



SHMUEL S. OREN, PH.D.

CURRENT POSITION

University of California at Berkeley

Earl J. Isaac Chair Professor in the Science and Analysis of Decision Making,
Department of Industrial Engineering and Operations Research (2006 - present)

Professor, Department of Industrial Engineering and Operations Research (1984 - present)

Berkeley Site Director, Power System Engineering Research Center (PSerc) (1995 - present)

PAST POSITIONS

IIT, Madrid, Spain

Visiting Professor (1999 - 2000)

University of Canterbury, Christchurch, New Zealand

Erskine Fellow (August 1993 - October 1993)

University of California at Berkeley

Chairman, Department of Industrial Engineering and Operations Research (1986 - 1992)

Associate Professor, Department of Industrial Engineering and Operations (1982 - 1984)

American University of Armenia, Yearvan, Armenia

Visiting Professor (May 1992 - July 1992)

Tel Aviv University, Israel

Visiting Professor, Staff Consultant (July 1985 - January 1986)

Stanford University

Associate Professor, Engineering Economic Systems (1980 - 1982)

Consulting Professor, Engineering Economic Systems (1972 - 1980)

Teaching and Research Assistant (1970 - 1972)

Xerox Palo Alto Research Center

Research Scientist (1972 - 1980)

EDUCATION AND PROFESSIONAL CERTIFICATION

PH.D., in Engineering Economic Systems, Stanford University, Stanford, California 1972

M.S., in Engineering Economic Systems, Stanford University, Stanford, California 1972



M.Sc. in Materials Engineering, Technion University, Israel, 1969

B.Sc. in Mechanical Engineering (Summa Cum Laude), Technion University, Israel, 1965

INDUSTRY EXPERIENCE

California Public Utility Commission - Consultant to the Energy Division on issue related to generation adequacy and capacity markets. Participated in stakeholders workshops and preparation of CPUC Energy Division white paper. (2006 - present)

Public Utility Commission of Texas - Senior adviser to the Market Oversight Division, reviewing market protocols and proposed reforms for transition to a nodal market. Testify on a regular basis before the Commission and speak at technical conferences. (2001 - present)

ISO-New England - Evaluated the implication of the forward capacity market (FCM) rules on market monitoring. Preparation of Market Mitigation Assessment report (with Robert Wilson) (2007)

ECOLGEN Colombia - Evaluated the regulator's proposal for a firm energy auction. (2007)

Korean Power Exchange (KPX) - Invited keynote speaker at workshop on demand response. (2007)

EPRI/EDF - Review of generation adequacy approaches with implication for Europe. (2006 - 2007)

Korean Power Exchange (KPX) - Invited keynote speaker at a workshop on generation adequacy and capacity markets. (2006)

FERC - Invited panelist in technical workshop on the subject of Long-Term Transmission Rights. (2005)

CPUC - Invited speaker at CPUC workshop on Capacity Mechanisms. (2005)

EPRI - Co-author of study on risk management and generation adequacy assurance in restructured electricity markets. (2004)

EPRI - Consulted on electricity market design initiatives. (1995 - 2004)

EPRI - Co-authored study on integration of markets and systems operation. (2004)

Peruvian Electricity Regulator (OSINERG) - Prepared (in affiliation with LECG in 2003) an evaluation and recommendation report on proposed generation market reforms in Peru. (2003)

California Independent System Operator (CAISO) - Served as independent reviewer of the CRR study performed by the CAISO. (2003)

Pacific Corp - Served as expert witness representing Pacific Corp in litigation before FERC to overturn long-term contracts signed during the California energy crisis. As part of direct testimony preparation, reviewed the contracts that were signed and conducted calculation to price out



the lost-option value resulting from the FERC-imposed cap after the contracts were signed. (Dockets EL02-80- 001-002, EL02-81- 001-002, EL02-82- 001-002, EL02-83 -001-002, Pacific Corp vs. Reliant, Morgan Stanley, Williams, El Paso.), (2002)

National Grid Company USA - Co-authored a white paper (in affiliation with Analysis Group Economics) about the implication of the ERC SMD on transmission investment incentives. (2002)

DOE - Member of task force on National Electricity Grid Study and co-author of two (out of the six) white papers included in the study on systems operations and on transmission business models. (2002)

Kyushu Electric Company - Japan - Co-authored (under contract to EPRI) a review of electricity markets reforms around the world and implications for Japan. (2002)

Polish System Operator - Participated (under contract to EPRI) in evaluation of the Polish electricity market reform. (2001 - 2002)

Alberta Energy Utility Board (EUB) - Served as independent reviewer of a comprehensive evaluation, commissioned by the EUB, of the Alberta electricity market structure. (2002)

Brazilian Electricity Regulator (ANEEL) - Served as independent evaluator of the whole sale market rule. (2000)

BART - Served as expert witness representing BART in litigation before FERC disputing reliability charges assessed by the CAISO on grandfathered transmission customers (Docket ER00-2360-000, Bart vs. PG&E). (2000)

FERC - Invited panelist at FERC technical workshops conducted during preparation of the SMD NOPR on the topics of Transmission Rights and on Generation Adequacy. (2000)

Entergy - Member of a team developing a "Blue Print for Transmission" (published as a book) describing an alternative to SMD based on performance-based regulated TRANSCOs. (1998)

Edison/Mission - Participated (in affiliation with Analysis Group Economics) in study of bidding strategies and market modeling for the UK electricity markets. (2000)

Hagler Bailly Inc. - Worked as Senior Adviser, providing technical assistance to the full-time staff in responding to RFPs, executing various consulting projects and in internal development activities. Guided the development of methodology for electricity supply contracts and portfolio valuation and for generation asset pricing to support divestitures decisions and procurement activities by clients. (1996-1999)

EIX - Developed (in affiliation with Hagler Bailly Co) a Stochastic Dynamic Programming methodology for optimal dispatch of water in the Big Creek system, so as to optimize response to PX prices.

PG&E (1993) - Consulted on use of a hydro thermal scheduling algorithm (HTO) for contract valuation. (1998)



New England Electric System (NEES) - Developed (under contract to EPRI) methodology for dispatch and pricing of interruptible service contracts to reduce capacity deficiency payment. (1989)

Niagara Mohawk Power Co. - Studied (under contract to EPRI) alternative interruptible service contracts. (1988)

EPRI - Co-developer of the PRISM project: A study of product differentiation strategies and priority-pricing schemes to induce demand response and design of interruptible service contract. (1980 - 1988)

Xerox Palo Alto Research Center - Member of technical staff. Developed decision models for product development. Was responsible for development of a market simulation model that facilitated the development and launching of the first laser printer. That project was a runner up for the INFORMS Edelman Prize. (1972 - 1980)

SOCIETIES

Institute for Operations Research and Management Science (INFORMS), Fellow

International Association of Energy Economists

IEEE, Power Systems Society, Fellow

EDITORIAL BOARDS

International Journal of Operations Research, Member of Editorial Board

Guest Co-Editor of a Special Issue of Decision Support System

Operations Research, Area Editor for Energy, Environment, and Natural Resources

REFERRED PUBLICATIONS

Archival Journals:

Oren, Shmuel S., "Self-Scaling Variable Metric Algorithms Without Line Search for Unconstrained Minimization," *Math Comp.*, V. 27 (1973), pp.885-973.

Oren, Shmuel S. and David G. Luenberger, "Self-Scaling Variable Metric (SSVM) Algorithms: Part I: Criteria and Sufficient Conditions for Scaling a Class of Algorithms," *Management Science*, V. 20 (1974), pp. 845-862.

Oren, Shmuel S., "Self-Scaling Variable Metric (SSVM) Algorithms: Part II: Implementation and Experiments," *Management Science*, V. 20 (1974), pp. 863-874.

