.
25. <i>Governing Law:</i>	Ohio
26. <i>Standard of Review:</i>	Absent the agreement of all Parties to the proposed change, the standard of review for changes to any rate, charge, classification, term or condition of the Agreement shall be the <i>Mobile-Sierra Doctrine</i> ("public interest" standard).

DRAFT

Definitions

"Ancillary Services" means regulation and frequency response services; energy imbalance services; automatic generating control services; spinning, non-spinning, supplemental and replacement reserve services; reactive power and voltage support services; black start services; and all other services or products ancillary to the operation of the Facilities that are defined as ancillary services in PJM's tariff or are commonly sold or saleable, to the extent that the assets comprising a given Facility are technically capable of providing those services or products.

"Approvals" means all approvals, permits, licenses, consents, waivers or other authorizations from, notifications to, or filings or registrations with, third parties, including Governmental Approvals.

"Capacity" means the output level, expressed in MW, that each Facility, or the components of equipment thereof, is capable of continuously producing and making available at the Delivery Point associated with such Facility, taking into account the operating condition of the equipment at that time, the auxiliary loads and other relevant factors; provided that the term Capacity shall mean the capacity supply obligation that is associated with each of the Facilities in PJM's eRPM system for any PJM Delivery Year for which a capacity supply obligation has been established under PJM's tariffs.

"Capacity Payment"

"Capacity Payment" = $\frac{\text{SIC} \times \text{WACOC}}{12}$

12

"Seller's Invested Capital ("SIC")" means the total net book value of the in-service Facilities, including nuclear fuel (but only to the extent that applicable accounting rules permit nuclear fuel costs to be capitalized), any Accumulated Deferred Income Taxes associated with the invested capital, allocations of capital used to support the Facilities, Materials and Supplies Inventory (including to the extent that applicable accounting rules permit fossil fuel), and Capital Expenditures Work that is performed at any Facility and that is placed into service after the Effective Date. To the extent that there is a difference between SIC costs for a given month and SIC collections for that month, the SIC calculation for future months will include a reconciliation to "true up" such difference. The total SIC will be calculated as the average of the total net book value at beginning of the month and the end of the month, respectively.

"Weighted Average Cost of Capital ("WACOC") means the sum of the equity component and the debt component of the WACOC. WACOC is calculated using a 50% equity and 50% debt capital structure. The equity component of the WACOC will be the product of the equity share of the capital structure and the ROE (*i.e.*, 0.5×0.1115). The debt component will be the product of the debt share of the capital structure and the Seller's embedded cost of debt which changes annually (*i.e.*, $0.5 \times$ long-term embedded cost of debt). An example formula for calculating the WACOC is:

$$\text{WACOC} = (0.5 \times 0.1115) + (0.5 \times \text{long-term embedded cost of debt})$$

"Seller's Return on Equity ("ROE")" means Seller's ROE, which is defined as 11.15% and shall be fixed over the term of the agreement.

"Capital Expenditures Work" shall mean the modeling, studying, engineering, design, procurement, purchasing, construction, inspection, start-up and testing of capital expenditures, replacements, spares,

repairs or additions to a given Facility, procurement of auxiliary power necessary to support other Capital Expenditures Work, procurement or retention of licenses (but only where applicable accounting rules permit such costs to be capitalized); including any and all such actions as may be required to comply with a permit, rule, regulation, order, standard or other requirements of a Governmental Authority.

"Claims" means all claims or actions, threatened or filed and, whether groundless, false, fraudulent or otherwise, that directly or indirectly relate to the subject matter of an indemnity, and the resulting losses, damages, expenses (including reasonable attorneys' fees and disbursements) and court costs, whether incurred by settlement or otherwise, and whether such claims or actions are threatened or filed prior to or after the termination of the Agreement.

"Effective Date" means the date on which all of the conditions precedent set forth in Section 20 have been satisfied or waived.

"Energy" means three-phase, 60-cycle alternating current electric energy, expressed in MWh.

