

Curriculum Vitae

of

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Curriculum Vitae of

LON L. PETERS

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I. Summary

Current Positions

Integrated Resources Planning Administrator, Glendale Water & Power, Glendale, California, 2013 – present

President, Northwest Economic Research, Inc., Portland, Oregon and Pasadena, California, 1996 – present

Previous Positions

Power Planning Manager, Glendale Water & Power, Glendale, California, 2011-13

Senior Energy Economist, Union of Concerned Scientists, Cambridge, Massachusetts, 2010-11

Visiting Professor of Economics, Reed College, Portland, Oregon, 2007-09

Member, Independent Economic Analysis Board, Northwest Power and Conservation Council, Portland, Oregon, 1997-2007

Executive Economist and Director of the Portland (Oregon) Office, R.W. Beck, Inc., 1994-95

Senior Economist, Public Power Council, Portland, Oregon 1986-94

Chief, Wholesale Rates, Bonneville Power Administration, Portland, Oregon, 1984-86

Economist, Division of Rates, Bonneville Power Administration, 1982-83

Visiting Assistant Professor of Economics, Reed College, 1980-82

Lecturer and Assistant Professor of Economics, Goucher College, Towson, Maryland, 1979-80

Education

M.A. 1976, M.Phil. 1979, Ph.D. 1981, Economics, Yale University

B.A., 1974, Economics, Reed College; elected to Phi Beta Kappa; nominated for the Rhodes Scholarship

II. Education

Ph.D. (Economics) 1981, Yale University

M.Phil. (Economics) 1978, Yale University

M.A. (Economics) 1976, Yale University

B.A. (Economics) 1974, Reed College, elected to Phi Beta Kappa

III. Experience

Integrated Resources Planning Administrator, Glendale Water & Power 2013 - present

Responsibilities: in addition to responsibilities of Power Planning Manager (below), overall management of all electricity and fuel supplies; management of leased transmission rights, transmission ownership rights, and fuel transport contracts (tenor of transactions: real-time through long-term); implementation of new Energy Trading and Risk Management system; development and implementation of risk management policies and hedging plans; support for cost-of-service analysis for retail rates; management of state and federal reporting obligations; preparation of short-term and long-term power supply budgets; supervision of outside consultants for multiple projects; two direct reports and total staff of seven.

Power Planning Manager, Glendale Water & Power 2011-13

Responsibilities: analyses and negotiations supporting long-term acquisition of renewable resources, including acquisition of transmission capacity and ancillary services; analyses and strategies for repowering existing local and remote generation resources; analyses and tactics for compliance with California state carbon (cap/trade) regulations and Renewable Portfolio Standards; (re)negotiation of generation, transmission, and assorted related contracts; review of proposed budgets for external and internal generation and transmission projects; evaluation of options for balancing area services; evaluation of energy storage systems and negotiation of related contracts; representation of City on multiple committees related to ownership and operation of existing generation and transmission resources; coordination of energy strategies and tactics with other similarly-situation municipal utilities in southern California; preparation, updating and tracking of budgets for power supply function, including transmission; oversight of contractors providing economic, legal, and technical services; analysis in support of billing disputes; regular briefings of senior management.

Senior Energy Economist, Union of Concerned Scientists
2010-11

Responsibilities: review and evaluation of state and federal policies aimed at promoting innovation and deployment of renewable energy resources in the U.S.; construction of annotated bibliography of the effectiveness and cost-effectiveness of such policies; identification and evaluation of potential new state and federal policies for further promotion of renewable energy supplies; initiation of supply-chain project, identifying economic impacts of renewable energy development in the Midwest.

President, Northwest Economic Research, Inc.
1996- present

Socio-Economic Analysis of Hydropower Operations: U.S. Geological Survey (2014-). Peer review of economic analyses related to alternative operations at the Glen Canyon Dam: wholesale operations and retail rate impacts.

Litigation Support: Scheff Law Offices (2014-). Preparation of expert opinion regarding maintenance budgets and maintenance practices at a coal-fired power plant in New England.

Litigation Support: [client has requested confidentiality] (2011-14). Preparation of expert opinion regarding damages at a power generation plant due to alleged fuel contamination; report filed in court; deposition taken; case settled.

Renewable Portfolio Standards: Umatilla Electric Cooperative (2011-12). Comparison of the economic impacts of Oregon's RPS on investor-owned and publicly-owned electric utilities.

Wholesale Power Purchase Agreement: City of Glendale (2010-11). Audit of seller's support for hourly pricing under long-term power sales contract for most recent contract year.

Litigation Support: Grant County PUD (2010-11). Analysis of wholesale pricing under long-term power sales contract; development of strategic arguments; discovery; expert report filed in court.

Application for Exemption from FERC Fees: Northern Wasco County PUD and Klickitat County PUD (2010-11). Preparation of application under 18 CFR §§11.1 and 11.6 for waiver of federal charges associated with a small hydropower project in Oregon.

Open-Access Transmission Tariff: Tacoma Power (2010). Revision of existing tariff to comply with FERC Order 890; revision of all rates (transmission and ancillary services).

Federal Power and Transmission Rates: Tacoma Power (2010). Analysis of initial implementation of wholesale (tiered) power rates and wholesale transmission rates; advice on alternative rate designs for power and transmission.

Federal Power and Transmission Rates: Snohomish County PUD (2009-10). Analysis of initial implementation of wholesale (tiered) power rates and wholesale transmission rates; advice on alternative rate designs for power and transmission.

Federal Power and Transmission Rates: PNGC Power (2010). Analysis of proposed initial implementation of wholesale (tiered) power rates; advice on alternative rate designs; support for retail rate design services; preparation for formal rate proceeding before the Bonneville Power Administration.

Litigation Support: PNGC Power (2010). Analysis of economic consequences of special contract for sale of power by a federal agency to a large industrial customer.

Retail Rates: City of Portland (2010). Analysis of proposal for rate increase by investor-owned utility; analysis of multiple accounts, rate schedules and City bureaus. Testimony before the Oregon Public Utility Commission on marginal cost pricing.

Damages under Long-Term Power Purchase Agreement: City of Glendale, California (2004-10). Analysis of complex pricing provisions of long-term power purchase/exchange contract, translation into Excel, calculation of damages; affidavits filed at the Federal Energy Regulatory Commission and the U.S. District Court, District of Oregon; preparation of draft contract amendment; audit support.

Municipal Fiscal Response to Recession: City of Glendale (2010). Research into municipal enterprise activities' response to the Great Recession.

Market Analysis: Distributed Energy Networks, Inc. (2009-10). Analysis of market potential (sales quantity and pricing) for a distributed energy storage start-up company.

Federal Policy on Variable Energy Resources: Grant County PUD (2010). Development of comments in response to a Notice of Inquiry of the Federal Energy Regulatory Commission on Variable Energy Resources.

Socio-Economic Analysis of Hydropower Operations: Member of the Independent Economic Panel, Glen Canyon Dam Adaptive Management Program, U.S. Geological Survey (2009-10). Review of previous relevant economic studies; planning of economic research into potential economic impacts and trade-offs associated with operations of Glen Canyon Dam, and economic implications of other management actions; development of recommendations for future

socioeconomic work to Grand Canyon Monitoring and Research Center staff and Program stakeholders.