Oren, Shmuel S., "On the Selection of Parameters in Self-Scaling Variable Metric Algorithms," *Mathematical Programming*, V. 7 (1974), pp. 351-367.



Oren, Shmuel S. "A Mathematical Theory of Man Machine Text Editing," *IEEE Transactions on Systems, Man and Cybernetics*, V. 4 (1974), pp.258-267.

Oren, Shmuel S., "A Mathematical Theory of Man Machine Document Assembly," *IEEE Transactions on Systems, Man and Cybernetics*, V. 5 (1975), pp. 520-526.

Oren, Shmuel S., and Michael H. Rothkopf, "Optimal Bidding in Sequential Auctions," *Operations Research*, V. 23, No. 6 (1975), pp. 1080-1090.

Oren, Shmuel S. and Emilio Spedicato, "Optimal Conditioning of Self Scaling Variable Metric Algorithms," *Mathematical Programming*, V. 10, No. 1 (1976), pp. 70-90.

Oren, Shmuel S., "On Quasi-Newton and Pseudo-Newton Algorithms," *J. Optimization Theory and Applications*, V. 20, No. 2 (1976), pp. 155-170.

Rothkopf, Michael H. and Shmuel S. Oren, "A Closure Approximation for the Nonstationary M/M/S Queue," *Management Science*, V. 25, No. 6 (1979), pp. 522-534.

Morris, Peter A. and Shmuel S. Oren, "Multi-Attribute Decision Making by Sequential Resource Allocation," *Operations Research*, V. 8, No. 1 (1980), pp. 233-255.

Smith, Stephen A. and Shmuel S. Oren, "Reliability Growth of Repairable Systems," *Naval Logistics Quarterly*, V. 27, No. 4 (1980), pp. 539-547.

Oren, Shmuel S., Michael H. Rothkopf and Richard D. Smallwood, "Evaluating a New Market: A Forecasting System for Nonimpact Computer Printers," *Interfaces*, V. 10, No. 6 (1980), pp. 76-87.

Oren, Shmuel S., "A Conjugate Directions Method for Subjective Assessment of Normal Distributions," *J. Optimization Theory and Applications*, V. 33, No. 1 (1981), pp. 25-36.

Oren, Shmuel S. and Stephen A. Smith, "Critical Mass and Tariff Structure in Electronic Communications Markets," *The Bell Journal of Economics*, V. 12, No. 2 (1981), pp. 467-487.

Oren, Shmuel S., "Perspectives on Self-Scaling Variable Metric Algorithms," *J. Optimization Theory and Applications*, V. 37, No. 4 (1982), pp. 137-147.

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Linear Tariffs With Service Quality Discrimination," *The Bell Journal of Economics*, V. 13, No. 2 (Autumn 1982), pp. 455-471.

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Nonlinear Pricing in Markets with Interdependent Demand," *Marketing Science*, V. 1, No. 3 (1982), pp. 287-313.

Feinstein, Charles D. and Shmuel S. Oren, "Local Stability Properties of the Modified Hamiltonian Dynamic System," *Journal of Economics, Dynamics and Control*, V. 6 (1983), pp. 387-397.

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Competitive Nonlinear Tariffs," *Journal of Economic Theory*, V. 29, No. 1 (1983), pp.49-71.



Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Pricing a Product Line," *Journal of Business*, V. 57, No. 1, Pt. 2 (1984), pp. S73-S99.

Oren, Shmuel S., "Planar Quasi-Newton Methods for Unconstrained Saddlepoint Problems," *Journal of Optimization Theory and Applications*, V. 43, No. 2 (1984), pp. 167-204.

Borison, Adam B., Peter A. Morris and Shmuel S. Oren, "A State of the World Decomposition Approach to Dynamics and Uncertainty in Electric Utility Generation Expansion Planning," *Operations Research*, V. 32, No.5 (1984), pp. 1052-1068.

Oren, Shmuel S. and Michael H. Rothkopf, "Market Dynamics Models for New Industrial Product Planning," *Marketing Science*, V. 3, No. 3 (1984), pp. 247-265.

Oren, Shmuel S., "Discussant's Comments on: Pricing Research in Marketing the State of the Art," *Journal of Business*, V. 57, No. 1, Pt. 2 (1984), pp. S61-S64.

Feinstein, Charles D. and Shmuel S. Oren, "A Newton Type Method for the Implicit Programming Problem," *Mathematics of Operations Research*, V. 9, No. 4 (1985) pp. 336-351 .

Feinstein, Charles D. and Shmuel S. Oren, "A 'Funnel' Turnpike Theorem for Optimal Growth Problems with Discounting," *Journal of Economics, Dynamics and Control*, V. 9, pp. 25-39 (1985).

Dhebar, Anirudh and Shmuel S. Oren, "Optimal Dynamic Pricing for Expanding Networks," *Marketing Science*, V. 4, No. 4 (1985) pp. 336-351 .

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Capacity Pricing," *Econometrica*, V. 53, No. 3, (1985) pp. 545-567.

Oren, Shmuel S. and Stephen G. Powell, "Optimal Supply of a Depletable Resource with Backstop Technology: Heals Theorem Revisited," *Operations Research*, V. 33, No. 2 (1985), pp. 277-292.

Oren, Shmuel S. and Shao Hong Wan, "Optimal Strategic Petroleum Reserve Policies: A Steady State Analysis," *Management Science*, V. 32, No. 1, (1986) pp. 14-29.

Dhebar, Anirudh and Shmuel S. Oren, "Dynamic Nonlinear Pricing in Markets with Interdependent Demand," *Operations Research*, V. 34, No. 3, (1986) pp. 384-394 .

Chao, Hung Po, Shmuel S. Oren, Stephen A. Smith and Robert B. Wilson, "Multi-Level Demand Subscription Pricing for Electric Power," *Energy Economics*, (1986) pp. 199-217.

Arbel, Ami and Shmuel S. Oren, "Generating Search Directions in Multiobjective Linear Programming using the Analytical Hierarchy Process," *Socio-Economic Planning Sciences*, V. 30, No. 6, (1986) pp. 369-373.

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Multiproduct Pricing for Electric Power," *Energy Economics*, V. 9, No. 2 (1987), pp.104-114.



Chao, Hung Po, Shmuel S. Oren, Stephen A. Smith and Robert B. Wilson, "Priority Service: Market Structure and Competition," *The Energy Journal*, Special Issue on Electricity Reliability, V. 9 (1988), pp. 77-104.

Schwartz, Rick G. and Shmuel S. Oren, "Using Analytic Hierarchies for Consumer Research and Market Modeling," *Mathematical Computer Modeling*, V. 11 (1988), pp. 266-271.

Oren, Shmuel S. and Rick G. Schwartz, "Diffusion of New Products in Risk Sensitive Markets Modeling," *Journal of Forecasting*, V. 7, No 4 (1988), pp. 273-287.

Powell, Stephen G. and Shmuel S. Oren, "The Transition to Nondepletable Energy: Social Planning and Market Models of Capacity Expansion," *Operations Research*, V. 37, No. 3 (1989), pp. 373-383.

Oren, Shmuel S. and Joseph A. Doucet, "Interruption Insurance for Generation and Distribution of Electric Power," *Journal of Regulatory Economics*, V. 2 (1990), pp. 5-19.

Oren, Shmuel S. and Stephen A. Smith, "Discussion of Paper by Rau and Hegazy," *IEEE Transaction on Power Systems*, V. 6, No. 2, (May 1991).

Oren, Shmuel S. and Stephen A. Smith, "Design and Management of Curtailable Electricity Service to Reduce Annual Peaks," *Operations Research*, V. 40, No. 2 (1992), pp. 213-238. Also in *Service Opportunities for Electric Utilities: Proceedings of the EPRI/UERG Symposium*, held at U.C. Berkeley, September 1990 (Oren and Smith Ed.), Kluwer Publishing Co., (1993).

