



CURRICULUM VITAE
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PROFESSIONAL EXPERIENCE

Compass Lexecon, Tucson, AZ

2012 to present, Senior Consultant

Provides economic analysis in the areas of natural resource extraction, transportation and infrastructure. Expert witness for contract disputes, pricing issues, and antitrust claims. Model building specialist for forecasting, backcasting, estimating economic impacts and substantiating damages claims.

Data Lab, Denver, CO and Santa Fe, NM

1986 to 2011, Owner

Thirty years experience providing macroeconomic and microeconomic forecasts primarily for financial reporting and scenario casting exercises. Led dynamic, regional, economic and environmental impact assessments. Managed multidisciplinary staff of 75 persons. Designed interactive tools for analysis of very large economic and engineering data sets in the energy industries. Supervised and directed analytical assessments of electric power generating resources, transmission networks, large customer retail loads as well as forecasting long term and short term wholesale rates by likely competitors.

Los Alamos National Laboratory, Los Alamos, NM

2003 to 2010, Scientist, Technical Leader and Manager

Assessed trends, methods, and size of illicit activity in the global and regional economies including: hacking, spam, malware, illicit drugs, and human trafficking in a macro-physical model of international trade flows. Assessed perception based impacts of radiological hazards and provided real-time support to Department of Defense economic/financial war games. The position required substantial interactions with the U.S. Department of Treasury, the Federal Reserve Board of Governors staff, the Financial Sector Services Coordinating Council, and the Federal Depository Insurance Corporation. Multiple briefings to the White House, Secretary of the

Department of Homeland Security, former Senator Domenici and Treasury's Office for Infrastructure Protection. Co-author of two Special Reports for Senator Domenici for the Congressional Record addressing the impacts of illegal immigration. Bayesian methods, coursework in: Java, C+, MatLab, Stata, VenSim, Unix, and Fortran.

State of New Mexico, Santa Fe, NM

2002-2003, Chief Economist

Supervised preparation of NM revenue estimates for budgetary and bonding purposes achieving better than 0.5% annual forecast error. Rebuilt state's spreadsheet models defining bonding capacities, tax collections and capital allocation formulae. Extended these economic models to discover financial representation and malfeasance of the NM Financial Authority, leading to criminal convictions. Also confirmed that Legislative spending practices were a primary cause of the only significant recession in state history.

International Energy Agency, Paris France

1993 to 1996 Senior Energy Economist, (Grade A/4, International/Diplomatic Grade)

Activities included designing, and implementing multi-disciplinary assessments of energy industries in selected countries around the world. Desk officer for the Netherlands and Korea. Worked extensively with NEMS (National Energy Modeling System) modeling group at EIA and the World Energy Model of the IEA. Traveled throughout Western Europe, Korea and China as part of assigned duties. Author of numerous technical reports for OECD/IEA governing committees modeling energy technology trends and impacts on global climate change specifically examining the expanded use of renewable energy technologies as substitutes for coal, nuclear, and natural gas-fired electrical generation. Participated in numerous climate change conferences as a technical expert reviewing the potential energy contribution of various renewable energy technologies in developing countries.

Argonne National Laboratory, Chicago, IL and Denver CO

1986 to 1993 Program Manager

Obtained funding and served as Technical Leader and Program Manager, including budgeting and reporting functions, for several large engineering, economic and environmental assessments of electric power generation and transmission systems, and advanced electric power technology under programs funded by the USDOE. Technical and management responsibility for assessments of clean coal technology research programs. Served USDOE-HQ for one year (1987) in the Office of Energy Tax Policy. Established and

obtained funding for a regional office of ANL in Denver. Office generated about \$20 million in funding for ANL during this seven year period.

