



**STEPHEN S. GEORGE, Ph.D.**  
*Principal Consultant*

## PROFESSIONAL PROFILE

Dr. Stephen George has almost 30 years of experience consulting to electric and gas utilities and regulatory agencies, and 32 years of experience in the energy field. His areas of expertise include pricing strategy, demand-side management program design and evaluation, electric industry restructuring, strategic and market planning, market research, and energy demand modeling. He has worked for electric utilities in numerous jurisdictions on issues associated with electricity pricing and advanced metering, including the recent design and evaluation of California's Statewide Pricing Pilot, the largest pricing experiment ever done in the US. He provided expert testimony on the demand-response benefits of dynamic pricing for one of California's largest utilities and advised the government of Victoria, Australia on the cost-effectiveness of implementing advanced metering and pricing reform. Dr. George is an expert on the design and implementation of competitive retail electricity markets. He has advised governments and utilities on retail market issues in numerous US states and countries, including Singapore, Ontario Canada, New Zealand and Australia. Dr. George has held previous positions as Vice President of CRA International and PHB Hagler Bailly, Inc. (formerly Putnam, Hayes & Bartlett, Inc.), Director of Putnam, Hayes and Bartlett, Inc., and Vice President of XENERGY Inc.

## EDUCATION

Ph.D.      Economics, University of California, Davis  
B.S.      Economics, Santa Clara University

## RELEVANT PROJECT EXPERIENCE

### Business and Policy Analysis

Dr. George has conducted a wide variety of work assisting utilities in better understanding customers and markets in order to develop effective business strategies. Examples of relevant projects in this area include the following:

- Dr. George recently completed a project for the Vermont Department of Public Service that developed estimates of the benefits and costs of advanced metering and time varying pricing for each of Vermont's major electric utilities.
- Dr. George provided expert testimony on behalf of San Diego Gas & Electric (SDG&E) in a regulatory proceeding on advanced metering and demand response. He was the primary SDG&E witness on the benefits of new pricing and demand-response strategies enabled by advanced metering, including critical peak pricing and an innovative, peak-time rebate program targeted at mass-market customers.
- Dr. George recently worked on several projects for the Department of Infrastructure, Victoria, Australia (DOI). Initially he provided analysis on the benefits of demand response in support of DOI's investigation into the costs and benefits of interval metering. This work eventually led to the Government's decision to deploy interval metering throughout Victoria. Subsequently, Dr.

- George worked on an analysis of the costs and benefits of adding two-way communication to these interval meters, which ultimately led to the Government's decision to fully deploy communicating interval meters throughout Victoria. He is currently working on the design and implementation of a statewide pricing pilot that will investigate the demand impacts of various pricing and information treatments among residential customers.
- Dr. George recently led a project to assess the market potential for an Automated Data Exchange that PG&E is considering developing to provide day-after interval data to electricity and gas service providers and multi-site customers. As part of this project, FSC conducted interviews among third-party energy service providers and focus groups among large commercial and industrial customers to assess their interest in the potential service offering.
  - Dr. George recently worked with California's Independent System Operator (CAISO) to develop a vision and strategy for incorporating demand response into the operation of California's electricity grid and electricity markets.
  - Dr. George recently worked with the three investor owned utilities in California to develop protocols and guidelines for estimating impacts associated with event-based and non-event based demand response and pricing options. The protocols apply to both ex-post impact evaluation as well as ex ante forecasting of load impacts for a wide spectrum of demand-response options.
  - Dr. George was one of the key architects and evaluators of California's Statewide Pricing Pilot (SPP), the largest time-of-use pricing experiment ever done in the industry. Working in conjunction with the three largest investor-owned utilities in CA, Dr. George facilitated sessions among multiple stakeholders to design the pilot, which examined both traditional TOU rates as well as dynamic rates such as critical peak pricing among residential and small and medium-sized commercial and industrial customers. The experimental design supported the estimation of electricity demand models that allowed stakeholders to predict the impact of time-varying prices that were not specifically tested in the experiment for a wide variety of customer sub-populations and weather conditions. The analysis has been used by each of the IOUs in CA in support of their regulatory filings on advanced metering and demand response.
  - Dr. George led a project for a large East Coast utility that developed a model to estimate the net benefits of a wide variety of demand response options, including pricing and incentive programs. This model examines impacts from multiple perspectives, including that of the utility, customers and the ISO.
  - In response to a regulatory directive to Xcel Energy, Dr. George helped estimate the net benefits of a variety of time-of-use rate options. The evaluation examined the net benefits from a variety of perspectives, including participating and non-participating consumers, the utility, all ratepayers and society. A report summarizing this analysis was filed by Xcel with the Minnesota Commission.
  - In May 2001, Puget Sound Energy (PSE) placed roughly 300,000 residential customers on a time-of-use rate and gave the option of returning to the standard rate. This opt-out program was the first of its kind. After several years of operation, intervenors challenged the cost-effectiveness and benefits of the rate, and PSE hired Dr. George to analyze the net benefits based on impact estimates that had already been developed. He found that the program was marginally cost-effective based on the estimates that were provided, but the estimates (especially the conservation savings) were questionable and the program eventually was