Kamien, Morton I., Shmuel S. Oren and Yair Tauman, "Licensing of Cost Reducing Innovation," *Journal of Mathematical Economics*, V. 21 (1992), pp. 483-508.

Doucet, Joseph A. and Shmuel S. Oren, "Onsite Backup Generation and Interruption Insurance for Electricity Distribution," *Energy Economics*, V. 12, No. 4 (1992), pp. 79-93.

Strauss, Todd P. and Shmuel S. Oren, "Priority Pricing of Interruptible Electric Power With an Early Notification Option," *The Energy Journal*, V. 14, No 2 (1993), pp.175-195.

Arbel, Ami and Shmuel S. Oren, "Generating Interior Search Directions for Multiobjective Linear Programming," *Journal of Multi-Criteria Decision Analysis*, V. 2 (1993), pp. 73-86.

Bushnell, James B. and Shmuel S. Oren, "Bidder Cost Revelation in Electric Power Auctions," *Journal of Regulatory Economics*, V. 6, No. 1 (1994), pp. 5-26.

Strauss, Todd P. and Shmuel S. Oren., "Priority Ordering in Interruptible Electric Power Service with Irreversible Early Notification," *Probability in Engineering and Information Sciences*, V 8, (1994) pp. 287-290.

Bushnell, James B. and Shmuel S. Oren, "Incentives Effects of Environmental Adders in Electric Power Auctions," *Energy Journal*, V. 15, No. 3 (1994) pp. 55-73.

Braden, David J. and Shmuel S. Oren, "Nonlinear Pricing to Produce Information," *Marketing Science*, Vol. 13, No. 3 (1994) pp. 310-326.



Svoboda, Alva J. and Shmuel S. Oren, "Integrating Price-based Resources in Short-term Scheduling of Electric Power Systems," IEEE Transaction on Energy Conversion, Vol. 9, No. 4, (1994) pp. 760-769.

Friedman, Eric J. and Shmuel S. Oren, "The Complexity of Resource Allocation and Price Mechanisms under Bounded Rationality," Economic Theory, Vol. 6, (1995) pp. 225-250 .

Min, K. Jo and Shmuel S. Oren, "Economic Determination of Spec. Levels and Allocation Priorities of Semiconductor Products," IIE Transactions, Vol 27, (1995) pp. 321-331.

Oren, Shmuel S., Pablo T. Spiller, Pravin Varaiya and Felix Wu, "Nodal Prices and Transmission Rights: A Critical Appraisal," Electricity Journal, Vol. 8, No. 3, (April 1995) pp. 24-35.

Bushnell, James B. and Shmuel S. Oren, "Internal Auctions for Efficient Sourcing of Intermediate Products," Journal of Operations Management, " Vol. 12 No. 3-4 (June 1995) pp. 311-320.

Arbel Ami and Shmuel S. Oren, "Using Approximate Gradients in Developing an Interactive Interior Primal-Dual Multiobjective Linear Programming Algorithm", European Journal of Operational Research, Vol. 89 (1996) pp. 202-211

Wu, Felix, Pravin Variya, Pablo T. Spiller and Shmuel S. Oren, "Folk Theorems on Transmission Open Access: Proofs and Counter Examples", Journal of Regulatory Economics, Vol. 10, (July 1996), pp. 5-23

Oren Shmuel S., "Economic Inefficiency of Passive Transmission Rights in Congested Electricity Systems with Competitive Generation", Energy Journal, Vol. 18, No.1 (1997) pp. 63-83.

Johnson B. Raymond, Shmuel S. Oren, Alva J. Svoboda, "Equity and Efficiency of Unit Commitment in Competitive Electricity Markets.", Utilities Policy, Vol. 6. No. 1, (1997) pp.9-19

Tseng Chung-Li, Shmuel S. Oren, Alva J. Svoboda, Raymond B. Johnson, "A Unit Decommitment Method in Power System Scheduling," Electrical Power & Energy Systems, Vol. 19, No. 6, (1997) pp. 357-365

Oren Shmuel S. "Passive Transmission Rights Will Not Do The Job", Electricity Journal, Vol. 10, No. 5, (June 1997) pp. 22-33.

Bushnell James B. and Shmuel S. Oren, "Transmission Pricing in California's Proposed Electricity Market", Utilities Policy, Vol. 6, No. 3 (1997) pp.237-244.

Tseng Cung-Li, Shmuel S. Oren, Alva J. Svoboda and Raymond B. Johnson, "Price Based Adaptive Spinning Reserves Requirements in Power System Scheduling", Electrical Power and Energy Systems, 21 (1999), pp. 137-145.



Tseng Cung-Li, Shmuel S. Oren, Carol S. Chang, Chao-an Li, Alva J. Svoboda and Raymond B. Johnson, "A Transmission-Constrained Unit Commitment Method in Power System Scheduling", *Decision Support Systems*, 24 (1999), pp. 297-310 also in *Proceeding of the 31st Hawaii International Conference on Systems Sciences*, Best Paper Award Winner (January 1998).

Elmaghrabi Wedad and Shmuel S. Oren, "Efficiency of Multi-Unit Electricity Auctions", *Energy Journal*, 20, (1999) 4, pp. 89-115. Also in *Proceedings of the IAEE Conference*, San Francisco, California (September 1997), pp.458-462.

Ugarte Armando and Shmuel Oren "Coordination of Internal Supply Chains in Vertically Integrated High-tech Manufacturing Organizations (HTMOs)" *International Journal of Production V 67* (2000) pp. 235-252.

Tseng Cung-Li, Chao-an Li, and Shmuel S. Oren, "Solving Unit Commitment by a Unit decommitment Method", *Journal of Optimization Theory*, Vol. 105, No. 3 (June 2000).

Oren Shmuel S., "Integrating Real and Financial Options in Demand-side Electricity Contracts", *Decision Support Systems*, Vol 30 (2001), 279-288. Also in *Proceedings of the 32nd Hawaii International Conference on Systems Sciences*, Maui, Hawaii (January, 1999).

Chao, Hung-po, Stephen Peck, Shmuel Oren and Robert Wilson, "Flowbased Transmission Rights and Congestion Management", *Electricity Journal*, (October, 2000).

Deng, Shijie and Shmuel S. Oren. "Priority Network Access Pricing for Electric Power," *Journal of Regulatory Economics*, Vol 19, No. 3, 239-270 (2001).

Kamat, Rajnish and Shmuel S. Oren. "Exotic Options for Interruptible Electricity Supply Contracts" *Journal of Operations Research*, Vol 50, No 5 (September - October, 2002), 835-850.

Kamat, Rajnish and Shmuel S. Oren. "Rational Buyer Meets Rational Seller:Reserves Markets Equilibrium Under Alternative Auction Design", *Journal of Regulatory Economics*, 21:3, 247-288 (2002).

Oren Shmuel S. and Andrew M. Ross, "Economic Congestion Relief Across Multiple Regions Requires Tradable Physical Flow-Gate Rights", *IEEE Transactions on Power Systems*, Vol. 17, No 1, pp 159-165 (2002).

Deng, Shijie and Shmuel Oren S., "Incorporating Operational Characteristics and Startup Costs in Option-Based Valuation of Power Generation Capacity", *Probability in Engineering and Information Sciences*, Vol. 17, No. 2 (2003) pp. 155-182.

Adler Ilan, Shmuel Oren and Sheldon Ross, "The Coupon Collector's Problem Revisited," *Journal of Applied Probability*, No. 40, pp. 513-518 (2003).

Barmack Matthew, Peter Griffes, Edward Kahn, and Shmuel Oren, "Performance Incentives for Transmission", *The Electricity Journal*, (April 2003) pp. 9-22.



Kamat, Rajnish and Shmuel S. Oren, "Two Settlements Systems for Electricity Markets under Network Uncertainty and Market Power", *Journal of Regulatory Economics*, 25:1, 5-37 (2004).