Litigation Expert Witness, Denver, CO

1983-1993

Prepared written testimony for the US Supreme Court concerning the purchase and use of Wyoming coal in Oklahoma coal-fired generation stations (*The Economic Effects of Oklahoma Statutes Title 45 S. 939, Title 45 S 939.1 and Title 75 S 85.32 on Oklahoma Utilities' Fuel Purchasing Decisions, prepared for the Office of the Wyoming Attorney General, Wyoming vs. Oklahoma, Case No. 112, US Supreme Court, September*). Conclusions of this testimony were included verbatim by the Special Master and became a basis of the majority opinion issued by the Supreme Court. The dissenting opinions were led by court conservatives arguing that the Federal government should not intervene between states even if states pass laws prohibiting imports from other states, a finding which appears to be an attack on the Commerce Clause of the Constitution. Conservatives argued that Oklahoma was penalizing itself by not buying cheap, low sulfur Wyoming coal. The majority opinion was based upon the facts and circumstances that were largely undisputed.

Prepared testimony and made appearances in US Federal District Courts Chicago, Denver and Kansas City. Technical leader and technical integrator for petroleum geologists' and petroleum engineers' assessments of crude oil and natural gas estimates of recoverable reserves in the Denver-Julesberg Basin, the San Juan Basin, the Hugoton Embayment, the Moxa/Wamsutter area and other geologic provinces in the US. Designed a database, supervised and participated in the collection and repair of drilling records for ~50,000 crude oil and natural gas wells in these areas thereby completing the first comprehensive, historical economic surveys of these geologic provinces.

British Petroleum (formerly Amoco Production Company)

1981 to 1983, Senior Economist

Member of the Exploration and Development Committees of the Regional Office, performing economic assessments, and integrating petroleum engineers, petroleum geologists and geophysicists' reports to support spending recommendations for exploration and production operations. Built the first operations research model of Amoco Regional operations, using an exploration (Monte-Carlo) model, coupled to production drill-out (linear programming model), to provide regional estimates of cash flow that conformed with generally accepted accounting standards. The results of the

regional model were used to provide spending recommendations for a \$1 billion/year major-cash budget. Worked extensively with Cyprus Minerals to estimate economically recoverable reserves, proposed contract terms and spending recommendations to develop Cyprus Mineral's lease portfolio.

National Renewable Energy Laboratory, Golden, CO

1977-1981, Program Manager

Technical leader and program manager for economic and environmental assessments of renewable energy technologies including solar-thermal, solar-electric, ocean-thermal, biomass, and wind energy systems. One year of onsite assistance to the Renewable Energy and Conservation Office at the US Department of Energy in Washington, D.C. (1980). I wrote more than a dozen reports for NREL; published two refereed journal articles and prepared numerous program plans and task descriptions supporting budget recommendations to Congress.

EDUCATION

1974-1977, PhD. Cornell University, Ithaca, NY in natural resource economics, quantitative methods and tax law. Dissertation funded by the Senate Special Subcommittee on Integrated Oil Operations under the direction of Senator Ted Kennedy. Built a simulation model of the U.S. income tax code applicable to the oil and gas industries to estimate the effects of tax preferences on domestic oil production and depletion. Completed the entire sequence of tax law courses offered at Cornell's Law School in 1975 and 1976.

1970-1974, B.S and M.S. in Agricultural Economics with honors at the University of Missouri-Columbia. Provided onsite statistical data validation for the first census of Nicaragua in Managua, in 1973. Supervised about 100 statistical clerks.

SELECTED PUBLICATIONS

Book Chapters & Refereed Journal Articles

Ewers, Mary, et al., 2009, “U.S. Centers of Economic Activity (CONUS)” LAUR -08-04291, 2009 ESRI Map Book, Volume 24

Outkin, Alexander, Silvio J. Flaim, et al., 2009, *FinSim: A Framework for Modeling Financial System Interdependencies*, in Applications of Complex Adaptive Systems, IGI Publishing

Edwards, Brian K., Silvio Flaim and Richard Howitt, September 2003, *Chapter 7*, in The Economics of Hydroelectric Power, Edward Elgar Publishers, New York

Edwards, Brian K., Silvio Flaim and Richard Howitt, May 1999, *Optimal Provision of Hydroelectric Power Under Environmental and Regulatory Constraints*, Land Economics

Flaim, Silvio J., and Jeffrey Ancrile, September 1997, *A Method of Estimating Fiscal Impacts Under an Option Pricing Framework*, Impact Assessment