- terminated when customers were forced to pay an incremental metering cost and bill savings proved to be marginal.
- In a project for a European metering company, Dr. George conducted in-depth interviews with 12 utilities and metering service providers in England. The survey focused on a variety of topics, including the structure of the metering market, outsourcing, competitive positioning among meter service providers, contracting relationships, business operations, and related topics.
  - In a project for a very large, Midwestern utility, Dr. George developed regulatory and business strategies for metering under multiple scenarios concerning distribution unbundling and metering requirements for support of retail competition. The project involved detailed financial analysis of alternative metering technologies.
  - In order to help one of the largest electricity retailers in the world determine which U.S. states it should enter, Dr. George evaluated the retail market rules in most of the states where retail competition is currently allowed.
  - Dr. George managed development of a comprehensive strategic marketing plan covering all major consuming sectors for a Midwestern utility. Through a series of senior management interviews, he assisted in the development of marketing objectives that were consistent with key corporate objectives. Using an analytical framework that systematically investigated the profitability of alternative strategic options and market segments, Dr. George worked closely with utility staff to identify targets of opportunity as well as potential risks. He also advised the marketing director on restructuring the planning and sales organization to be more responsive to the changing needs of the company and its customers.
  - In a project for a medium-sized electric utility, Dr. George identified time-to-market bottlenecks in the sales, customer service and marketing planning departments, and made recommendations for restructuring the departments to improve sales and service effectiveness.
  - In another project for the same company, Dr. George managed the development of a market strategy and detailed business plan for entry into the energy services business, with an emphasis on contract energy services (CES). From a customer's standpoint, CES provides an opportunity to completely outsource their entire energy operation, in essence purchasing end-use services (e.g., light, heat, motive force) from a full-service energy provider. From a supplier's perspective, CES affords the opportunity to bundle many value-added services into a single contract and to better control decisions regarding energy purchases, equipment investments and operational practices.
  - In a project for a southeastern utility, Dr. George participated on a team that restructured the company into lines of business and strategic business units designed to compete more effectively in a restructured utility industry.
  - In a project for the Electric Power Research Institute (EPRI), Dr. George investigated several topics, including issues concerning the importance of determining customer profitability across product lines and the development of strategic market management strategies in a competitive electricity industry. He also directed a project that developed case histories of product innovation in other industries in order to provide insights about market strategies for new products in the utility industry.
  - As part of a senior consulting team, Dr. George developed a long-range strategic plan for a large electric utility holding company. The comprehensive effort examined how the company would fare in an increasingly competitive energy market under a variety of transition and equilibrium