Economics of Critical Habitat: Fish and Wildlife Service (2009). Under subcontract to Industrial Economics, Inc., analysis of the economic impacts on the hydropower system under the Endangered Species Act of proposed critical habitat designation for the Oregon chub.

Long-Term Land Leases: Minnick-Hayner, Walla Walla, Washington (2009). Economic analysis of options for compensation to landowners for leases of property to wind generation and transmission developers.

Wholesale Power Rates: Pacific Northwest Generating Cooperative (2009). Analysis of wholesale rate proposal by the Bonneville Power Administration; discovery and testimony.

Program Evaluation: Northwest Energy Efficiency Alliance (2008). Retrospective evaluation of efforts to develop and adopt energy-efficient products and services in the Pacific Northwest (available at <http://www.nwalliance.org/research/reportdetail.aspx?ID=233>).

Municipalization: Washington Public Utility Districts Association (2008). Advice on issues associated with formation of new publicly-owned utilities in Washington State.

Implementation of Federal Rates Mandates: Public Power Council, Portland, Oregon (2007-08). Strategic advice and testimony regarding interpretation of certain provisions of the Northwest Power Act, regarding rates charged for power by the Bonneville Power Administration.

Biosolids Processing: City of Portland (2007). Preparation of a report for the Bureau of Environmental Services on the economic effects of a proposal for processing biosolids produced by a municipal wastewater treatment plant.

Litigation Support: City of Portland (2007). Support for a subpoena issued by the City seeking tax records from an investor-owned utility.

Purchase of Renewable Energy: City of Portland (2007). Advice on contract terms associated with purchase of renewable energy resource to serve City's municipal loads.

Litigation Support: Tacoma Power, Tacoma, Washington (2004-07). Analysis of contractual provisions for formula-based payments under a long-term power purchase agreement; strategic advice regarding potential litigation; declarations filed in Superior Court for Spokane County, Washington; preparation for litigation.

Economic Analysis in a Condemnation Case: South San Joaquin Irrigation District (2004-07). Analysis and preparation of economic reports on “private injury” aspects of condemnation by the District of distribution assets owned by an investor-owned utility in California.

Wholesale Power and Transmission Contracts, Rates, and Industry Restructuring: Public Generating Pool, Washington (1996-2007). (1) Analysis of and expert testimony on (a) BPA’s open-access transmission tariffs (terms and conditions), (b) transmission revenue requirements, (c) transmission cost allocation, (d) transmission rate design, (e) the definition and pricing of unbundled power services, (f) the interaction of BPA’s proposed wholesale rate structure with the utilities’ existing purchase power contracts with BPA, (g) proposed rate design for new long-term power contracts. (2) Advice on policies of the Federal Energy Regulatory Commission on transmission access and pricing. (3) Negotiation of new long-term contracts for the purchase of federal power, which include various power products. (4) Analysis of and advice on proposals for a Regional Transmission Organization, including pricing, congestion management, planning and expansion, cost-benefit analysis, creditworthiness regulations, and market monitoring functions. Testimony before the Northwest Congressional delegation.

Market Redesign and Technology Upgrade (MRTU): Public Power Council (2006-07). Review of the MRTU filing by the California Independent System Operator, concentrating on implications for public power utilities in the Pacific Northwest. Drafting of comments for FERC technical conferences.

Consolidation of Control Areas: Turlock Irrigation District, California (2007). White paper on the advantages and disadvantages of consolidation of control areas (revised May 2009).

Cost-Effectiveness Analysis: Independent Economic Analysis Board, Northwest Power Planning Council, Portland, Oregon (1997-07). Advice to the Council on economic analysis of proposed fish recovery measures. Evaluation of previous studies of the cost-effectiveness of fish recovery measures. Peer review of studies by the Corps of Engineers, BPA and various contractors of the economic consequences of removal of federal hydroelectric projects on the Lower Snake River. Recommendations for use of market mechanisms to acquire water rights for fisheries enhancement. Vice-Chair, 2001-2002. Reappointed to second and third four-year terms, November 2002 and December 2006; resigned August 2007.

Federal Power and Transmission Contracts and Rates, Industry Restructuring: Eugene Water and Electric Board, Eugene, Oregon (1998-07). Advice regarding partial requirements products and related rates; analysis of proposed rate designs and product definitions; analysis of alternative new transmission services, including interaction with new power services; advice on development of Regional Transmission Organizations; general advisory services on regional power issues.

Federal Power and Transmission Contracts and Rates, Industry Restructuring: Tacoma Power, Tacoma, Washington (1999-07). Advice and analysis on transmission and power purchases.

Retail Rates and Direct Access: City of Portland, Oregon (2006-07). Analysis of retail rate filings by two investor-owned utilities; emphasis on rates, terms and conditions of direct access, terms and conditions of service to accounts with behind-the-meter generation, and costs of streetlight services. Drafting of term sheets for power purchase agreement. Discovery, settlement conferences, and direct testimony.

Retail Rates: City of Gresham, Oregon (2006-07). Analysis of retail rate filings by an investor-owned utility, with emphasis on costs of streetlight services. Discovery, settlement conferences, and direct testimony.

Integration of Wind Resources: Cowlitz County PUD, Longview, Washington (2006). Strategic advice regarding options for maximizing economic value of a wind resource and for design of contract for retail load service.

Long-Term Transmission Contract Application and Negotiation: Public Utility District No. 1 of Klickitat County, Washington (2005). Economic evaluation of options, preparation of application for renewal of transmission service, preparation for contract negotiations, briefing of management and Board on options and recommendations.

Federal Power Rates: Cowlitz County PUD, Eugene Water and Electric Board, Grant County PUD, Pacific Northwest Generating Cooperative, Pend Oreille County PUD, Seattle City Light, Tacoma Power (2006). Analysis, negotiation, and testimony on pricing of ancillary services, rate design, market-based rates, and rate for Slice of System power sales.

Wholesale Transmission Rates: State Water Project, Department of Water Resources, Sacramento, California (2006). Analysis of filing at FERC for a transmission rate increase by an investor-owned utility, discovery, recommendations regarding settlement, representation at settlement conference at FERC.

Integration of Wind Resources: White Creek Purchasers, Washington (2005). Analysis and advice regarding integration services and transmission access.

Acquisition of Renewable Resources, City of Portland, Oregon (2004-05). Analysis and advice on transmission implications of acquisition of new renewable resources by the City, including contract structure, ancillary services, and relationships with Energy Service Suppliers.

Transmission Restructuring: Washington Public Utility Districts Association, Seattle, Washington (2002-06). Analysis and advice regarding federal transmission restructuring proposals, including development of alternatives to Regional Transmission Organizations and other near-term improvements to the management of the regional transmission system.

Federal Policy: Implementation of the Energy Policy Act of 2005 (2005). Drafting and submission of comments to the Federal Energy Regulatory Commission on behalf of a coalition of consumer-owned utilities in the Northwest.