Bartholomew E. S, A. S., Siddiqui, C. Marnay, and S.S. Oren "The New York Transmission Congestion Contract Market: Is it Working Efficiently", *Electricity Journal* (November 2003), pp. 1-11.

Hurlbut D., K. Rogas and S. Oren, "Protecting the Market from 'Hockey Stick' Pricing: How the Public Utility Commission of Texas is Dealing with Potential Price Gauging", *Electricity Journal* (April 2004), pp. 26-33.

Wilson A. R, Kahn J. G, Oren S. S. "Targeting Interventions to High-risk Populations: Benefits and Costs", *Socio-Economic Planning Sciences*, Vol. 39 (2004), pp. 335-349.

Siddiqui, Afzal S., Emily S. Bartholomew Chris Marnay and Shmuel S. Oren, "On the Efficiency of the New York Independent System Operator Market for Transmission Congestion Contracts", *Journal of Managerial Finance*, Vol 31, No. 1, (2005) pp. 1-45.

Oren, Shmuel S. and Ramteen Sioshansi, "Joint Energy and Reserves Auctions with Opportunity Cost Payments for Reserves", *International Energy Journal*, Vol. 6, No. 1, Part 4, pp. 35-45. (June 2005).

Oren, Shmuel S., and Andrew M. Ross, "Can We Prevent the Gaming of Ramp Constraints", *Decision Support Systems*, 40 (2005), pp. 461-471(available online July 2004).

Chao H., S. Oren, A Papaloxopoulos, D. Sobajic and R. Wilson, "Interface Between Engineering and Markets Operations in Restructured Electricity Systems", *Proceedings of the IEEE*, Vol. 93, No. 11, pp. 1984-1997,(2005).

Oren Shmuel S., "Generation Adequacy via Call Option Obligations: Safe Passage to the Promised Land", *Electricity Journal*, Vol 18, pp 28-42 (November 2005).

Deng, Shijie, Shmuel S. Oren, "Electricity Derivatives and Risk Management", *Energy*, Vol. 31, (2006) pp. 940-953.

Oum, Yumi, Shmuel Oren and Shijie Deng, "Hedging Quantity Risk with Standard Power Options in a Competitive Wholesale Electricity Market", *Naval Research Logistics*. Vol. 53, (2006) pp. 697-712.

Yao, Jian, Shmuel Oren and Ilan Adler, "Cournot Equilibria in Two Settlement Electricity Markets with System Contingencies", *Int. J. Critical Infrastructure*, Vol 3, Nos 1/2 (2007), pp. 142-160.

Sauma Enzo E. and Shmuel S. Oren., "Proactive Planning and Valuation of Transmission Investments in Restructured Electricity Markets", *Journal of Regulatory Economics*, Vol 30, (2006), pp. 261-290.

Schubert Eric, David Hurlbut, Parviz Adib and Shmuel Oren, "The Texas Energy-Only Resource Adequacy Mechanism", *Electricity Journal*, Vol 19, No. 10 (December 2006), pp. 39-49.



D. Veit, A. Weidlich, J. Yao, S. Oren, "Simulating the Dynamics in Two Settlement Electricity Markets Via an Agent-Based Approach" *International Journal of Management Science and Engineering Management*, Vol. 1(2), forthcoming (2006).

Yao, Jian, Shmuel Oren and Ilan Adler, "Two Settlements Electricity Markets with Price Caps and Cournot Generation Firms", *European Journal of Operations Research*, 181 (2007) pp. 1279-1296.

Sioshansi, Ramteen and Shmuel S. Oren, "How Good are Supply Function Equilibrium Models: An Empirical Analysis of the ERCOT Market", *Journal of Regulatory Economics*, Vol. 31 (1), (2007) pp. 1-35.

Yao, Jian, Ilan Adler and Shmuel Oren, "Modeling and Computing Twosettlement Oligopolistic Equilibrium in Congested Electricity Networks", *Operations Research*, Vol. 56, No. 1, 2008, pp. 34-47.

Sauma Enzo and Shmuel Oren, "Economic Criteria for Planning Transmission Investment in Restructured Electricity Markets", *IEEE Transactions on Power Systems*, special issue on Transmission Investment, Pricing and Construction, Vol. 22, No. 4 (2007) pp. 1394-1405.

Sioshansi Ramteen, Richard O'Neill and Shmuel Oren, "Economic Consequences of Alternative Solution Methods for Centralized Unit Commitment in Day-Ahead Electricity Markets", *IEEE Transactions on Power Systems*, Accepted (November 2007).

Hedman, Kory W., Richard P. O'Neill, Emily Bartholomew Fisher, and Shmuel S. Oren, "Transmission Unit Commitment for Optimal Dispatch Sensitivity Analysis and Extensions", *IEEE Transactions on Power Systems*, Vol. 23, No. 3 (2008) pp 1469-1479.

Oum Yumi and Shmuel Oren, "VaR Constrained Hedging of Fixed Price Load-Following Obligations in Competitive Electricity Markets", *Journal of Decision and Risk Analysis*, Vol 1, No 1 (2009) pp 43-56.

Kory Hedman, Richard O'Neill, Emily Bartholomew Fisher, and Shmuel S. Oren, "Optimal Transmission Switching with Contingency Analysis", Accepted for publication in *IEEE, PES Transactions* (November 2008).

Sauma Enzo and Shmuel Oren, "Do Generation Firms in Restructured Electricity Markets Have Incentives to Support Social-Welfare-Improving Transmission Investments?", accepted for publication in *Energy Journal* (January 2008).

Lee Yongheon, and Shmuel Oren, "An Equilibrium Pricing Model for Weather Derivatives in a Multi-commodity Setting", *Energy Economics*, in Press (2009).

O'Neill, Richard P., Kory Hedman, Eric Krall, Anthony Papavasiliou and Shmuel S. Oren, "Economic Analysis of the N-1 Reliable Unit Commitment and Transmission Switching Problem using Duality Concepts", *Energy Systems*, Published online 1/12/2010.



Oum, Yumi and Shmuel Oren, "Optimal Static Hedging of Volumetric Risk in a Competitive Wholesale Electricity Market", *Decision Analysis*, Special issue in memory of Michael H. Rothkopf, Vol 7, No 1 (2010) pp. 107-122.

Hedman, Kory W., Richard O'Neill, Emily Fisher, and Shmuel Oren, "Smart Flexible Just-in-time Transmission and Flowgate Bidding", *IEEE Transactions on Power Systems*, Accepted for publication, (March 2010)

Conference and Symposium Proceedings and Book Chapters:

Oren, Shmuel S. and David G. Luenberger, "The Self-Scaling Variable Metric Algorithm," Proceeding of the 5th Hawaii Conference on System Science (January 1972).

Oren, Shmuel S., "Self-Scaling Variable Metric Algorithms without Line Search for Unconstrained Minimization," Proceedings of the Joint Automatic Control Conference, Columbus, Ohio (June 1973).

Oren, Shmuel S., "A Mathematical Model of Computer Assisted Document Creation," in Information Systems, COIN IV, (J. Tou, ed.), Plenum Publishing Corp., pp. 387-401 (1974).

Oren, Shmuel S., "A Combined Variable Metric-Conjugate Gradient Algorithm for a Class of Large Scale Unconstrained Minimization Problems in Optimization Techniques: Part 2" (J. Stoer, ed.), Springer Verlag, pp. 97-115 (1978).

Oren, Shmuel S., "Quasi-Newton Algorithms: Approaches and Motivations," Proceedings of the IEEE Conference on Decision and Control, San Diego, California (December 1973).

Oren, Shmuel S. and Michael H. Rothkopf, "Optimal Bidding in Sequential Auctions," Proceedings of the IEEE Conference on Decision and Control, Phoenix, Arizona (November 1974).