- scenarios. Dr. George directed the analysis of the customer-side of the business and was also involved in benchmarking, performance improvement and organizational change analysis.
- On behalf of EPRI, Dr. George was the first to apply Quality Function Deployment (QFD) to the design of marketing and DSM programs. QFD is a design tool used widely in manufacturing to develop products and services that better meet customer's needs. It focuses on incorporating the "voice of the customer" in all elements of the planning process from conception through implementation. Dr. George managed the first application of the tool in designing a commercial sector efficient lighting program for PSI Energy. He also facilitated the development of a residential add-on heat pump program, a commercial/industrial communication and energy monitoring service, and automated payment machines. Dr. George has conducted QFD training workshops for well over 150 utility staff members representing more than two dozen utilities.
  - Dr. George managed a large, multiyear project for EPRI designed to develop methods and tools for assisting utilities to incorporate customer needs into the planning process. The comprehensive project focused not only on how to identify customer needs and wants, but also on how to organize and manage a utility's structure and resources to achieve a greater value orientation, as well as how to address the concerns that arise among regulators and other policy shapers when utilities shift from a cost to a value orientation.
  - In a project for one of Spain's largest investor-owned utilities, Dr. George directed a major least-cost planning effort. Working closely with client staff, he developed a comprehensive understanding of the existing markets for demand-side alternatives using existing data as well as new survey data that he helped develop. He determined the relative costs and benefits of a wide variety of demand-side management options in all major consuming sectors, as well as the barriers and opportunities for achieving cost-effective options.
  - Dr. George was the author of a strategic marketing planning report, "Demand-Side Management Strategy for 1990–1993," prepared for a major U.S. utility. The strategy included not only recommendations for specific demand-side programs, but also for the data collection and analysis, resource planning, program design, and monitoring and evaluation activities that accompany program implementation.
  - In a study for another large utility, Dr. George directed a series of DSM program planning and evaluation activities that included a state-of-the-art econometric evaluation of the kWh impact of the company's Residential Conservation Services (RCS) program. Another analysis utilized a comprehensive benefit/cost assessment that involved the development of new conservation strategy selection software. Dr. George was the primary author of a major filing with the regulatory commission, which presented estimates of the conservation potential for the company's service territory and recommended specific program options.
  - Dr. George managed a project for EPRI that reviewed much of the existing literature on commercial customer acceptance of demand-side options and programs and surveyed over 100 utilities about their specific experience in marketing demand-side programs. The project identified a variety of specific customer needs and characteristics that affect purchase and utilization decisions. The project also examined various market research methods used to investigate customer characteristics and interests, as well as the technical issues important to program evaluation.
  - For Public Service of New Hampshire, Dr. George evaluated an interruptible rate program for commercial and industrial customers and helped design a new program that met with significantly greater success than the original. After implementing his recommendations,



- participation in the program increased from three to over 40 customers, and the amount of interruptible capacity under contract went from 1 MW to over 20 MW.
- Dr. George participated in a major project for the three largest investor-owned utilities in California that developed an evaluation methodology for acquiring supply-side resources through competitive auctions. The methodology allows one to compare alternative multi-attribute resource options using a self-scoring evaluation process.
  - For many years, Dr. George organized and facilitated the Utility Customer Satisfaction Network, an ad hoc group of utility researchers who meet twice a year to discuss technical and practical issues associated with customer satisfaction measurement.
  - Other relevant projects conducted by Dr. George in the area of planning and evaluation include:
    - An assessment of the load impact of a commercial audit program for the Bonneville Power Administration.
    - An investigation of the persistence of commercial conservation measure savings, also for BPA.
    - An analysis of the transferability of time-of-use rate impact estimates for EPRI.
    - An investigation into effective implementation factors for DSM programs, also for EPRI.
    - An analysis of residential DSM program evaluation studies for the California Energy Commission.

### Electric Industry Restructuring

Dr. George's focus in electric industry restructuring is on the retail side of the business, examining issues associated with market rules and structures for retail competition, distribution system unbundling and strategy, default supply pricing and design, licensing and codes, information access, consumer protection, and affiliated interest rules. Among his most recent projects are:

- Development of all aspects of the retail market design and implementation for the Singapore Electricity industry. Through this project, Dr. George developed recommendations concerning the overall structure of the retail market, the characteristics of standard offer service to both contestable and non-contestable consumers, business rules for consumer transfers among suppliers, user requirements for an electronic business transaction system to support customer switching, and meter standards for contestable consumers.
- Management of a consulting team assisting the Ontario Energy Board (OEB) to develop licenses and codes for all market participants in the restructured Ontario energy industry. The team developed licenses for generators, transmitters, distributors, the Independent Market Operator, gas and electricity retailers, and wholesale electricity suppliers. The various codes developed through this project included a distribution system code, retail settlement code, metering code, marketing code of conduct, and affiliate relationships code. This project involved extensive public consultation with stakeholders.
- Expert testimony on behalf of ComEd concerning unbundling of delivery services under Section 16-108 of the Illinois Public Utilities Act.
- Expert testimony on behalf of Entergy concerning issues associated with distribution unbundling of metering and billing services.