Report on Non-Bypassable Charges: Turlock Irrigation District, Turlock, California (2005). In association with M.A. Meal, CFA, preparation of a report on “exit fees” charged to loads that transferred service from Pacific Gas & Electric Company to the Turlock Irrigation District.

Evaluation of ISO Market Monitoring: American Public Power Association, Washington, D.C. (2004). Review and evaluation of the activities and effectiveness of market monitors at three existing Independent System Operators in New England, New York, and the Mid-Atlantic.

Litigation Support: Turbine Technology Services, Orlando, Florida (2004-05). Expert opinion services regarding general determinants of the value of assets in power markets, in litigation related to an outage of a power generation plant in upstate New York. Submission of report before the Supreme Court for the County of Niagara, State of New York, Case No. 110482. Appearance before arbitrator in Buffalo, New York for direct and cross-examination.

Market Activities of Public Enterprises: American Public Power Association, Washington, D.C. (2004). Review and preliminary evaluation of an academic article regarding the incentives for anticompetitive behavior by public enterprises.

Economics of Critical Habitat: National Oceanographic and Atmospheric Administration, Washington, D.C. (2003-04). As a subcontractor to Industrial Economics, Inc., advice on the economic analysis associated with critical habitat designation for endangered salmon and bull trout populations in the Pacific Northwest; review and critique of draft reports.

Wholesale Power Contract Litigation: Cities of Burbank, Glendale and Pasadena, California (1996-2004). Preparation and filing of damage estimates under long-term sales and exchange agreements with a Northwest federal agency. Clarification of estimated damages with agency staff. Estimation of damages included in Complaint filed at the Federal Court of Claims and the Energy Board of Contract Appeals (EBCA). Testimony at trial before the EBCA.

Northwest Transmission Restructuring: Snohomish County PUD, Washington (2004). Participation in a workshop of the Board on the status of transmission restructuring initiatives in the Pacific Northwest, including options to formation of a Regional Transmission Organization.

Cost/Benefit Analysis of a Regional Transmission Organization: City of Seattle, City Light Department (2003-04). In cooperation with Energy Expert Services, Inc., preparation of a report on the financial and operational impacts on Seattle City Light of a range of alternatives for a Regional Transmission Organization in the Pacific Northwest.

Wholesale Power Contract Evaluation, Renegotiation, and Litigation; Transmission Restructuring: Turlock Irrigation District, Turlock, California (2002-04). Advice and analysis related to certain provisions of a long-term power sales contract, then under dispute; advice regarding national transmission restructuring proposals.

Retail Access: Tri-Met, Portland, Oregon (2001-03). Advice and analysis for tri-county transportation agency (bus and light rail), regarding proposed regulations, prices, and tariffs for implementation of retail competition for electricity: collection of necessary data, interpretation of tariffs, analysis of pricing options; advice regarding management of options, including pricing choices with incumbent suppliers, swap arrangements, and direct access; evaluation of costs of alternatives available under retail access tariffs of Portland General Electric.

Integration of Wind Resources: Grant County PUD, Ephrata, Washington (2003). Advice on costs of integrating wind resources.

Cost-Effectiveness Analysis: Public Power Council, Portland, Oregon (2003). Advice on potential for additional cost-effectiveness analyses in the evaluation of operations of the Columbia River system.

Potential Public Acquisition of an Investor-Owned Utility: Regional Power Study Group (Clackamas, Marion, Multnomah, and Washington Counties, Oregon) (2002-03). Preparation and presentation of a *pro forma* analysis comparing public and private acquisition of an investor-owned utility; advice to Commissioners of individual counties.

Acquisition of an Investor-Owned Utility by a Municipality, City of Portland, Oregon (2003). Preparation of *pro forma* estimates of the retail rate impacts of the acquisition of Portland General Electric by the City of Portland.

Oregon Metals Industry Council, Salem, Oregon (2002). Analysis of the structure of electricity costs for four major customers of Portland General Electric and PacifiCorp; review of pricing options for 2003; development of *pro forma* cost analyses.

Retail Access: City of Portland, Oregon (2000-02). Review of draft rules, development of comments on proposed regulations of the Oregon Public Utilities Commission (OPUC) for retail direct (open) access; analysis of and advice on filings at the OPUC by two investor-owned utilities; testimony before the OPUC rate design for streetlights and traffic signals, payments to

small distributed generation, and tariff provisions; negotiation of settlement agreements; estimation of impacts of final rates adopted by the OPUC; advice regarding management of supply options, including pricing choices of incumbent suppliers, swap arrangements, and direct access; preparation of draft Request for Qualifications materials; evaluation of the costs of alternatives available under retail access tariffs of Portland General Electric.

Retail Access Rates and Tariffs: League of Oregon Cities, Salem, Oregon (2000-02). For the Cities of Tualatin, Hillsboro, and Sandy, Oregon, analysis of impacts of proposed unbundled and direct access retail rates of an investor-owned utility in Oregon. Analysis of the likely effects of choices available under retail tariffs of Portland General Electric.

Analysis of Regional Energy Markets: REBOUND (2002). For a coalition of environmental and labor organizations, preparation of reports before the Idaho Department of Water Resources, pertaining to the “speculative purpose” standard in the application for water rights by two power projects proposed in northern Idaho. Deposition and testimony at hearing.

Wheeling Tariff and Rate Development: Cowlitz County PUD, Longview, Washington (2001-02). Design of segment-specific and network wholesale tariff and rates for wheeling services for new generation resources in the PUD’s service territory, including ancillary services; draft of agreement for wheeling services.

Strategic Evaluation of Wholesale Water Conveyance Rates: Metropolitan Water District of Southern California, Los Angeles, California (1999). Review of methodology for evaluating impacts of proposed and alternative legislation; application of standard utility and regulatory cost of service and economic practices to review proposed legislation and alternative proposals for calculating wheeling rates; comparison of proposed legislative alternatives and regulatory practices governing the application of wheeling rates in other utility sectors; identification of those areas of water utility economics and regulations that distinguish water utilities and agencies from other utilities such as gas and electricity; advice on best practices for determining wheeling rates for water transmission system; review of unbundling, cost allocation, and rate design proposals.

Transmission Access and Pricing: FPL Energy, Inc., Juno Beach, Florida (1998-2002). Assessment of available transmission capacity and estimate of transmission costs for a new thermal generation project in the Pacific Northwest; advice on transmission pricing and access.

Due Diligence: Klickitat Public Utility District, Goldendale, Washington (2001). Review of financial and economic assumptions associated with a proposed generation project.

Reactive Power Charges: Grant County PUD, Ephrata, Washington (2000). Analysis of impact of proposed charges for reactive power and voltage support.

Power Purchase Arrangements, Pacific Northwest Generating Cooperative, Portland, Oregon (2000). Presentation on the costs and risks associated with a new type of power purchase arrangement in the Northwest.

Economic Analysis in Condemnation Case: City of Hermiston, Oregon (2000). Analysis and preparation of economic reports on “private injury” aspects of condemnation by the City of distribution assets owned by an investor-owned utility; expert testimony at trial; judicial finding in favor of client.

Regional Transmission Organizations: Chelan County PUD, Wenatchee, Washington (2000). Organization of workshop to review the status of RTO West.