Oren, Shmuel S., Michael H. Rothkopf and Richard D. Smallwood, "Evaluating a New Market: A Forecasting System for Nonimpact Computer Printers," Proceedings of the First ORSA/TIMS Special Interest Conference on Market Measurement and Analysis, Stanford University (June 1980).

Oren, Shmuel S. and Stephen A. Smith, "Nonlinear Pricing and Network Externalities in Telecommunications", Proceedings of the 6th International Conference on Computer Communications, London, U.K. (September 1982).

Chao, Hung Po, Shmuel S. Oren, Stephen A. Smith and Robert B. Wilson, "Priority Service: Managing Risk by Unbundling Electric Power Service", Proceedings of the XIII Energy Technology Conference, Washington, D.C., pp. 1610-1618 (March 1986).

Arbel, Ami and Shmuel S. Oren, "A Priority Based Interactive Multicriteria Optimization Algorithm," in Lecture Notes in Economics and Mathematical System Theory, Springer-Verlag, V. 285 (Part I), pp. 163-171, (1987). (Proceedings of the VII-th International Conference on Multiple Criteria Decision Making held in Kyoto, Japan, August 1986).



Schwartz, Rick G., Shmuel S. Oren, Charles A. Dennis and Robert F. Debusk, "Measuring and Responding to Consumer Preferences for Medical Products and Services," Proceedings of the 1987 Annual Healthcare Systems Conference held in Las Vegas, Nevada (February 1987). (Best Paper award).

Schwartz, Rick G. and Shmuel S. Oren, "Using Analytic Hierarchies for Consumer Research and Market Modeling," in Proceedings of the Sixth International Conference on Mathematical Modeling in Science and Technology, " St. Louis, Missouri, pp. 229-240, (August 1987).

Min, K. Jo and Shmuel S. Oren, "Optimal Pricing of Allocation Priority and Spec. Level with Multiple Customer Groups", Proceedings of the 1993 NSF Design and Manufacturing Systems Conference, Vol. 2 (1993), pp.1799-1808.

Bushnell, James B. and Shmuel S. Oren, "Two-dimensional Auctions for Efficient Franchising of Independent Power Generation" Proceedings of the 29th Annual Conference of the Operational Research Society of New Zealand, Auckland University, New Zealand, (August 1993).

Min, K. Jo and Shmuel S. Oren, "Optimal Pricing of Allocation Priority and Spec. Level with Multiple Customer Groups," Proceedings of the 1994 NSF Design and Manufacturing Systems Conference, Vol. 3 (1994), pp.351-352.

Oren Shmuel S. "The Role of Financial Instruments in a Competitive Electricity Market", in Proceedings of the 1996 EPRI Conference on Innovative Approaches to Electricity Pricing, (March 1996) pp. 7:1-15.

Oren Shmuel S., "Economic Foundation of Unbundling and Product Differentiation with Application to Electric Power" in Proceedings of the NSF Conference on Unbundled Power Quality Services in the Electricity Power Industry, Key West, Florida, (November 1997) pp. 138-143.

Oren Shmuel S., Alva J. Svoboda and Raymond B. Johnson, "Volatility of Unit Commitment in Competitive Electricity Markets, " in Proceedings of the 30th Hawaii International Conference on Systems Sciences, (January 1997) pp. 594-601.

Oren Shmuel S. and Dennis Ray, "Services in an Unbundled and Open Electric Services Market Place", In The Virtual Utility: Accounting, Technology & Competitive Aspects of the Emerging Industry (S.Awerbach and A. Preston Ed.), Kluwer Academic Publishers (1997). pp.249-274.

Deng Shieji and Shmuel S. Oren, "Priority Network Access Pricing for Electric Power," In Proceedings of the Bulk Power Systems Dynamics and Control Conference IV - Restructuring, Santorini, Greece, August 24-28, (1998). Also in Proceedings of the POWER Conference, University of California Energy Institute, Berkeley, California (March, 1998).

Oren Shmuel S., "Transmission Pricing and Congestion Management", Proceedings of the EPRI Conference on Innovative Pricing, Washington D.C. (June 17-19, 1998).



Oren Shmuel S. "Authority and Responsibility of The ISO: Objectives, Options and Tradeoffs", In Designing Competitive Electricity Markets, Chao and Huntington ed., Kluwer Academic Publishers, Boston. (1999).

Oren Shmuel S., Contributor to: "Unlocking the Benefits of Restructuring: A Blueprint for Transmission" by Shimon Awerbuch, Leonard Hyman and Andrew Vesey, Public Utilities Reports Inc., (November 1999).

Oren Shmuel S., "Capacity Payments and Generation Adequacy in Competitive Electricity Markets", in Proceedings of SEPOPE IIV Conference, Curitiba, Brazil (May 22-26, 2000).

Oren Shmuel S., "Design of Ancillary Service Markets", Proceeding of the 34th Hawaii International Conference on Systems Sciences HICSS 34. Maui, Hawaii, January 5-8, 2001.

Kamat, Rajnish and Shmuel S. Oren, "Multi-settlement Systems for Electricity Markets: Zonal Aggregation under Network Uncertainty and Market Power", Proceeding of the 35th Hawaii International Conference on Systems Sciences HICSS 35, Big Island, Hawaii (January 7-11, 2002).

Oren, Shmuel, George Gross and Fernando Alvarado, "Alternative Business Model for Transmission Investment and Operation", DOE National Transmission Grid Study Report, pp. C4-C34 (May 2002).

Alvarado, Fernando and Shmuel Oren, "Transmission System Operations", DOE National Transmission Grid Study Report, pp. A1-A34, (May, 2002).

Oren Shmuel S. and Andrew Ross, "Designs for Ramp-constrained Dayahead Auctions", Proceeding of the 36th Hawaii International Conference on Systems Sciences HICSS 36, Big Island, Hawaii (January 5-9, 2003).

Yao, J., S. Oren and I. Adler, "Computing Two Settlement Cournot Equilibria in Electricity Markets", Proceeding of the 37th Hawaii International Conference on Systems Sciences HICSS 37, Big Island, Hawaii (January 5-8, 2004).

Deng Shijie, Shmuel S. Oren and Sakis Meliopoulos, "The Inherent Inefficiency of the Point-to-Point Congestion Revenue Right Auction", Proceeding of the 37th Hawaii International Conference on Systems Sciences HICSS 37, Big Island, Hawaii (January 5-8, 2004).

Oren, Shmuel and Ramteen Sioshansi "Joint Energy and Reserves Auction with Opportunity Cost Payment for Reserves", Proceedings of the Bulk Power Systems Dynamics and Control VI, Cortina D' Ampezzo, Italy (August 22-27, 2004).

Oren, Shmuel, "State of the Market-based Mitigation vs. Conduct and Impact", Proceedings of the Power System Conference and Exposition (PSCE), New York, NY, (October 10-13, 2004).

Oren, Shmuel, "When is Pay as Bid Better than Uniform Price", Proceedings of the Power System Conference and Exposition (PSCE), New York, NY, (October 10-13, 2004).



Yao, J., B. Willems, S. Oren, I. Adler, "Cournot Equilibrium in Price-Capped Two-Settlement Electricity Markets" Proceeding of the 38th Hawaii International Conference on Systems Sciences HICSS38, Big Island, Hawaii (January 3-6, 2005).

Yao, J., S. Oren and I. Adler, "Cournot Equilibria in Two-Settlement Electricity Markets with System Contingencies" Proceedings of the 6th ICPSOP Conference on Power Systems Operations and Planning, Praia, Cape Verde (May 22-26, 2005).

Sauma, Enzo and Shmuel Oren, "Conflicting Investment Incentives in Electric Transmission", Proceeding of the IEEE PES Annual Meeting, San Francisco, California (June 12-16, 2005).