"Environmental Attributes" means, to the extent associated with one or more the Facilities and/or the generation of Energy at a given Facility, as applicable, any and all of the following: renewable energy credits, renewable energy certificates, alternative energy credits, and any other credits, including environmental air quality credits, emissions reduction credits, energy credits, and any allowances, reductions, offsets, certificates, property, and benefits, that are granted or awarded or transferred or conferred or acquired over the Delivery Period through existing or new governmental programs on the basis of environmental, or power source, or emissions characteristics that are or may be related to Facility operations, and actual or potential emissions or avoided emissions or reductions of waste of any kind, to the air, soil or water of substances (in whatsoever form) that is or are now or may be in the future regulated under federal, state or local laws. The term "Environmental Attributes" does not include Energy, Capacity, or Ancillary Services or the power or energy attributes of a Facility or Facilities.

"Fuel Expenses" means all fixed or variable costs, expenses, losses, liabilities, claims and charges related to the acquisition, storage, inventory, balancing and transportation and delivery of fuel for the Facilities, including reagents, emissions allowances, and related costs of credit at weighted average cost; provided that the term "Fuel Expenses" excludes the costs of any fuel that is capitalized under applicable accounting rules and guidance; and provided further that all costs and expenses will be calculated on a consumed basis.

"GAAP" means accounting principles generally accepted in the United States of America.

"Good Utility Practice" means any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

"Governmental Approvals" means any permit, authorization, registration, consent, action, waiver, exception, variance, order, judgment, decree, license, exemption, publication, filing, notice to, or declaration of or with, or required by any Governmental Authority or applicable law; provided that the

term Governmental Approval as used in this definition does not include the Public Utilities Commission of Ohio or its successor agency.

"Governmental Authority" means any federal, state, local, or municipal government body; and any governmental, regulatory, or administrative agency, commission, body, agency, instrumentality, or other authority lawfully exercising or entitled by law to exercise any executive, judicial, legislative, administrative, regulatory, or taxing authority or power, including any court or other tribunal.

"Imbalance Charges" means any penalties, fees or charges assessed by PJM for failure to satisfy requirements for balancing of electric energy receipts and deliveries or loads and generation, or payable to any other Person in connection with the delivery of energy in an amount(s) different from the amount(s) scheduled.

"Materials and Supplies Inventory" is as defined in Part 101, Uniform System of Accounts for Public Utilities, of FERC's regulations, as such may be amended from time to time.

"Operation and Maintenance Expenses" means all fixed or variable costs, expenses, losses, liabilities, claims, charges and associated credits incurred directly or indirectly in the performance of operation, maintenance, use, repair of the Facility, including the procurement of auxiliary power, but not including Fuel Expenses.

"Operating Work" means the operation, maintenance, use, repair or retirement of the Facility on or after the Effective Date, including but not limited to labor; parts; supplies; insurance; permits; licensing; taxes other than income; procurement of ancillary services, fuel and other consumables; fuel acquisition, transportation balancing and storage; waste handling and disposal (including coal ash or spent nuclear fuel); filing, defense and settlement of claims, suits and causes of action; procurement (or sale) of Allowances and settlement of all other environmental charges (or credits) pertaining to the operation of the Facility; including any and all such actions as may be required to comply with a permit, rule, regulation, order, standard or other requirements of a Governmental Authority; but excluding any Capital Expenditures Work.

"Share" means, with respect to each Buyer, each Buyer's several (and not joint) obligation, as such obligation is calculated as of June 1, 2016 based on each Buyer's average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of 2015; and provided further that the Buyer's several *pro rata* obligations will be updated on June 1st of each subsequent updated on June 1st of each year during the term hereof based on each Buyer's average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of the prior year year during the term hereof based on each Buyer's average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of the prior year .

P3-EP SA Set 1
Witness: Jason Lisowski
As to Objections: Carrie M. Dunn

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

- P3-EP SA Set 1** Referencing Mr. Lisowski's testimony at Page 3, lines 1-11, has FES included the costs
- INT-47 associated with the following capital investments as part of its cost data:
- a. The recently completed Davis-Besse steam generator replacement project which required a reported \$600 million investment. To the extent this reported investment is included, what is the final cost of the investment that is included in the costs?
 - b. The Davis-Besse reactor head repair completed during the prior decade. To the extent this reported investment is included, what is the cost of the investment that is now included as part of the cost?
 - c. The 2010 pollution control investments completed at the Sammis plant and described by Mr. Harden in his direct testimony at pages 10-11. To the extent these reported investments are included, what is the cost of the investment that is now included as part of the cost?