Sale of Investor-Owned Utility: City of Glendale, California (2000). Review of proposed sale of investor-owned utility in Oregon to an investor-owned utility in Nevada.

Economic Analysis in Condemnation Case: Emerald People’s Utility District, Eugene, Oregon (1999-2000). Analysis and advice to Board and management regarding economic consequences of annexation of retail service territory by Emerald; preparation of economic report on “private injury”; expert testimony at trial; judicial finding in favor of client.

Assessment of Electricity Loads and Infrastructure: Energy Office, City of Portland, Oregon (1999). With R. Young & Associates, preparation of study of (a) the physical and financial characteristics of the local electric distribution systems within the City, (b) transmission interconnections with nearby transmission providers, (c) load shapes for customer classes within the City of Portland, (d) power purchase options for the City, and (e) cost savings associated with various post-deregulation scenarios. Analysis of options for municipal ownership.

Transmission Investment Planning: Grant County PUD, Ephrata, Washington (1999). Advice on investment in new transmission capacity.

Retail Power Contracts: Klickitat Public Utility District, Goldendale, Washington (1999). Review of draft retail contracts for sale of power to an aluminum smelter.

Generation Auction Procedures: City of Glendale, California (1999). Testimony before the Oregon Public Utilities Commission regarding the auction of generation and contract resources by an investor-owned utility.

Federal Power Contracts and Rates: Klickitat Public Utility District, Goldendale, Washington (1998-99). Reports on developments regarding the Bonneville Power Administration: rates, product definitions, contract terms and conditions; advice regarding strategic planning of wholesale power and transmission supplies for the PUD.

Independent System Operator: Chelan County Public Utility District, Wenatchee, Washington (1998-99). Development of Memorandum of Understanding for formation an Independent Grid Scheduler in the Northwest; testimony before the Federal Energy Regulatory Commission; draft outlines for operating and governing agreements.

National Electricity Policy: American Public Power Association, Washington, D.C. (1997-99). Economic critique of a proposal to privatize three Power Marketing Agencies (PMAs). White paper responding to a study of PMA financial practices by the Congressional Budget Office. Critique of a report on tax-exempt debt by the Congressional Research Service. Economic critique of a study by a consultant to the Edison Electric Institute of “subsidies” available to public power entities. Paper on the role of tax-exempt municipal debt in the electric power industry (see publications).

Open-Access Transmission Tariffs: American Public Power Association, Washington, D.C. (1997-98) Guidebook for APPA members developing Open-Access Transmission Tariffs.

Retail Wheeling Program: Grant County Public Utility District, Ephrata, Washington (1997). Economic and policy analysis of implications of a retail wheeling program.

Antitrust Economics: Heller Ehrman White & McAuliffe, Portland, Oregon (1997). Affidavit on damages resulting from anticompetitive behavior in the electric power industry.

Marketing of Renewable Energy: Klickitat Public Utility District, Goldendale, Washington (1997). Preparation of a Request for Proposals for the acquisition of three generating projects; evaluation of bids; recommendations for negotiations; negotiations with bidders; drafting of power sales contract; drafting of adjustment clause for gas supply contract.

Market Power Study: Lansing (Michigan) Board of Water & Light (1997). In cooperation with Economic Modeling & Computer Consulting, Inc. and R.W. Beck, Inc., preparation of a study of market power in the state of Michigan.

Retail Street Lighting and Signal Rates: City of Portland, Oregon (1996-2000). Analysis of the retail rates paid by the City for streetlight and traffic signal consumption. Negotiation with the City’s power supplier on cost allocation and rate design changes. Negotiation of special contract providing for market-based retail pricing of electricity. Analysis of impacts of retail rate unbundling, and testimony on unbundling and rate design. Analysis of financial swap instruments to manage risk to City of variable purchased power expenses. Preparation of bid instruments for a swap of indexed price for fixed price. Review and revision of standard swap contracts. Analysis of bids and negotiations with bidders for swap of indexed prices. Advice on monthly financial settlements under the swap.

Technical Support for Training in Alternative Dispute Resolution: Western Regional Transmission Association, Western Systems Coordinating Council, Northwest Regional Transmission Association, and Southwest Regional Transmission Association, Portland, Salt Lake City, and Phoenix (1996-97). Training in alternative resolution procedures for transmission access and pricing disputes; participation in training exercises.

Industry Restructuring, Wholesale Power Contract Renegotiation, Transmission Tariff Development: Tacoma Public Utilities (1996-97). Advice on restructuring of the electric utility industry in the U.S. and the Pacific Northwest; negotiation of an amendment to the utility's power purchase contract with a federal power marketing agency; analysis of implications of a proposed merger of a nearby investor-owned utility with a distributor of natural gas; preparation of ancillary service rates and tariffs.

Wholesale Power Contract Strategies: Tillamook People's Utility District, Tillamook, Oregon (1996-97). Advice to Power Manager on interpretation and implications of amendments to and operation of existing contract and proposed new contracts with major power supplier, including both power and transmission.

Wholesale Power Contract Evaluation, Renegotiation, and Litigation: City of Burbank, California (1996-99). Analysis of pricing under a long-term wholesale power purchase contract. Estimation of refund due, and preparation of notice of refund. Interpretation of contract terms in light of FERC Order 888, including the potential for stranded cost obligations. Support for negotiations aimed at contract revision, replacement, or termination. Investigation of market value of lay-off of contract. Analysis of replacement contract options. Preparation of petition to intervene at FERC against the proposed merger of a Northwest investor-owned utility and an international power marketer, including preliminary analyses of relevant antitrust markets. Evaluation of economic implications of operation under purchase and exchange modes of a long-term sale-and-exchange contract with a Northwest federal power marketing agency. Advice regarding the economic implications of developments in the Northwest for the City's rights under the contract. Preparation of strategy for contract revision, replacement, or possible termination. Auditing of invoices submitted under contract.

Transmission Contract Negotiation: Chelan County PUD, Wenatchee, Washington and Klickitat County PUD, Goldendale, Washington (1996-97). Negotiation of terms and conditions of long-term contract for firm and nonfirm transmission service for a hydroelectric resource being scheduled for a wholesale power services customer of Chelan, including mediation; advice on partial requirements contract rights of Chelan's customer.

Antitrust Economics: Taylor Economic Research, Portland, Oregon (1996-98). Support in preparation of affidavits and testimony on the market power aspects of proposed mergers of electric utilities in California and the Midwest; review of expert report in a federal antitrust case.

Wholesale and Retail Contracts and Rates: Columbia River People's Utility District, St. Helens, Oregon (1996). Economic analysis in support of various activities associated with competitive power markets, including retail rate design, retail industrial contracts, wholesale power contract and rate issues, economic evaluation of a proposed cogeneration project, and support in negotiation of a retail industrial contract.

Antitrust Economics and Retail Tariff Design: Industrial Customers of Northwest Utilities, Portland, Oregon (1996). For a group of retail industrial customers throughout the Northwest, analysis of the proposed merger of Puget Sound Power and Light with Washington Natural Gas, including market power issues, effects on regulation, and the distribution of the costs and benefits of the proposed merger; case settled by negotiation of market-based pricing tariff for retail service.