Oren Shmuel, S., "Ensuring Generation Adequacy Through Centrally Procured Call Options Obligations", Proceeding of the IEEE PES Annual Meeting, San Francisco, California (June 12-16, 2005).

Yumi Oum, Shmuel Oren and Shijie Deng, "Volumetric Hedging in Electricity Procurement", Proceedings of the PowerTech 2005 Conference, St.Petersburg, Russia (June 27-30, 2005).

Oren Shmuel S., "Ensuring Generation Adequacy in Competitive Electricity Markets", Chapter 10 in: Electricity Deregulation: Choices and Challenges, Griffin, M. James and Steven L. Puller, editors, University of Chicago Press (June 2005).

Deng, Shijie and Shmuel S. Oren, "Valuation of Electricity Generation Capacity", Chapter 31 in Applications of Stochastic Programming, Stein W. Wallace and William T. Ziemba, editors, SIAM and MPS Publication (June 2005).

Sauma Enzo E. and Shmuel S. Oren., "Assessing the Economic Value of Transmission Investments in Restructured Electricity Markets", Proceedings of the ICORAID-2005-ORS Conference, Bangalore, India (December 27-29, 2005).

Chao, Hung-po, Shmuel S. Oren and Robert B. Wilson, "Alternative Pathways to Electricity Market Reform: Risk Management Approach", Proceeding of the 39th Hawaii International Conference on Systems Sciences HICSS39, Kauai, Hawaii (January 4-7, 2006).

Sauma Enzo E. and Shmuel S. Oren., "Proactive Transmission Investment in Competitive Power Systems", Proceeding of the IEEE PES Annual Meeting, Montreal, Canada (July 18-22, 2006).

Michaillat Pascal and Shmuel Oren, "A Probabilistic Graphical Approach to Computing Electricity Price Duration Curves under Price and Quantity Competition", Proceeding of the 40th Hawaii International Conference on Systems Sciences HICSS40, Big Island, Hawaii (January 3-6, 2007).

Sauma Enzo E. and Shmuel S. Oren., "Aligning Generators' Interests with Social Efficiency Criteria for Transmission Upgrades in an LMP Based Market", Proceeding of the IEEE PES Annual Meeting, Tampa, Florida (June 24-28, 2007).

Bishu Chatterjee and Shmuel S. Oren., "The California Resource Adequacy Program: Achieving Reliability and Economic Efficiency Through Virtual Re-bundling of Generation and Distribution", Proceeding of the IEEE PES Annual Meeting, Tampa, Florida, (June 24-28, 2007).



Shmuel S. Oren., "Risk Management vs. Risk Avoidance in Power Systems Planning and Operation", Proceeding of the IEEE PES Annual Meeting, Tampa, Florida (June 24-28, 2007).

Chao, Hung Po, Shmuel Oren and Robert Wilson, "Reevaluation of Vertical Integration and Unbundling in Restructured Electricity Markets", in Competitive Electricity Markets: Design, Implementation, and Performance, Ed. by F. P. Sioshansi, Elsevier (2008).

Sioshansi, Ramteen, Shmuel Oren and Richard O'Neill, "The Cost of Anarchy in Self-Commitment Based Electricity Markets", in Competitive Electricity Markets: Design, Implementation, and Performance, Ed. by F. P. Sioshansi, Elsevier (2008).

Adib, Parviz, Eric Schubert and Shmuel Oren, "Resource Adequacy: Alternate Perspectives and Divergent Paths", in Competitive Electricity Markets: Design, Implementation, and Performance, Ed. by F. P. Sioshansi, Elsevier, 2008.

Papavasiliou and S. S. Oren, "Coupling Wind Generation with Deferrable Loads," Proceedings of the IEEE Energy 2030 Conference, Atlanta, Georgia (November 17-18, 2008).

K. W. Hedman, P. O'Neill, and S. S. Oren, "Analyzing Valid Inequalities of Generation Unit Commitment Problems", Proceeding of the PSCE Conference (March 15-18, 2009).

Eric Schubert, Shmuel Oren and Parviz Adib, "Achieving Resource Adequacy In Texas via an Energy Only Electricity Market", In Electricity Restructuring: The Texas Story, Kiesling and Kleit ed. , AEI Book (November 2009)

Sauma Enzo E. and Shmuel S. Oren., "Alternative Economic Criteria and Proactive Planning for Transmission Investment in Deregulated Power Systems", Chapter 3 In Economic Market Design and Planning for Electric Power Systems, Momoh and Mili ed., IEEE Press Series on Power Engineering (November 2009)

Books:

Oren, Shmuel S. and Stephen A. Smith, (Editors) "Service Opportunities for Electric Utilities: Creating Differentiated Products," Kluwer Academic Publishers, Boston (1993).

NON-REFEREED PUBLICATIONS

Technical Reports, Working Papers, Comments:

Oren, Shmuel S., "The Correspondence Principle in Viscoelastic Stress Analysis," M. Sc. Thesis, Dept. of Materials Engineering, Technion University, Haifa, Israel (in Hebrew) (July 1969).

Allan, Dan, Shmuel S. Oren et. al, "A Nationwide Communication System for the Hearing Impaired: Strategies Toward Commercial Implementation," Final Report, Project 3288, SRI International, Menlo Park, California (October 1981).



Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Priority Service: Unbundling the Quality Attributes of Electric Power," EPRI Report EA-4871 (November 1986).

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Selected Papers on Priority Service Methods," EPRI Report P-5350, (August 1987).

Oren, Shmuel S., "Product Differentiation in Service Industries," working paper presented at the First Annual Conference on Pricing, New York, NY (December 1987).

Oren, Shmuel S., Stephen A. Smith and Robert B. Wilson, "Service Design in the Electric Power Industry," EPRI Report P-6543, (1990).

Letter to the Editor, Wall Street Journal, (April 21, 1997).

Interview in "Electricity's Big Bang", Public Utilities Fortnightly (January 1, 1998).

Shmuel, Oren, "It Takes One Counterexample to Disprove a Theory", Electricity Journal, (10) pp. 95-98, (October 1997).

Oren, Shmuel S., "Review of MAE Rules for the Brazilian Wholesale Electricity Market", Report to ANEEL - The Brazilian Electricity Regulatory Agency (June 15, 2000).

Shmuel S. Oren, "Report to the Public Utility Commission of Texas on the ERCOT Protocols in Docket No. 23220" (February 9, 2001).

Oren Shmuel S. and Pablo Spiller, "Wild Prices Out West: What Can Be Done", Public Utilities Fortnightly, pp. 58-61, (November 1, 2000).

Oren, Shmuel S., "Market Based Risk Mitigation: Risk Management vs. Risk Avoidance", Proceedings of a White House OSTP/NSF Workshop on Critical Infrastructure Interdependencies held in Washington, D.C. (June 14-15, 2001).

J. Rabaey, E Arans, C. Dedespeil, A. Gadgill, D Masserschmidt, W. Nazaroff, K. Pister, S. Oren "Smart Energy Distribution and Consumption: Information Technology as an Enabling Force", CITRIS White Paper, University of California at Berkeley (May 2001).

Chao H., S. Oren, A Papaloxopoulos, and R. Wilson, "An External Evaluation of Power Markets in Poland", EPRI, Palo Alto, California (December 2001).

Oren, Shmuel S., "The FTR vs. FGR Debate: Facts and Misconceptions", Comments to FERC in Docket RM01-12-000 (Standard Market Design) (April 2002).

Oren, Shmuel S., "Comments on the FERC SMD NOPR", Comments in Docket RM01-12-000 (November 15, 2002).

C. Mensah-Bonsu and S. Oren, "California Electricity Market Crisis: Causes, Remedies, and Prevention", IEEE Power Engineering Review, Vol 22, No.8 (August 2002) pp. 4-5.