- Response:**
- a. Objection. The request is vague and ambiguous. Moreover, this request seeks information outside the Companies' possession, custody, or control. ***Subject to any objections, the requested information is Competitively-Sensitive Confidential*** and will be provided to the requesting party, provided that said party has executed a mutually agreeable protective agreement.
 - b. Objection. The request is vague and ambiguous. Moreover, this request seeks information outside the Companies' possession, custody, or control. ***Subject to any objections, the requested information is Competitively-Sensitive Confidential*** and will be provided to the requesting party, provided that said party has executed a mutually agreeable protective agreement.
 - c. Objection. The request is vague and ambiguous. Moreover, this request seeks information outside the Companies' possession, custody, or control. ***Subject to any objections, the requested information is Competitively-Sensitive Confidential*** and will be provided to the requesting party, provided that said party has executed a mutually agreeable protective agreement.

OCC Set 1
Witness: Jay A. Ruberto

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

**OCC Set 1 –
INT-20**

Referring to page 9 of the Direct Testimony of Companies' witness Ruberto, what persons (i.e. names, job titles, and employing entities) from the Companies will be responsible for offering the output of the Davis Besse and Sammis plants:

- a. Into the PJM RPM capacity auction process?
- b. Into the PJM markets for energy and ancillary services?

Response:

- a. Jay Ruberto, Director, Regulated Generation and Dispatch will be responsible for offering the output of the Davis Besse and Sammis plants into the PJM capacity auctions and energy and ancillary services markets.
- b. See response to subpart (a), above.

PJM RTO RELIABILITY REQUIREMENT v. EXPECTED CAPACITY

PJM RTO Reliability Requirement v. Expected Capacity

Summer Year	Reliability Requirement (MW)	Expected Generation			Expected Capacity		Expected Capacity Over Reliability Requirement	
		Additions (MW)	Expected Retirements (MW)	Generation (MW)	(MW)	(MW)	Reliability Requirement (%)	(%)
6/1/2015	177,184	5,346	9,868	188,275	11,091	6.3%		
6/1/2016	180,332	5,463	0	192,064	11,732	6.5%		
6/1/2017	179,545	6,267	288	192,464	12,919	7.2%		
6/1/2018	180,981	6,128	1,124	197,469	16,487	9.1%		