Training in Rate Design: Northwest Public Power Association, Vancouver, Washington (1996). Two seminars on the impact on retail rates of the unbundling of wholesale power rates by the Bonneville Power Administration.

Cost of Wheeling Power: Bouillon Christofferson & Schairer, Seattle, Washington (1996). Development of detailed projection of the long-term cost of wheeling firm power from a proposed combustion turbine project from the Pacific Northwest to the Los Angeles area, prepared in cooperation with Utility System Efficiencies, Sacramento, California.

Contract Interpretation: Emerald People's Utility District, Eugene, Oregon (1996). Advice to management and board regarding economic implications of proposed amendments to a long-term contract with the utility's major power supplier (a federal power marketing agency), and options for supply diversification under the same contract.

Wholesale Power Contract Negotiation: Okanogan Public Utility District, Okanogan, Washington (1996). Advice during negotiations for wholesale power purchase agreement with an investor-owned utility, and on value of options available under contract with the PUD's major power supplier.

Executive Economist and Director of the Portland Office, R.W. Beck, Inc. (1994-1996)

- Retail Tariff Evaluation, City of Portland, Oregon. Project Manager for a survey of streetlight and traffic signal rates; analysis of rates paid by the City for these services.
- Wholesale Power Market Evaluation, KLT, Inc., Kansas City, Missouri. Consulting Economist for report on market conditions in the Pacific Northwest: siting regulations, fuel supplies, pipeline expansion, transmission access and pricing, status of competing power projects, incentives for diversification of wholesale and retail power supplies.
- Power and Transmission Contract Negotiation, Public Power Council, Portland, Oregon. Advice, support, interpretation, and regular information to the membership and Executive Committee during negotiation of principles for new long-term power sales and transmission contracts with the Bonneville Power Administration.
- Power Supply Contract Negotiation, Inland Power & Light, Spokane, Washington. Assistance in negotiations for a ten-year contract to purchase power from an investor-owned utility, approved by Inland's board.
- Economic Consulting Services to the Public Generating Pool (PGP), Oregon and Washington. Interpretation of existing power supply contracts with BPA, new partial requirements contracts with BPA, unbundled power and transmission services, rates for unbundled federal power services and federal wheeling; testimony in the 1996 BPA rate case: transmission revenue requirements, cost allocation, segmentation, and rate design; impacts of FERC's open-access policies on existing federal transmission service; open-access (FERC *pro forma*) transmission tariffs, network operating agreements, and transmission service agreements; unbundled power services; marginal cost analysis; definition of partial requirements power services for utilities with hydroelectric generation.
- Power Supply Planning, Northern Wasco People's Utility District, The Dalles, Oregon, and Klickitat County Public Utility District, Goldendale, Washington. Project Manager: solicitation and evaluation of wholesale power supplies, development of options for completing and integrating a small hydroelectric project in Oregon, and filing of a §211 request for transmission service.
- Contract Interpretation, City of Burbank, California. Consulting Economist retained by outside counsel to analyze the pricing provisions of a wholesale power contract.
- Contract Negotiation, Emerald People's Utility District, Eugene, Oregon. Consulting Economist: resolution of dispute over conservation contract, negotiations over new power contracts, purchase of power from alternative suppliers; advice regarding Emerald's retail industrial contracts.
- Competitive Bidding Support, American Medical Response, Inc., Portland, Oregon. Support for bid to supply emergency medical transport to Multnomah County, Oregon.
- Transmission Market Analysis, Enserch, Inc. Analysis of options for wheeling output of a proposed new generation plant across federal transmission in the Northwest.
- Least-Cost Planning, Grant County Public Utility District, Ephrata, Washington. Support for wholesale components of least-cost plan effort.

Taylor Economic Research, Inc. (1988-94)

Taylor Economic Research provided consulting services in several areas of the electric utility industry, including regulation, antitrust, and commercial contracts:

- on behalf of a group of municipal utilities, advice regarding least-cost transmission planning in Wisconsin;
- on behalf of a geothermal power producer in California, analysis of market conditions affecting contractual payments to the producer by an investor-owned utility;
- on behalf of a group of municipal utilities, analysis of relevant market definitions for power and transmission in federal and state regulatory proceedings regarding the proposed merger of Southern California Edison with San Diego Gas and Electric;
- on behalf of a generation/transmission cooperative, analysis of predatory pricing, exclusionary behavior, market definition, and contingent valuation of natural resources in a hydroelectric relicensing case in North Carolina;
- on behalf of a group of municipal utilities, analysis of transmission access conditions during proposed merger of Northeast Utilities with Public Service New Hampshire;
- on behalf of the state of Maine, asset valuation in a contested hearing regarding the evaluation of a hydroelectric site in Maine operated by an investor-owned utility;
- on behalf of a private company in Louisiana, analysis of relevant market definition, exclusionary behavior, and damages in a private antitrust case in the secondary waste water treatment industry;
- on behalf of a steel mill in Nebraska, research on retail rate design and cost allocation precedents and principles in retail electricity rate-making.

Gordon, Thomas, Honeywell, Malanca, Peterson & Daheim, Attorneys at Law (1991)

Advice identifying a broad spectrum of emerging Northwest regional issues.

Gordon T. Carey, Jr., Attorney at Law (1986)

In support of the defense, application of theories of information and entry in a case involving a “Green River” ordinance (restrictions on residential direct marketing), and testimony at trial.

Senior Economist, Public Power Council, Portland, Oregon (1986-94)

Analysis of issues and development of technical and policy positions: demand and revenue forecasts; capital and expense budgets of the Bonneville Power Administration (BPA); BPA’s financial policies and wholesale rate proposals; resource acquisition targets, cost-effectiveness, and mechanisms, including competitive bidding; analysis of regional (Northwest) and federal load/resource balance; wholesale power supply and transmission contracts, including power exchanges, conservation wheeling, operations and scheduling, curtailments, alternative dispute resolution procedures, and contract assignments; economic impacts of federal statutes; regional power planning; surplus power marketing programs and contracts; contracts covering short-term regional power deficits; environmental analyses; federal and state regulation of investor-owned utilities; transmission access policies, joint-ownership proposals, cost allocation

approaches, and wheeling tariffs; formation of Regional Transmission Organizations in the Western U.S. and the Northwest; utility mergers and acquisitions; economic costs of fish and wildlife protection; negotiation of settlements of lawsuits; service on technical committees at BPA, the Pacific Northwest Utilities Conference Committee, the National Marine Fisheries Service, and the Northwest Power Planning Council; expert testimony before BPA, state and federal regulatory commissions, and the Northwest Power Planning Council; contacts with the General Accounting Office (GAO), newspaper editorial boards, trade press, and Congressional staff; presentations before monthly board meetings; drafting primers, “white papers”, and regular newsletters; Acting Manager in the absence of the Manager (staff of ten).