Chao, H, R. Entriken, H. Huntington, S. Oren, A. Papaloxopoulos, S. Wan and R. Wilson "Review of the Current Status of Power Markets Reforms in the U.S. and Europe", Technical Report, EPRI, Palo Alto, California (November, 2002).

Chao H., S. Oren, A Papaloxopoulos, D. Sobajic and R. Wilson, "Integrated Engineering and Economic Operation of Power Systems", Technical Report, EPRI, Palo Alto, California (December 2004).

Deng, Shijie, Shmuel Oren and Sakis Meliopoulos, "The Inherent Inefficiency of Simultaneously Feasible Financial Transmission Rights Auctions", Working paper, (Revised: February 12, 2005).

Chao, Hung Po, Shmuel S. Oren and Robert B. Wilson, "Electricity Market Transformation: A Risk Management Approach", EPRI, Palo Alto, California (March, 2005).

Oren Shmuel. S., "Challenges of Restructuring the Power Industry: Introduction to Special Issue of Decision Support System" Editorial, Decision Support System 40, pp 407-408 (2005).

Sauma Enzo E. and Shmuel S. Oren., "Alternative Economic Criteria and Proactive Planning for Transmission Investment in Deregulated Power Systems", Working paper (September 2005). To appear as a book chapter.

Oren Shmuel S., Fernando Alvarado and George Gross, "Market Redesign: Incorporating the Lessons Learned for Enhancing Market Design", PSERC Project Report, available at http://www.pserc.org/ecow/get/publicatio/reports/reportsfor/market_redesign_final_report_m4_2005.pdf.

Oum Yumi and Shmuel Oren, "Optimal Static Hedging of Volumetric Risk in a Competitive Wholesale Electricity Market", Working paper, submitted to Decision Analysis (May 2007).

Oren Shmuel S., "Program on Technology Innovation: Alternative Approaches to Generation Adequacy Assurance", Technical Report, EPRI, Palo Alto, California (December 2007).

Eric Schubert, Shmuel Oren and Parviz Adib, "Achieving Resource Adequacy in Texas Via an Energy-Only Electricity Market", to appear as a book chapter in forthcoming EIA Book on the Texas Electricity Market (final draft, April 2009).

Oren Shmuel S., "Nonlinear Pricing", Book Chapter, to appear in Handbook of Pricing and Revenue Management, Oxford University (draft September 2008)

Anthony Papavasiliou, Andrew Lee, Phil Kaminsky, Ikhtlaq Sidhu*, Burghardt Tenderich, Shmuel Oren, "Electric Power Supply and Distribution for Electric Vehicle Operations", Berkeley Global Venture Lab, Technical Brief 2008.2 (November 21, 2008).



**PUBLIC LECTURES, SEMINARS AND CONFERENCE PRESENTATIONS
(SINCE JANUARY 2005)**

Montreux California Clean Energy Roundtable, Invited talk, “Orderly Retreat from the Promised Land: Assuring Generation Adequacy through Call Options Obligations”, Half Moon Bay, CA January 19-21, 2005

ICUBE and F. Wendell Miller Distinguished Lecture, “Market Design and Gaming in Competitive Electricity Markets”, Iowa State University, February 4, 2005

Public Utility Commission of Texas, Technical workshop on Generation Adequacy, Invited talk on “Review of alternative approaches to Generation Adequacy”, Austin, Texas, April 20, 2005

EPRI International Conference on Global Electricity Industry Restructuring, Invited presentation, “Resource Adequacy via Call Options Obligations”, San Francisco, CA May 11-12, 2005

6th ICPSOP Conference on Power Systems Operations and Planning, presentation: “Cournot Equilibria in Two-Settlement Electricity Markets with System Contingencies”, Praia, Cape Verde, May 22-26, 2005

IDEI Conference on The Economics of Electricity Markets, Paper presentation (with Sioshansi): “Do Supply Function Equilibrium Models Describe Behavior in Electricity Spot Markets: An Empirical Analysis of the ERCOT BES Market”, Toulouse, France, June 2-3, 2005

IEEE PES Annual Meeting, Invited Panel Presentation, “Ensuring Generation Adequacy Through Centrally Procured Call Options Obligations”, San Francisco, CA, June 12-16, 2005

IEEE PES Annual Meeting, Invited Panel Presentation, “Conflicting Investment Incentives in Electricity Transmission”, San Francisco, CA, June 12-16, 2005

CPUC Invited Seminar, “Ensuring Generation Adequacy via Call Options Obligations”, San Francisco, California, June 20, 2005

PowerTech Conference, Invited Panel Presentation “Alternative Valuation Objectives for Transmission Investment in Deregulated Electricity Markets” St. Petersburg, Russia, June 27-30, 2005

PowerTech Conference, Paper presentation “Volumetric Hedging in Electricity Procurement”, St. Petersburg, Russia, June 27-30, 2005

International Conference on Complementarity Problems (ICCP 2005), Paper presentation (with Yao and Adler): “An EPEC Algorithm for a Two Settlement Electricity Market Equilibrium Model”, Stanford, CA August 9-12, 2005

Lawrence Berkeley Lab – Scientific Computing Seminar, “Modeling and Computing two settlement oligopolistic market equilibrium in a congested electricity network”, (with Yao and Adler), October 28, 2005.



International Symposium on the Regulatory and Monitoring Design for Power System Operator Under Deregulation, Invited keynote lecture, “Market Design and System Operations in the US Restructured Electricity Industry, Taipei, Taiwan, November 4, 2005.

Conference on Developing the modern Grid, Invited presentation, “Power Market Economics and the Modern Grid: Pserc Activities”, Mesa, Arizona, November 9, 2005.

INFORMS meeting, invited talk (with Sauma) “Proactive Transmission Investment in Power Systems”, San Francisco, CA, November 13-16, 2005.

PSERC IAB Meeting, Invited presentation, “Market Redesign: Incorporating the Lessons Learned for Enhancing Market Design: Final Report”, Raleigh, North Carolina, December 7-9, 2005

ICORAID-2005-ORSI, Contributed talk, “Assessing the Economic Value of Transmission Investment in Restructured Electricity Market”, Receptient of Best Application paper award in the name of Prof B G Raghavendra, Bangalore, India, December 27-29, 2005.

ICORAID-2005-ORSI, Invited plenary lecture, “Computing Two-settlement Equilibrium in a Transmission Constrained Oligopolistic Electricity Market”, Bangalore, India, December 27-29, 2005.

HICSS39, Invited talk (with Chao) “Alternative Pathways to Electricity Market Reform: Risk Management Approach”, Kauai, Hawaii, January 4-7, 2006.

HICSS39, Invited talk “Generation Adequacy via Call Options Obligations: Safe Passage to the Promised Land”, Kauai, Hawaii, January 4-7, 2006.

2nd Carnegie Mellon Conference in Electric Power Systems, Invited talk, “Proactive Economic Assessment of Transmission Investment in Restructured Electricity Markets”, CMU, Pittsburgh, PA, January 11-12, 2006.

California Clean Energy Roundtable, Invited talk: “Transmission Investment in Restructured Electricity Markets”, San Francisco, CA January 25-27, 2006.

11th Annual POWER Research Conference on Electricity Regulation and Restructuring, “Hedging Quantity Risks with Standard Power Options in Competitive Wholesale Electricity Markets”, The University of California Energy Institute, Berkeley, CA March 24, 2006.

IEEE San Francisco PES chapter, Invited talk: “Application of Auction Theory in Electricity Markets”, San Francisco, California, April 27, 2006.

PSERC, presentation at the 10th anniversary IAB meeting, “A decade of Power Market Research”, University of Wisconsin, Madison Wisconsin, May 31-June 2, 2006.

Konkuk University, Research Center for Network and Energy Industries, Invited talk: “Risk Management and Financial Instruments in Competitive Electricity Markets”, Seoul, Korea, June 13, 2006.