Edwards, Brian K., Silvio Flaim and Richard Howitt, 1996, *Fuel, Crop and Water Substitution in Irrigated Agriculture* Resource and Energy Economics, Vol. 18

Flaim, Silvio J., and Jane Ellis, 1996, “Chapter 6, Environment,” Energy and Environment in China and India, International Energy Agency, Paris

Flaim, Silvio J., and Jane Ellis, 1995, *Environmental Consequences of Renewable Energy Development in Rural India*, Pacific/Asian Journal of Energy, TATA Energy Research Institute, New Delhi

Flaim, Silvio J., and Jane Ellis, 1995, *Environmental Consequences of Renewable Energy Development in Rural India*, Chapter 3, Rural and Renewable Energy: Perspectives from Developing Countries, New Delhi

Flaim, Silvio J., and Donald Hertzmark, 1981, *Agriculture and Energy Policies for Biomass Fuels*, Annual Review of Energy, Volume 6

Hertzmark, Donald, Silvio J. Flaim and Darrel Ray, December 1980, *Economic Feasibility of Agricultural Alcohol Production Within a Biomass System*, American Journal of Agricultural Economics, Vol. 62, pp. 965-71

Flaim, Silvio J., September 1977, *Federal Income Taxation of the Petroleum Industry and the Depletion of Domestic Reserves*, Ph.D. dissertation, Cornell University, Ithaca

Other Papers & Proceedings

Kalt, Joseph P., February 2014, *The Mining of Crow Nation Coal: Economic Impact on the Crow Reservation*, Big Horn County, and Montana, the Harvard Project on American Indian Economic Development [statistical analysis and modeling]

Moore, Michal, et al., December 2011, *Catching the Brass Ring: Oil Market Diversification Potential for Canada*, the School of Public Policy, SPP Research Papers, 4:16,

Flaim, Silvio J., April 2009, *Measuring and Integrating the Shadow Economy in Information Technology*, LAUR-09-01778, LANL Annual Risk Symposium, Pojoaque, NM

Flaim, Silvio J., 2009, *Predicting Network Congestion Caused by Spam – A Geospatial Approach*, LAUR-10-9165

Flaim, Silvio J., April 2009, *Real-Time Economic Modeling Support for Wargames and Other Exercises*, LAUR-09-02331, MORS Conference, Washington, DC

Flaim, Silvio J., May 2008, *Modeling International Energy Interdependencies*, LAUR-08-4150

Flaim, Silvio J., August 2008, *Telecommunications Sector: Cyber Agents: Large-Scale High-Fidelity Modeling and Simulation of Cyber-Attacks and Mitigations Schemes*, LAUR-08-2256

Flaim, Silvio J., Brian K. Edwards, August 2008, *Measuring and Integrating the Shadow Economy: A Sector-Specific Approach*, LAUR-08-5372, DEFCON 16, Las Vegas

Flaim, Silvio J., August 2008, *The Market for Malware and the Hacker Economy*, LAUR-08-5809

Flaim, Silvio J., 2007, *Foundations of Funding Formulas for Equitable Public School Capital Outlay*, New Mexico Public School Capital Outlay Taskforce

Flaim, Silvio J., 2006, *FinSim-Financial System Infrastructure*, LAUR-06-0659

Flaim, Silvio J., 2006, *Critical Infrastructure Modeling: Financial Sector Interdependencies*, briefings to the Federal Reserve Board of Governors Office of Payment Systems Studies and Department of Treasury Office of Critical Infrastructure Protection, White House science advisors, FDIC and other relevant agencies

Flaim, Silvio J., Alexander Outkin and Doug Mitarotonda, 2006, *Agent Based Models of Electricity Markets*, Advanced Workshop in Regulation and Competition, Skytop Pennsylvania, LAUR-06-3322

Flaim, Silvio J., Loren Toole, 2006, *Effects of Climate Change on California Energy Security*, LAUR-06-0984

Flaim, Silvio J., December 2004, *An Institutional History of Environmental Constraints Affecting Hydropower Operations on the Upper Colorado*, LAUR-04-08985, USGS Scientific Investigations Report #05-285. Also presented at Institutional Analysis for Environmental Decision-Making Workshop, January 28-29, 2005, Fort Collins