- Recommendations to the Office of Regulator General, Victoria, Australia concerning provider of last resort rules and responsibilities, meter unbundling, and the net benefits of wide scale deployment of time-of-use metering for mass-market consumers.
- Management of a consulting team that developed recommendations to the Ontario Market Design Committee (MDC) on all aspects of retail competition, including retail settlement procedures, load profiling, procedures for transferring customers among electricity retailers, default supply obligations, separation of competitive and regulated activities, guidelines and codes for competitive metering and billing operations, consumer protection, and distribution and marketer licensing. Dr. George has directed a wide variety of stakeholder teams working on all aspects of retail restructuring and has been the primary consulting liaison on retail issues with the MDC.
- Evaluation of proposals for a metering and settlement framework to support the introduction of full retail competition in Victoria, Australia. The Victorian Government had asked the state's Distribution Businesses to produce proposals, which it then asked PHB Hagler Bailly to evaluate. Dr. George reported findings back to the Government, taking into account the Government's objectives, and made suggestions for an alternative approach.
- Development of a detailed report advising the Australian Metering and Reconciliation Committee on design of a retail settlement and metering strategy in support of expansion of the Australian competitive electricity market to all customers. Working under contract to the National Electricity Market Management Company (NEMMCO), Dr. George managed this work and was the primary author of a report entitled *Development of a Conceptual Metering and Settlement Design for Full Retail Competition in the National Electricity Market* (December 11, 1998). The report includes a worldwide review of settlement procedures and metering policies in jurisdictions where retail competition is already in place or planning is well advanced. The work involved more than half a dozen all-day workshops among a wide variety of stakeholders, including distribution company representatives, government agencies, meter suppliers, and competitive energy service providers.
- Two reports to the Edison Electric Institute identifying major operating and business management issues associated with retail competition and distribution unbundling. Issues were examined under multiple scenarios regarding competitive supply of distribution services (e.g., metering, billing, and customer service) and public policies associated with meter requirements for direct access.
- Broad-based support to a Midwestern utility involved in both legislative and regulatory restructuring proceedings. The work included examination of distribution unbundling, identification of price and non-price impacts of restructuring on consumers, investigation of affiliate interest rules, and development of information strategies to support industry restructuring.
- Development of a report identifying organizational issues associated with distribution unbundling for another Midwestern utility.
- For the Government of Victoria, Australia, Dr. George developed a framework for examining cross-ownership policies and restrictions in the electricity and natural gas industries. The report examined the benefit and concerns associated with various cross-ownership combinations as well as appropriate analysis methods and policy options.
- For the New Zealand Commerce Commission, support in Commerce Act litigation involving alleged anticompetitive practices of one of New Zealand's leading electric utilities. Issues in the



case involved structural boundaries between regulated and unregulated elements of a restructured electricity industry, preferential access to monopoly services and cross-subsidization of competitive businesses by monopoly services. .

- For one of the largest U.S. utilities, a detailed review of how California has implemented retail competition. The review has focused on distribution unbundling issues, including competitive provision of metering and billing.

## Market Research

Another one of Dr. George's primary areas of expertise is market research. He has directed numerous surveys and analyses designed to help utilities better understand their customers' needs and motivations. This work has primarily been used to improve marketing effectiveness in the increasingly competitive environment faced by utilities. Descriptions of relevant projects in this area follow:

- In a project for a Midwestern utility, Dr. George developed a comprehensive, three-year market research plan to support both strategic and tactical marketing planning.
- In a project for a major West Coast utility, Dr. George assisted the marketing department through a survey of large commercial customers. The telephone survey of 750 customers provided information on customer decision-making practices with respect to large capital investments, specifically focusing on cogeneration and thermal energy storage systems. The data was analyzed to determine customer segments and their buying factors and processes associated with investments in cogeneration and other large energy-using equipment.
- Dr. George directed individual market assessment studies of a number of large commercial customers of a major utility. Through a review of secondary sources and extensive interviews of firm personnel, each assessment described the customer's energy-related decision-making process, technological characteristics and position within its market. The primary focus of the studies was to identify marketing threats and opportunities from the utility's perspective.
- In a project for a large New York utility, Dr. George managed a multiyear research effort that investigated a number of issues associated with the buying patterns of commercial customers. He designed a comprehensive research strategy including a detailed survey of the physical and behavioral characteristics of commercial customers, the development of end-use energy consumption and load profiles and the management of experimental studies to investigate the penetration of selected DSM technologies under various utility program alternatives.

Other relevant market research studies directed by Dr. George include:

- A survey of heating, ventilation, and air conditioning contractors to determine installation practices relevant to developing building standards.
- A focus group study among commercial sector energy managers to ascertain information relevant to the purchase of cogeneration equipment.
- The conduct of a large onsite residential appliance saturation survey designed, in part, to evaluate the validity of mail survey data.
- The conduct of a series of focus groups designed to assess the impact of various lease arrangements among commercial establishments on the purchase of energy using equipment.



## Demand Modeling and Forecasting

Dr. George began his career in the Demand Assessment Office of the California Energy Commission where he played a key role in developing one of the first end-use forecasting models in the industry. Since that time, he has conducted numerous projects in the area of demand modeling and forecasting, some of which are described below:

- In a project for the Northwest Power Planning Council (NPPC), Dr. George managed the development of a large-scale electricity market model, including submodels for load forecasting, supply pricing and demand/supply integration. These models were used by the Council to examine the implications of alternative demand and supply scenarios for electric power policy in the Pacific Northwest. The load forecasting model combined updated versions of existing residential and commercial sector models with industrial and irrigation sector models developed specifically for the region.
- Dr. George was one of the earliest practitioners of Conditional Demand Analysis, a method of estimating end-use consumption from individual household survey data. He applied this technique in his doctoral dissertation to estimate residential end-use electricity consumption for several California utilities. His conditional demand analysis experience led to a contract with the California Energy Commission to estimate the variation in space conditioning electricity consumption over the days of the year as a function of changes in weather and other determining factors such as price.

Other relevant experience in the forecasting and modeling area include:

- An evaluation of alternative estimates of end-use consumption in the commercial sector.
- The development of a technology brief on price elasticity for EPRI.
- The estimation of econometric forecasting models for utilities in the Northwest and Midwest.
- The development of forecasting models for the Texas Energy and Natural Resources Advisory Council.

## EMPLOYMENT HISTORY

2006 – Present	Principal Consultant, Freeman, Sullivan & Co., San Francisco, CA
2000 – 2006	Vice President, CRA International (formerly Charles River Associates), Oakland, CA
1988 – 2000	Vice President (and Director), Putnam, Hayes & Bartlett (merged with Hagler Bailly in 1998 to become PHB Hagler Bailly), San Francisco (and Palo Alto), CA
1984 – 1988	Vice President, Xenergy, Inc., Oakland, CA
1979 – 1984	Senior Research Associate and Vice President, Charles River Associates, Boston, MA
1976 – 1979	Analyst, California Energy Commission, Sacramento, CA

## PUBLICATIONS AND REPORTS

*Benefit-Cost Analysis for Advanced Metering and Time-Based Pricing.* Draft Report, January 7, 2008. (With Josh Bode and Michael Wiebe). Prepared for the Vermont Department of Public Service.

*Joint IOU Revised Straw Proposal on Load Impact Estimation for Demand Response.* September 10, 2007. (With Michael Sullivan and Josh Bode) Prepared for PG&E, SCE and SDG&E.



*California's Statewide Pricing Pilot: Commercial & Industrial Analysis Update.* Final Report, June 28, 2006. (with Ahmad Faruqui and John Winfield).

"Pushing the Envelope on Rate Design," *The Electricity Journal*. March 2006. (with Ahmad Faruqui)

*Residential Hourly Load Response to Critical Peak Pricing in the Statewide Pricing Pilot.* Final Report, November 29, 2005. (with Ahmad Faruqui).