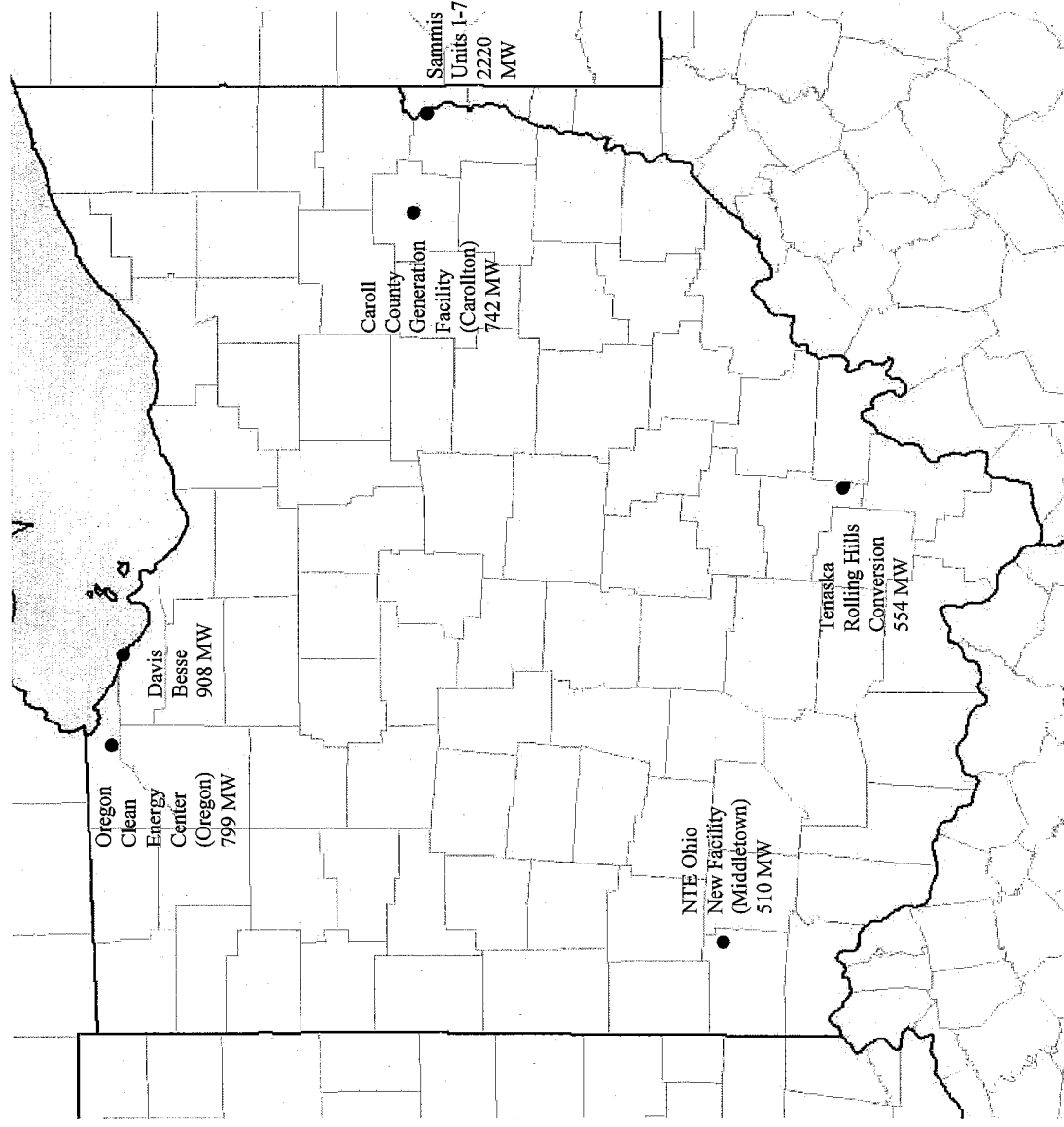
Notes:

- 1) The 2018 Reliability Requirement escalated from 2017 using the summer peak load growth rates from the 2014 PJM Load Forecast Report.
- 2) 2018 assumes the same Offered DR and EE and Offered Capacity Imports as 2017.
- 3) Expected Generation Additions for 2015-2017 are Cleared New Generation Capacity reported in the RPM Base Residual Auction Results; for 2018, they are resources that are actively under development and are submitting permit applications for relevant permits and are working with PJM to complete interconnection agreements.

Sources:

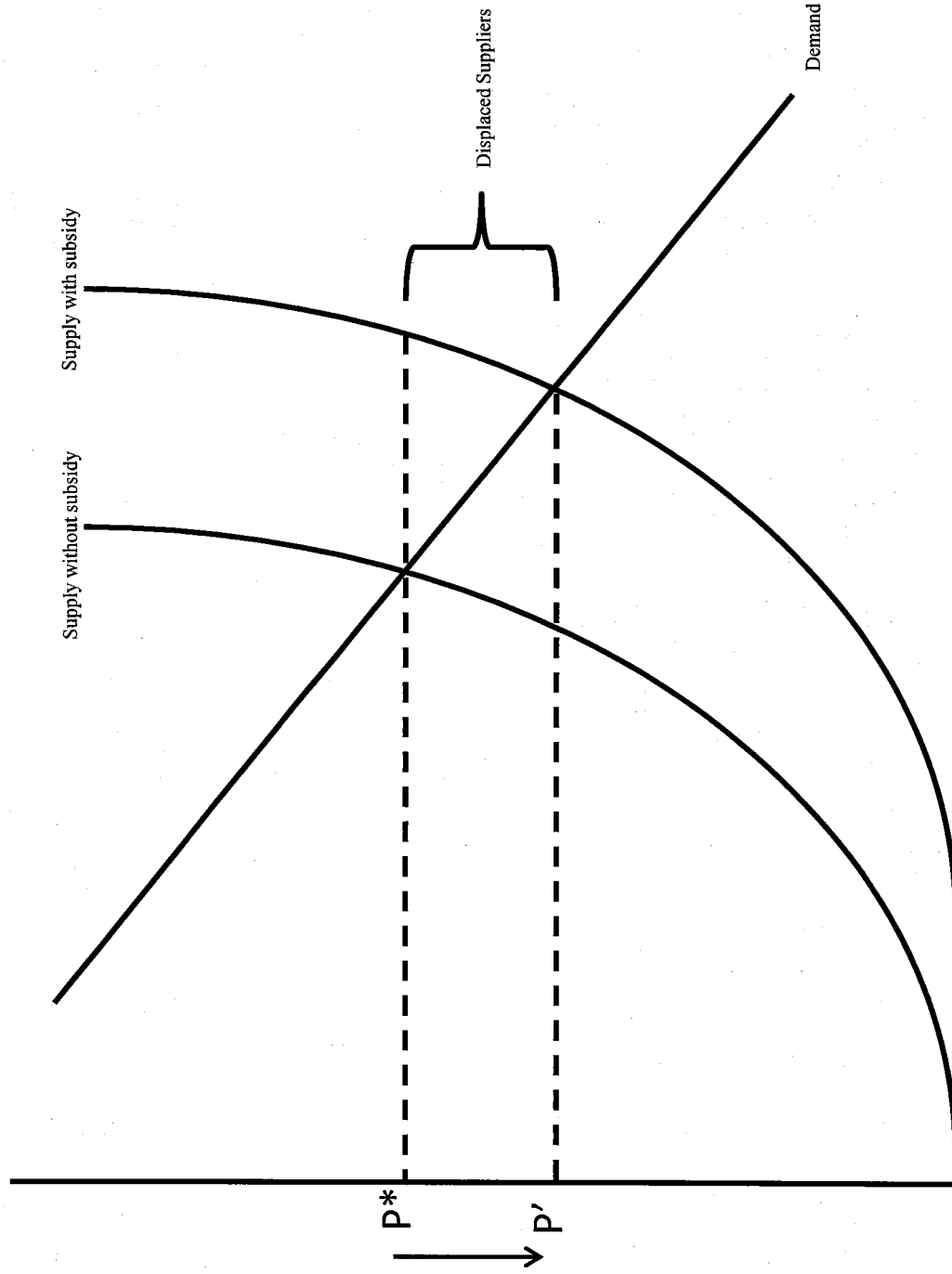
- 1) PJM Reliability Requirement from Planning Period Parameters files, available at <http://www.pjm.com/markets-and-operations/rpm/rpm-auction-user-info.aspx>
- 2) Expected generation additions for 2015-2017 from PJM RPM Base Residual Auction Results reports; for 2018, from company websites and news articles.