Flaim, Silvio J., July 5-9, 2005, *Economics in Criticality and Restoration of Energy Infrastructures*, LAUR-05-5007, Western Economic Association International, 80th Annual Conference, San Francisco. Also published as Sandia Report 2005-1926, Albuquerque, March 2005

Edwards, Brian K., Silvio Flaim and Richard Howitt, May 1997, *Measuring the Costs of Environmental Restrictions on Hydropower Operations*, Annual Meeting of the International Association of Impact Assessment New Orleans

Flaim, Silvio J., et al., March 1996, *Regional Economic Impacts of Changes in Electricity Rates Resulting from Western Area Power Administration's Power Marketing Alternatives*, ANL/DIS/TF-5

Flaim, Silvio J., Jane Ellis, May 1995, *Energy and Environmental Trends in China: Urban Problems with Global Consequences*, in Zhihang Chen et al. eds. Proceedings of the International Conference on Energy and the Environment, Shanghai, Begell House Publishers, London

Flaim, Silvio J., March 1995, *Impacts on Irrigated Agriculture of Changes in Electricity Costs Resulting from Western Area Power Administration's Power Marketing Alternatives*, ANL/DIS/TM-9

Flaim, Silvio J., January 1988, *BLM Managers' Litigation Handbook for CERCLA and RCRA Actions*, A Field Guide, Bureau of Land Management, Office of Hazardous Materials and Program Management, Washington, D.C.

Flaim, Silvio J., January 1988, *Disemployment Effects Caused by Regulation of Oilfield Wastes and Produced Waters Under RCRA*, (ANL/EES-TM-341), Argonne National Laboratory, Chicago

Flaim, Silvio J., 1987, *An Assessment of the Potential Environmental Residuals in the Lower 48 States Arising from Alaskan Natural Gas Exports*, report to the Energy Regulatory Administration, U.S. Department of Energy, for the Environmental Impact

Statement of the Trans-Alaska Gas System, Argonne National Laboratory, Chicago

Flaim, Silvio J., September 11, 1989, *The Economic Effects of Oklahoma Statutes Title 45 S. 939, Title 45 S 939.1 and Title 75 S 85.32 on Oklahoma Utilities' Fuel Purchasing Decisions*, prepared for the Office of the Wyoming Attorney General, Wyoming vs. Oklahoma, Case No. 112, US Supreme Court

Flaim, Silvio J., May 1988, *Divestiture Report on Elk Hills Naval Petroleum Reserve-1, Kern County, California*, Argonne National Laboratory, Chicago

Flaim, Silvio J., November 11-12, 1988, *The Effects of Federal Take Policy on U.S. Oil and Gas Production*, 18th Annual Meeting of the Illinois Economics Association, Chicago

Flaim, Silvio J., October 16-18, 1988, *Taxation Effects on the Competitiveness of U.S. Oil and Gas Investments: Promoting Stability in the 1990's*, Proceedings of the Annual Meeting of the International Association of Energy Economists, Los Angeles

Flaim, Silvio J., May 31-June 2, 1978, *Federal Energy Taxes and Subsidies*, Proceedings of an Analysis of Federal Incentives Used to Stimulate Energy Production, Battelle-NW, Seattle

Flaim, Silvio J., May 11-12, 1978, *Tax and Subsidy Treatment of the Petroleum Industry: Their Effects on Capital Intensity, Resource Demand, and Rates of Return*, Proceedings of the Economics of Alternative Energy Technologies in California, Public Interest Economics-West, San Francisco

Flaim, Silvio J., July 1976, *The Structure of the U.S. Petroleum Industry: A Summary of Survey Data*, prepared for the Special Subcommittee on Integrated Oil Operations of the U.S. Senate Committee on Interior and Insular Affairs, USGPO, Washington, D.C.

Flaim, Silvio J., June 1975, *Federal Taxation of the Petroleum Industry: a Description of Incidence and Policy Implications*, Cornell University Staff Paper No. 75-4, Ithaca