Chief, Wholesale Rates, Bonneville Power Administration, U.S. Department of Energy, Portland, Oregon (1984-86)

Supervision of all aspects of wholesale power rate design, including development of computer models; testimony in BPA’s 1985 general rate case on interruptible rates, cost classification (development of demand and energy charges), implementation of adjustment clauses, stand-by charges, special discounts, and surcharges; supervision of the development of a variable power rate tied to output prices for aluminum smelter loads; testimony before the Federal Energy Regulatory Commission on energy markets in the Southwest; research on the price-responsiveness of non-profit electric utilities to changes in wholesale rate structure (see publications); advice to management on antitrust aspects of transmission access policies; organization of systematic collection of data on sales and revenues; supervision of staff of ten.

Economist, Division of Rates, Bonneville Power Administration (1982-83)

Revision of BPA’s comprehensive long-term rate forecasting model to incorporate new statutory provisions; required understanding of all aspects of agency operation (total revenue requirements, load forecasts, cost allocation and rate design techniques); support for expert witnesses in general rate proceedings and at FERC.

ECO/Northwest (1983, 1986)

Analysis and projection of the demand for coal by utilities in the Pacific Northwest.

Stoel, Rives, Boley, Fraser and Wyse, Attorneys at Law (1982)

Support for plaintiff during the discovery phase of a private antitrust case (exclusionary practices in the wood products industry).

Economist, Social Security Administration, Washington, D.C. (1975)

Collection of data and construction of an econometric model of innovation in the U.S. pharmaceutical industry.

IV. Expert Testimony, Affidavits, Declarations, and Reports

On behalf of [confidential client], in the case of Thomas Mathews, et al. v. Dominion Energy Salem Harbor, LLC, et al., expert report regarding maintenance budgets and maintenance practices at a coal-fired power plant in New England, 2014.

On behalf of [confidential client], before the U.S. District Court (Oregon), expert report on economic damages sustained by a power plant due to alleged fuel contamination, 2011.

On behalf of Grant County PUD No. 2 of Grant County, Washington, before the U.S. District Court for the District of Oregon, CV No. 09-1012-HZ, expert report on the evolution of wholesale pricing of electricity, pertinent to the provision of services under a long-term power sales agreement, 2011.

On behalf of the City of Portland, testimony before the Oregon Public Utilities Commission in Docket No. UE 215, on the application of marginal cost principles to retail rate design and issues specific to streetlight rate design, 2010.

On behalf of the Pacific Northwest Generating Cooperative, testimony before the Bonneville Power Administration in Docket No. WP-10, on the establishment of the Industrial Firm power rate, 2009.

On behalf of the City of Glendale, declarations in U.S. District Court, District of Oregon, Case No. 05 1321 PK, 2008-2009.

On behalf of the Public Power Council, before the Bonneville Power Administration, testimony on the implementation of section 7(b)(2) of the Northwest Power Act, Docket No. WP-07S, 2008.

On behalf of the Cities of Tacoma and Seattle, Washington, before the Superior Court of the State of Washington in and for the County of Spokane, No. 05201697-8, declarations regarding the appropriate calculation of formula-based “incentive payments” under long-term purchase power agreements with a power supplier, 2007.

On behalf of the Cities of Tacoma and Seattle, Washington, report to “Project Consultant” (contractually-defined alternative dispute mechanism) regarding the appropriate calculation of formula-based “incentive payments” under long-term purchase power agreements with a power supplier, 2006.

On behalf of the Cities of Portland and Gresham, testimony before the Oregon Public Utilities Commission in Docket No. UE 180, on restoration priority, direct access, time-of-use pricing, streetlight cost of service, rate design, and rate treatment of customer-owned cogeneration resources, 2006.

On behalf of the City of Portland, testimony before the Oregon Public Utilities Commission in Docket No. UE 179, on restoration priority, direct access, and time-of-use pricing, 2006.

On behalf of several coalitions of customers of the Bonneville Power Administration, testimony before BPA in docket WP-07 on rate design, pricing of ancillary services, market-based rates for surplus power sales, the rate for the Slice of System product, 2006.

On behalf of the City of Glendale, California, before the Federal Energy Regulatory Commission, affidavit regarding damages under complex pricing provisions of a long-term power sale and exchange agreement, Docket No. EL06-5-000; also filed before the U.S. District Court for the District of Oregon, Case 3:05-cv-01321-PK in support of a motion to dismiss, 2005.

On behalf of the Cities of Tacoma and Seattle, Washington, before the Superior Court of the State of Washington in and for the County of Spokane, No. 05201697-8, declaration regarding the interpretation and application of the term “prudent utility practices” to retail rate-setting by municipal utilities, September 2005.

On behalf of Turbine Technology Services, Inc., testimony before an arbitrator appointed by the Supreme Court for the County of Niagara, State of New York, Case No. 110482, regarding damages associated with generation plant capacity and general determinants of the value of assets in power markets, in litigation related to an outage of a power generation plant in upstate New York, 2005.

On behalf of the Cities of Burbank, Glendale, and Pasadena, California, testimony before the Department of Energy Board of Contract Appeals, regarding financial damages sustained under long-term power purchase agreements, 2004.

On behalf of the Public Generating Pool, Benton, Franklin, and Grays Harbor County PUDs, and the Eugene Water and Electric Board, testimony before the Bonneville Power Administration, on the subject of the Safety Net Cost Recovery Adjustment Clause, 2003.

On behalf the Public Generating Pool, Tacoma Power, and the Washington Public Utility Districts Association, testimony before the Northwest Energy Caucus of the U.S. Congress, on the subject of proposals for restructuring of the Northwest transmission system (RTO West), 2002.

On behalf of the Public Generating Pool, testimony before the Chairman of the Federal Energy Regulatory Commission during a meeting of the Regional Representatives Group of RTO West, 2002.

On behalf of REBOUND, reports on regional energy market conditions; deposition and testimony before the Idaho Department of Water Resources, regarding the application for water rights by Cogentrix, Inc. and Newport Northwest, 2002.

On behalf of the City of Portland, testimony in Oregon Public Utility Commission dockets UE 115 and UE 116, regarding unbundled rates, marginal cost rate design, tariff provisions, credits for demand reductions and small power generation, 2001.

On behalf of the City of Hermiston, Oregon, report on “Private Costs and Public Benefits Associated with the Condemnation of Electric Utility Distribution Facilities by the City of Hermiston, Oregon”; direct examination, rebuttal testimony, and cross-examination at trial before the Circuit Court of the State of Oregon for the County of Umatilla, 2000.

On behalf of Emerald People’s Utility District, Eugene, Oregon, report on “Potential Private Injury Aspects of the Transfer of Service Territory to the Emerald People’s Utility District”; direct examination, rebuttal testimony, and cross-examination at trial before the Circuit Court of the State of Oregon for the County of Linn, 2000.

On behalf of the Public Generating Pool, testimony before the Bonneville Power Administration, in the wholesale power rate proceeding for the period 2002-06 (Docket No. WP-02): “Slice of System” power product; design of demand, energy, and load variance charges; general transfer agreements, billing factors, and General Rate Schedule Provisions; design of cost recovery adjustment clauses, 2000.

On behalf of the Metropolitan Water District of Southern California, regarding the pricing of wholesale water wheeling services, testimony before the Assembly Committee on Water, Parks and Wildlife on Senate Bill 506, 1999.