"California Pricing Experiment Yields New Insights on Customer Behavior," *Electric Light & Power*. June 2005. (with Ahmad Faruqui)

"Preventing Electrical Shocks: What Ontario and Other Provinces Should Learn About Smart Metering," *C.D. Howe Institute Commentary, No. 210*. April 2005. (with Ahmad Faruqui)

"Quantifying Customer Response to Dynamic Pricing," *The Electricity Journal*. May 2005. (with Ahmad Faruqui)

*Impact Evaluation of California's Statewide Pricing Pilot.* Final Report, March 16, 2005. (with Ahmad Faruqui)

"California's Experiment With Dynamic Pricing For Mass Market Customers", *Public Utilities Fortnightly*, July 2003. (with Ahmad Faruqui)

"Demise of PSE's TOU Program Imparts Lessons", *Electric Light & Power*, January, 2003. (with Ahmad Faruqui)

"Reforming Pricing in Retail Markets." *Electric Perspectives*, September/October 2002, pp. 20-21. (with Ahmad Faruqui)

"The Value of Dynamic Pricing in Mass Markets", *The Electricity Journal*, June 2002. (with Ahmad Faruqui)

"Time To Get Serious About Time-of-use Rates", *Electric Light and Power*, February, 2002. (with Ahmad Faruqui)

*Economic Analysis of Time-of-Use Rates for Residential Customers.* Prepared on behalf of Xcel Energy, December 28, 2001

"The Great Meter Ownership Debate." *Utility Automation*. April 1999, Vol. 4, No. 3. pp. 6-7.

*Market Design for Retail Competition: Retail Technical Panel Report to the Ontario Market Design Committee.* January 15, 1999.

*Development of a Conceptual Metering and Settlement Design for Full Retail Competition in the National Electricity Market.* A report to the Australian National Electricity Market Management Company. December 11, 1998.

"Just a Phone Call Away." *Electric Perspectives*. July-August 1998.

"Up for Grabs: The Fight Is on for Control of the Meter in Retail Markets." *Electric Perspectives*. May-June 1998, pp. 36-50.

*Competitive Metering, Billing and Customer Services: Part II.* Edison Electric Institute. January 1998.



*Competitive Metering, Billing and Customer Services Part I: An Analysis of Operational Issues.* Edison Electric Institute. July 1997.

*Evaluating Cross-Ownership Restrictions in the Electricity and Natural Gas Industries.* Government of New South Wales, Australia. 1997.

*Strategic Evaluation of New Service Ventures.* Electric Power Research Institute, EPRI TR-107216. December 1996. (With Robert Buzzell).

*New Product Introductions: Case Histories From Other Industries.* Electric Power Research Institute, EPRI TR-106901. September 1996. (With Robert Buzzell and Zander Arkin).

*Five Essential Tests of Market Strategy.* Electric Power Research Institute, EPRI TR-1063895. April 1996. (With Robert Leone and Robert Buzzell).

*Using Quality Function Deployment: A Customer-Driven Process to Create and Deliver Value.* Electric Power Research Institute, EPRI TR-1046635. December 1994.

*Customer-Focused Planning: Demonstration Project Summaries.* Electric Power Research Institute, EPRI TR-101569. December 1992. (With Robert Leone).

*Customer-Focused Planning: Interim Work Products.* Electric Power Research Institute, EPRI TR-100762. June 1992. (With Robert Leone).

*Customer-Focused Planning: Getting Started.* Electric Power Research Institute, EPRI TR-100761. June 1992. (With Robert Leone).

*Customer-Focused Planning: Concepts and Tools.* Electric Power Research Institute, EPRI TR-100815. March 1992. (With Robert Leone).

*Delivering Customer Value: The Application of Quality Function Deployment to Demand-Side Management.* Electric Power Research Institute, EPRI TR-100239. February 1992. (With Robert Leone).

*DSM Commercial Customer Acceptance: Program Planning Insights.* Electric Power Research Institute EM5633, Volume 1 and 2, April 1988.