SELECT DEVELOPING AND EXISTING POWER PLANTS IN OHIO

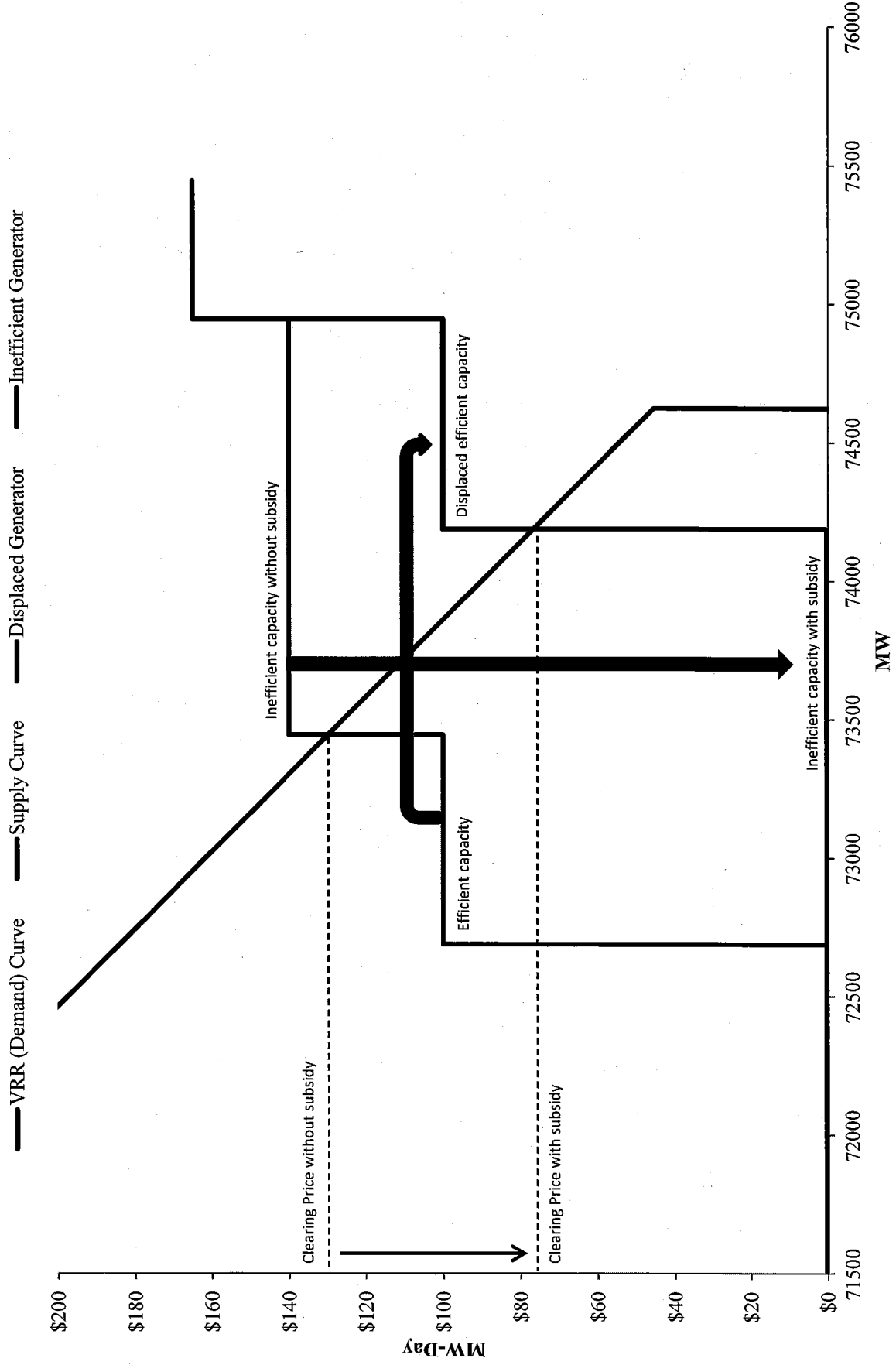


Sources: Carroll County Energy OO 13-1752-EL-BGN; NTE OO 14-0534-EL-BGN; Oregon Clean Energy OO 12-2959-EL-BGN; AMP Generating Station OO 06-1358-EL-BGN; Rolling Hills 12-1669-EL-BGA
 Note: AMP Natural Gas Combined Cycle (960 MW) is not depicted; its status is uncertain.

MARKET IMPACT OF A SUBSIDY



IMPACT OF A SUBSIDY ON PJM RPM CAPACITY MARKET



ANNUALIZED VOLATILITY AT AEP-DAYTON

October 2010 – October 2014

Type	Product Duration		
	Year*	Half-Year*	Quarter*
On-Peak	18%	23%	37%
Off-Peak	16%	22%	33%
			Day
			274%
			200%

Note: * indicates implied volatility based on forward curve; all others indicate historical volatility.

Source: Platts.

Attachments JPK 6, 7 and 8 are Confidential

CERTIFICATE OF SERVICE

The Public Utilities Commission of Ohio e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served upon the persons below via electronic mail this 22nd day of December, 2014.



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Case No(s). 14-1297-EL-SSO

Summary: Testimony -- Attachments (Public) of Joseph P. Kalt Ph.D. electronically filed by Mrs. Gretchen L. Petrucci on behalf of PJM Power Providers Group and Electric Power Supply Association