On behalf of the City of Glendale, testimony before the Oregon Public Utilities Commission in a proceeding on the auction of the generation and contract assets of Portland General Electric (UE-102): the value of bidder-defined packages of assets; comparison of simultaneous ascending auctions and two-stage, sealed-bid auctions, 1999.

On behalf of the City of Portland, testimony before the Oregon Public Utilities Commission in a proceeding on retail access in the service territory of Portland General Electric (UE-102): unbundled retail coordination services: cost allocation, obligation to purchase; rate design, tariff design, and cost allocation for unmetered end-use loads, 1998.

On behalf of the Public Generating Pool, testimony in the BPA rate cases (power and transmission) and the BPA transmission terms and conditions case: transmission revenue requirements; transmission segmentation; transmission rate design; transmission terms and conditions (for FERC's open-access tariffs); marginal cost analysis, for the seasonal/diurnal differentiation and classification (capacity/energy) of power rates; cost basis and design of unbundled power services, including load shaping (options to meet the difference between forecasted and actual loads); revenue forecasting for partial requirements customers; and the interaction of existing power sales contracts and BPA's proposed rate design, 1996.

On behalf of the Public Power Council, 1986-94:

- before BPA: appropriate financial practices for BPA; analysis and management of cost and revenue risks; adjustment clauses; load forecasts; competitiveness of proposed rates; design of specific rates (economy energy, rates tied to marginal resources, interruptible rates, and cost allocation).
- before state commissions in Oregon, Idaho, Washington and the Federal Energy Regulatory Commission: regarding the merger of Pacific Power and Light with Utah Power and Light, transmission market definition and measures of market power throughout the western U.S., essential facilities, sources of efficiency, power supply benefits, and contractual alternatives to the proposed merger.
- before the Washington Utilities and Transportation Commission: regarding Puget Sound Power and Light's Energy Cost Adjustment Clause and incentive regulation generally.

On behalf of the Bonneville Power Administration:

- 1985 general rate case: adjustment clauses, wholesale rate design, stand-by charges, interruptible tariffs, cost classification (demand/energy).
- before the Federal Energy Regulatory Commission: competitive nature of markets for economy energy in the western U.S., 1985

On behalf of the defense, represented by Domenici and Purcell, testimony in County Court, Hillsboro, Oregon: the economic impacts of "Green River" ordinances restricting direct residential marketing activities, 1986.

V. Professional Activities

Member, Technical Work Group, Northwest Wind Integration Action Plan, 2006-07

Member, Endangered Species Economics Committee, National Marine Fisheries Service, 1991-94

Discussant and Section Chair, Annual Western Conference of the Rutgers Advanced Workshop in Regulation and Public Utility Economics, 1988-2000

Member, Economic Forecasting Advisory Committee, Northwest Power Planning Council,
Portland, Oregon, 1986-94
Citizen Member, Comparable Worth Study Committee, City of Portland, 1983

VI. Academic Experience

Visiting Professor of Economics, Reed College, 2007-09

Introductory and intermediate/advanced microeconomic theory, energy economics, European and U.S. economic history; supervision of nine senior theses in Economics, Mathematics-Economics, and International Policy Studies (Economics).

Co-Chair, Economics and Member, Executive Council, Oregon Academy of Science, 1991-96
Organization of annual conference, including overall arrangements, solicitation and selection of papers for the economics section.

Referee

Economic Inquiry, 2008
Business History Review, 1990 and 1994
The Review of Industrial Organization, 1991
Journal of Economic Behavior and Organization, 1994
Annals of Public and Cooperative Economics, 1994

Guest Lecturer, Graduate School of Administration, Lewis and Clark College, Portland, Oregon, Winter 1984 Seminar for mid-career executives on industrial policy.

Visiting Assistant Professor of Economics, Reed College, Portland, Oregon, 1980-82

Introductory and intermediate microeconomics, economic history of Europe, the U.S., Russia, and Japan; supervision of senior theses; service on the Committee on Academic Computing, the Admissions and Financial Aid Committee, and the Bookstore Board of Directors.

Lecturer and Assistant Professor of Economics, Goucher College, Towson, Maryland, 1979-80 Introductory and intermediate microeconomics, industrial organization and public policy.

Guest Scholar, The Brookings Institution, Washington, D.C., 1979-80

Teaching Fellow, Yale University Graduate School, New Haven, Connecticut, 1976-77, 1978-79

Teaching assistant for graduate courses in economic history.

Research Assistant, Department of Economics, Yale University, 1976

Assistance on an investigation of the history of agricultural innovation in the U.S.

VII. Papers and Publications

(with L. Xue, D. Sullivan, J.L. Peltola, and P. Leiber) “Decoupling for municipally-owned utilities: innovation in Southern California”, *The Electricity Journal*, April 2014.

“Are ISOs and RTOs Really All They Claim To Be?”, *Public Power*, March-April 2010.

(with J. Hamilton, M. Hanemann, and J. Loomis) “Report of the GCMRC Socioeconomic Research Review Panel”, prepared for the Grand Canyon Monitoring and Research Center, February 2010.

“The Impact of FERC Orders on the Value of Bidders in PJM”, *The Electricity Journal*, August/September 2009.

“The Impact of Auction Design on the Value of Bidders in PJM”, presented at the Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 2009 (submitted to *The Journal of Regulatory Economics*; revise and resubmit).

“Control Area Operations: The Debate over Consolidation”, June 2007 (revised May 2009).

“Quis custodiet ipsos custodes? An Evaluation of Market Monitoring in the Mid-Atlantic and Northeastern United States”; presented at the 18th Annual Western Conference of the Rutgers Advanced Workshop in Regulation and Competition, June 2005 (revised May 2009).

“RTOs: An Idea Whose Time Has Not Yet Come”, *Oregon’s Future*, Electric Energy: Northwest Issues, Vol. III, No. 1, Spring 2002, pp. 62-64.

“The Economic Analysis of Tax-Exempt Debt in the Electric Power Industry”, *Proceedings of the 92nd Annual Conference on Taxation of the National Tax Association*, Atlanta, October 1999; longer form in *State Tax Notes*, Vol. 18, No. 11, March 13, 2000, pp. 841-846, and in *The Exempt Organization Tax Review*, April 2000, Vol. 28, No. 1, pp. 53-58.

“More Heat Than Light: A Critical Examination of *Lights Out on Federal Power: Privatization for the 21st Century*”, prepared for the American Public Power Association, February 1998; excerpted in *Public Power*, May-June 1998.

“The Costs and Benefits of Federal Power Programs. A Critique of the Report *Should the Federal Government Sell Electricity?* by the Congressional Budget Office, November 1997”, prepared for the American Public Power Association, May 1998.

“Guide to Open-Access Transmission Tariffs”, published by the American Public Power Association, Washington, D.C., May 1998.

“Power, Politics, and Salmon: Restructuring the Northwest Power Industry”, *Fiscal Insight* #11, Cascade Policy Institute, Portland, February 1996.

“Government Monopolies: Facing the Voters, or the Competition? Challenges of the New Ballot Measure Five”, *Fiscal Insight* #8, Cascade Policy Institute, October 1994.