*Appliance Efficiency Incentive Programs: Literature Review and Recommendations for Pilot Program Design and Demand Forecasting.* Prepared for the California Energy Commission, February 1988. (with Michael Koved and Marjorie McRae).

*DSM Market Research Issues and Methods.* Electric Power Research Institute, EM5632. February 1988. (with Shel Feldman)

*Title 24 Heat Pump and Furnace Comparison Project.* California Energy Commission. January 1988.

*A Comparative Analysis of Commercial Sector Energy Utilization Indexes.* Stephen George and Anne Gumerlock Lee. Pacific Gas and Electric Company. March 1987.

*Small Cogeneration Focus Group Study.* Pacific Gas and Electric Company. December 1986.



Impact of Short-term Leases on Conservation Investments of Commercial Landlords and Tenants. Bonneville Power Administration, Portland, Oregon. April 1986.

Analysis of Methods for Load Shape Response Transfer. Electric Power Research Institute, Phase IV, Rate Design Study, 1984.

Review and Documentation of Snohomish County Public Utility District Load Forecast. Snohomish County Public Utility District, 1983.

Study of Conservation Potential and Goals. Southern California Edison Company, 1983.

Statistical Analysis of the Relationship between Weather and Electricity Consumption in the Residential Sector. California Energy Commission, 1982.

"A Review of the Conditional Demand Approach to Electricity Demand Estimation," Proceedings: End-Use Modeling and Conservation Analysis. Electric Power Research Institute Workshop, Atlanta, Georgia, 1980.

"Unit Energy Consumption," Technical Documentation of Residential Sales Forecasting Model: Electricity and Natural Gas. California Energy Commission, Chapter 5, 1979.

"Short-Run Residential Energy Demand: A Policy-Oriented Look," Ph.D. dissertation, University of California at Davis, 1979.

"Statistical Estimation of Residential Appliance-Specific Demand for Electricity," Changing Energy Use Futures, Volume I, ed. R. A. Fazzalare and C. B. Smith, Pergamon Press, New York, 1979, pp. 365–373.

## SELECTED PRESENTATIONS

"Benefit Cost Analysis for Advanced Metering and Time-Based Pricing" Vermont Department of Public Service Three workshops: August 21, 2007, November 13, 2007 and January 15, 2008.

"New Pricing Strategies in California." Western Supply Forum conference. January 2007.

"What's Happening with Advanced Metering Down Under?" National Town Meeting on Demand Response. Berkeley, June 27, 2006

"Do Pay for Reduction Incentive Programs and CPP Tariffs Produce Similar Demand-Response Impacts?" AESP Pricing Conference on Retail Rates and Price Response. Chicago, May 17, 2006.

"Will Residential Customers Respond to Time-Varying Price Signals?" Ohio PUC Workshop on EPA05. April 2006.

"California's Statewide Pricing Pilot: Lessons Learned." Smart Metering Canada, Ontario. January 19, 2006.

"Requirements Under Section 1252 EPA05." A presentation before the Pennsylvania Public Utilities Commission. November 2005.

"State Regulatory Requirements Under EPA05 for Advanced Metering and Time-Based Pricing." Energy Issues Policy Forum. Orlando, FL. October 2005.



"California's Statewide Pricing Pilot: Overview of Key Findings." Seminar on Delivering the Benefits from Advanced Metering, Innovative Pricing and Demand Response. Sydney, Australia. August 3, 2005.

"California's Statewide Pricing Pilot: Overview of Key Findings." MADRI Advanced Metering Infrastructure Workshop. May 4, 2005.

"California's Statewide Pricing Pilot: Key Findings for Residential Customers." NARUC Winter Meetings: Committee on Energy Resources and the Environment. February 16, 2005.

"California's Statewide Pricing Pilot." Oregon PUC Workshop on Advanced Metering. June 6, 2005.

"Preliminary Impact Estimates from California's Statewide Pricing Pilot." AESP Annual Conference. New Orleans. December 8, 2003.

"Preliminary Impact Estimates from California's Statewide Pricing Pilot." EUCI Load Management Conference. October 8, 2003.

"Issues and Challenges in Designing California's Statewide Pricing Pilot. AESP/EPRI Pricing Conference. Chicago. May 14, 2003.