“Competition versus Social Goals: Is There Necessarily A Conflict?”, *Bulletin*, Northwest Public Power Association, May 1994.

“Non-Profit and For-Profit Electric Utilities in the United States: Pricing and Efficiency”, *Annals of Public and Cooperative Economics*, October-December 1993.

“Prices, Incentives, and Consumer Surplus: What Does It Really ‘Cost’ To Protect Northwest Salmon?”, *Proceedings of the 27th Annual Pacific Northwest Regional Economic Conference*, Northwest Policy Center, University of Washington, Seattle, 1993.

“For-Profit and Non-Profit Firms: Limits of the Simple Theory of Attenuated Property Rights”, *The Review of Industrial Organization*, October 1993.

“Vertical Integration, Horizontal Co-ordination, and Innovation in the Electric Power Industry”, presented to the Fifth Annual Western Conference of the Rutgers University Advanced Workshop in Regulation and Public Utility Economics, San Diego, July 1992.

“Spending More Money Cannot Protect Endangered Salmon”, *Environmental Insight* #1, Cascade Policy Institute, Portland, February 1992.

“Protection of Large-Scale Common Property Resources with Existence Value”, February 1992.

“Rush to Consolidate Wrong Direction for Governments”, *The Oregonian*, Portland, January 28, 1992.

“Purchasing ‘Lost Opportunity’ Resources: How Much Should We Pay Today To Avoid Costs Tomorrow?”, *The Electricity Journal*, June 1991.

“Managing Competing Demands on a Scarce Resource: Non-Market Allocation of Water in the Columbia River Basin”, presented to the First Annual Meeting of the International Association for the Study of Common Property, Duke University, September 1990.

“When Are Power Markets ‘Workably Competitive’?”, *The Electricity Journal*, March 1990.

(with J. Hagerman and T. Shannon) “Interactions Among Sellers on the Pacific Intertie”, presented at the Second Annual Western Conference of the Rutgers Advanced Workshop in Regulation and Public Utility Economics, Monterey, California, July 1989.

“Managing Competition in German Coal, 1893-1913”, *The Journal of Economic History*, June 1989 (reprinted in *Selected Cliometric Studies on German Economic History*, edited by John Komlos and Scott Eddie, Franz Steiner Verlag, Stuttgart, 1997).

“Evaluating an Industrial Policy: The Bonneville Power Administration and the Northwest Aluminum Industry”, *Proceedings of the 23rd Annual Pacific Northwest Regional Economic Conference*, Northwest Policy Center, Univ. of Washington, 1989.

(with T. Shannon) “What Happens When the Government is the Dominant Firm? Spot Market Energy Prices on the Pacific Intertie”, presented as “Price Formation on the Pacific Intertie” to the Oregon Academy of Science, Portland, February 1988.

(with K. P. Seiden) “The Behavior of Publicly-Owned Utilities in Wholesale Electricity Markets: The Case of the Pacific Northwest”, *Energy Economics*, October 1987.

“Are Cartels Unstable? The German Steel Works Association Before World War I”, in *Technique, Spirit and Form in the Making of Modern Economies: Essays in Honor of William N. Parker*, edited by Gary Saxonhouse and Gavin Wright, JAI Press, 1984.

“Horses and Men in the Ruhr Coal Mines Before World War I”, prepared for the Eighth International Congress of Economic History, Budapest, Hungary, August 1982.

“Cooperative Competition in German Coal and Steel, 1893-1914”, *The Journal of Economic History*, March 1982.

“Cooperative Competition in German Coal and Steel, 1893-1914”, Ph.D. dissertation, Yale University, 1981.

“Evolving Entrepreneurial Attitudes toward Industrial Organization in Germany”, presented in the Yale Council on West European Studies lecture series on modern Europe, New Haven, Connecticut, January 1979.

“Coal and Bureaucrats”, presented to the 7th International Congress of Economic History, Edinburgh, Scotland, August 1978.

VIII. Papers of the Independent Economic Analysis Board

(available at www.nwcouncil.org/fw/ieab)

- 2007-1 Review of the SOS Revenue Stream Report
- 2006-2 Scoping Investigation of Available Project Information
- 2006-1 A Scoping Investigation of Approaches to Preserving Habitat
- 2005-8 Review of the Select Area Fishery Evaluation Project
- 2005-2 Review of the Estimated Economic Impacts of Salmon Fishing in Idaho
- 2005-1 Economic Effects from Columbia River Basin Anadromous Salmonid Fish Production
- 2004-2 Scoping for Feasibility of Columbia River Mainstem Passage Cost-Effectiveness Analysis
- 2004-1 Juvenile Passage Cost Effectiveness Analysis for the Columbia River Basin: Description and Preliminary Analysis
Application of the Recommendations and Guidance for Economic Analysis in Subbasin Planning to the Clearwater Subbasin Management Plan
- 2003-2 Recommendations and Guidance for Economic Analysis in Subbasin Planning
- 2003-1 Review of Activities and Contributions to Fish and Wildlife Planning
- 2002-2 Review of Proposals for Improving Methow and Twisp Rivers for Anadromous Fish Interim Report
- 2002-1 Artificial Production Review - Economics Analysis Phase I
- 2001-2 Economic Review of Instream Water Supply Components of the Salmon Creek Project
- 2001-1 The Economics of Water Acquisition Projects
Memo regarding Review of Economic Appendix 1 of the Corps' Lower Snake Feasibility Study
Technical Review of Lower Snake River Juvenile Salmon Migration Feasibility Report / Environmental Impact Statement Appendix I – Economic
- 1999-1 River Economics: Evaluating Trade-offs in Columbia River Basin Fish and Wildlife Programs and Policies
Independent Economic Advisory Board Comments on Restoring the Lower Snake River
- 1997-2 Lessons from Existing Studies of the Economics of Fish and Wildlife Recovery Measures in the Northwest
- 1997-1 Review of Local Economic Impact Studies: Tri-Port Economic Impact Study, and The Economic Impact of Steelhead Fishing and the Return of Salmon Fishing in Idaho

IX. Book Reviews and Translations

Internationale Kartelle und Aussenpolitik, edited by Clemens A. Wurm, in *Business History Review*, 1991.

Interessenpolitik und nationale Integration, 1848/49, by Heinrich Best, in *The Journal of Economic History*, December 1980.

(Translation into English) Toni Pierenkemper, "Entrepreneurs in Heavy Industry: Upper Silesia and the Westphalian Ruhr Region, 1852 to 1913", *Business History Review*, 53(1), March 1979, 65-78.

X. Fellowships and Grants

Goldhammer Research Grant, Reed College, Summer 2008

Faculty Research Grant, Reed College, Summer 2008

National Endowment for the Humanities, Summer Stipend, 1982

Mellon Foundation, Research Grant, 1981

National Science Foundation (NSF), Project Grant, 1981

National Science Foundation, Grant for Improving Doctoral Dissertation Research, 1979-80

Social Science Research Council, Dissertation Fellowship, 1977-79

Council on West European Studies, Yale University, Graduate Student Research Grants
(various), 1977-78

Yale University, University Fellowship, 1974-77, 1979

Reed College, The Samuel E. Hibbs Memorial Scholarship, 1972-74