"The Economic Value of Dynamic Pricing for Small Consumers." California Energy Commission Workshop: Achieving Greater Demand Response in the California Electricity Market. March 15, 2002.

"Can Mass Market Consumers Help Mitigate High Market Prices?" 12<sup>th</sup> National Energy Services Conference. December 2001.

"Retail Competition in the UK: A Success Story." Workshop on Retail Competition. Ontario. April 2001.

"What's Going on at the Retail Level in California?" presentation to the Association of Edison Illuminating Companies Committee on Power Delivery. Fall 1998 Meeting, Atlanta, Georgia.

"Distribution Unbundling: A Critical Strategic Decision," presentation to the EEI Chief Executive Conference, Phoenix, Arizona. January 9, 1998.

Key Issues in Measuring Customer Satisfaction. "Proceedings of the 5th Biennial Marketing Research Symposium." EPRI TR-101695. November 1992.

"Getting to Yes with Commercial Customers," presented at the American Public Power Association Customer Services and Communications Workshop. Marco Island, Florida, September 1988.

"Marketing Interruptible Rates to Commercial and Industrial Customers: A Case Study," in Proceedings: DSM Strategies for the 90s. EPRI CU-6367. April 1989.

"Multi-Attribute Bidding for Future Energy Resources in California," presented to the Geothermal Resources Council, Los Angeles Section, March 15, 1989.

"New Technologies: Residential Bill Disaggregation Software," presentation at the Customer Services and Communication Workshop, American Public Power Association. San Francisco, California. October 1987.



"DSM Commercial Customer Acceptance," proceedings of the EPRI Annual Review of Demand-Side Planning Research. Houston, Texas. September 1987.

"The Impact of the Auditor on Conservation Implementation: An Evaluation of BPA's Commercial Audit Program," proceedings of the Conference on Energy Conservation Program Evaluation: Practical methods, Useful Results, August 19–21, 1987, Chicago, Illinois.

"The Deregulated Role of Your Utility: What's in It for You," a presentation before the Association of Professional Energy Managers. Los Angeles, California. July 1987.

"Commercial Customer Acceptance of Demand-side Management," proceedings of the Fourteenth Energy Technology Conference. Washington, D.C. April 1987.

"Marketing Energy Investments to Parties of Commercial Short-term Leases," proceedings of the ACEEE 1986 Summer Study on Energy Efficiency of Buildings. Marjorie R. McRae, Stephen S. George, John da Silva, Santa Cruz, California. August 17–23, 1986.

"Marketing Demand-Side Management Programs to Commercial Customers," presentation at the Wisconsin Utility Association Customer Energy Utilization Conference. May 11–13, 1986.

"Commercial Customer Acceptance of Demand-Side Management: Conservation Programs," proceedings of the 1986 Pacific Gas and Electric Energy Expo, San Francisco, California. April 30, 1986.

"Customer Acceptance of Commercial Audit Programs," proceedings of The Renaissance of Utility Marketing: Second Annual Seminar on Demand-Side Management. Albuquerque, New Mexico. November 13–15, 1985.

"Energy Forecasting Techniques: An Overview," Energy Forecasting, ed. Terry H. Morland, American Society of Civil Engineers, October 24, 1985.

"Least Cost Planning in the United States." Presented at the Least Cost Planning Conference, Bilbao, Spain. July 1991.

"Internalizing Environmental Costs in Utility Planning." Presentation to Southern California Edison Company, April 1991.

"Integrated Value-Based Planning: How Customer-Focused Are Electric Utilities," presentation to Conference on Enhancing Electricity's Value to Society. Toronto, Ontario, Canada, October 22–24, 1990.

"Performance Measurement: A Critical Element in Product/Service Planning," presented at Conference on New Service Opportunities for Electric Utilities: Creating Differentiated Products. Berkeley, California, September 12–14, 1990.

"Customer Focused Planning," presented at Conference on Innovations in Pricing and Planning. Milwaukee, Wisconsin, May 2–4, 1990.

"Value Based Planning: What it Means to be Customer Driven," presented at the PURC Conference 1990, Regulatory Initiatives and Competitive Response in the New Decade. Gainesville, Florida, February 1–2, 1990.