Korean Power Exchange (KPX), Keynote speech, “Generation Adequacy via Call Option Obligations: Safe passage to the Promised Land”, 2nd International Conference on Electricity Market and Power System Operations, Seoul, Korea, June 14, 2006.

IEEE PES Annual Meeting, Invited Panel Presentation, “Proactive Transmission Investments in Competitive Power Systems”, Montreal, Canada, June 18-22, 2006.

International INFORMS Meeting, Invited Talk, “Optimal Timing and Composition of Revenue Hedges in Competitive Electricity Markets”, Hong Kong, July 26-28, 2006.

European Science Foundation (ESF) Exploratory Workshop on Mathematical Models in Electricity Markets, Invited presentation: “EPEC Models in Restructured Electricity Markets: Formulation, Computation and Applications”, Ciudad Real, Spain, July 13-14, 2006

EDF, Invited presentations, 1) “Generation Adequacy through Call Option Obligations”, 2) Tutorial on Locational Marginal Pricing and Transmission Right in Competitive Power Markets”, Clamart, France, July 17, 2006

Colombian Electricity Regulatory Commission (CREG), Invited talk “Generation Adequacy through Call Option Obligations”, Bogota Colombia, July 25, 2006

EPRI Power Market Initiative Interest Group Meeting, Invited talk: “Risk Management and Financial Instruments in Competitive Electricity Markets”, Washington DC, July 26-28, 2006.

Workshop on Integrated Finance and Operations Management, Invited talk “Hedging Fixed Price Energy Contracts with Exposure to Price and Quantity Risk”, Tepper School, CMU, Pittsburg, PA, August 21-22, 2006.

CPUC Energy Division, Invited presentation “Alternative Approaches to Capacity Markets”, San Francisco, CA August 24, 2006

PSCE Invited Panel presentation: “Modeling and Computing Two Settlement Market Equilibrium” (with Yao and Adler), Atlanta Georgia, October 30, 2006

Annual INFORMS Meeting, Invited paper, “A Hybrid Bertrand-Cournot Model of Electricity Markets with Multiple Subnetworks “ (with Yao and Hobbs), Pittsburgh, PA, Nov 5-8, 2006

Annual INFORMS Meeting, Invited paper, “Incentives of Generation Firms for Long-Term Investment in the U.S. Electricity Transmission System “ (with Sauma), Pittsburgh, PA, Nov 5-8, 2006

Annual INFORMS Meeting, Invited paper, “The Cost of Anarchy in Self-Commitment Based Electricity Markets “ (with Sioshansi and O'Neill), Pittsburgh, PA, Nov 5-8, 2006

Denki Shimbun Newspaper's International Energy Seminar, Keynote presentation, “The Texas and California Electricity Markets: Parallel Paths and Divergent Approaches, Washington D.C. via satellite to Tokyo, November 30, 2006



EPRI Internet PMI Seminar: Generation Adequacy Mechanisms in the US, December 22, 2006

HICSS40, Invited talk “A Probabilistic Graphical Approach to Computing Electricity Price Duration Curves under Price and Quantity Competition”, Big Island Hawaii, Hawaii, January 3-6, 2007.

IDEI Conference on the Economics of Energy Markets, Invited talk: “Modeling and Computing Two-settlement Oligopolistic Equilibrium in a Congested Electricity Network”, Toulouse, France, January 15-16, 2006.

EPRI Power Delivery and Markets Meeting, Invited presentation: “Alternative Approaches to Generation Adequacy”, San Francisco, CA February 13, 2007.

EUCI Conference on National Perspectives on Financial Transmission Rights, Invited talk: “Transmission Investment Incentives Through Active TO participation in FTR Markets”, Washington DC, March 20, 2007

12th Annual POWER Research Conference on Electricity Regulation and Restructuring, Invited talk: “The Texas Energy Only Resource Adequacy Mechanism”, The University of California energy Institute, Berkeley, CA March 23, 2007.

Conference on Decision and Risk Analysis, Invited talk, “An Equilibrium Pricing Model for Weather Derivatives in a Multi-commodity Setting” (with Y. Lee), University of Texas, Dallas, Texas May 21-22, 2007.

Presentation to the ERCOT Demand Side Working Group, “Priority Pricing: A Proposal for an Economic Demand-Side Program in ERCOT (with Jay Zarnikau), June 8, 2007.

Research Center for Network and Energy Industries at Konkuk University, Invited talk: Risk Management and Financial Instruments in Competitive Electricity Markets, Seoul, Korea, June 20, 2007.

3rd Seoul International Conference on Electricity Markets (SICEM), Invited presentation, “Design and Pricing of Demand Response Contracts”, Korean Power Exchange, Seoul, Korea, June 21, 2007.

IEEE PES Annual Meeting, Invited Panel Presentation, “The California Resource Adequacy Program: Achieving Reliability and Economic Efficiency Through Virtual Re-bundling of Generation and Distribution” (with B Chatterjee), Tampa, Florida, June 24-28, 2007.

IEEE PES Annual Meeting, Invited Panel Presentation, “Risk Management vs. Risk Avoidance in Power Systems Planning and Operation”, Tampa, Florida, June 24-28, 2007.

IEEE PES Annual Meeting, Invited Panel Presentation, “Aligning Generators' Interests with Social Efficiency Criteria for Transmission Upgrades in an LMP Based Market” (with E. Sauma), Tampa, Florida, June 24-28, 2007.

Advanced Workshop in Regulation and Competition, 20th Annual Western Conference, Invited presentation: “Conflicting Objectives and the Burden of Market Power in the Economic Evaluation of Transmission Investments” (with E. Sauma), Monterey, CA, June 27-29, 2007.



EURO 2007, Invited presentation, “An Equilibrium Pricing Model for Weather Derivatives in a Multi-commodity Setting” (with Y Lee), Prague, Czech Republic, July 8-11, 2007.

CMU Tepper School, Invited Seminar, “Modeling and Computing Oligopolistic Strategic Forward Market Equilibrium in a Congested Electricity Network”, October 12, 2007

Department of Business, Enterprise and Regulation Reform, United Kingdom: International

Workshop on Transmission Access, Investment and Pricing , Invited presentation, “LMP and Flowgates, Texas Experiences”, London, UK, October 23, 2007

Annual INFORMS Meeting, Invited paper, “Pricing Weather Derivatives: A Multicommodity Market Equilibrium Approach” with Yongheon Lee, Seattle, Washington, November 4-7, 2007

ACOLGEN, Invited presentation “Generation Adequacy mechanisms: Theoretical Foundation, Alternatives Approaches and International Experiences”, Bogota Colombia, November 14, 2007.

University of Los Andes, School of Business, Invited Seminar, “Managing Risk in Competitive Electricity Markets”, Bogota Colombia, November 16, 2007.

Stanford University, Graduate School of Business, OIT Group, Invited Seminar, “Modeling and Computing Oligopolistic Strategic Forward Market Equilibrium in a Transmission Constrained Electricity Market”, Stanford, CA November 28, 2007.

Ohio State University, Energy Systems Modeling Symposium, Invited Talk, “Hedging Fixed Price Load Following Obligations in Competitive Electricity Markets”, Columbus , Ohio December 3, 2007.

PSERC Industry Advisory Board Meeting, Proposal presentation, “Technical and Economic Implications of GHG Regulation in a Transmission Constrained Restructured Electricity Market”, Washington DC, December 5, 2007.

Catholic University of Chile, Featured speaker at special workshop: “Overview of alternative approaches to generation to generation adequacy provision”, and “Managing risk in competitive electricity markets”, Santiago, Chile, December 12, 2007.

University of Chile, Center for Mathematical Modeling, Invited talk: “Modeling and Computing Oligopolistic Strategic Forward Market Equilibrium in a Transmission Constrained Electricity Market”, Santiago, Chile, December 19, 2007.

American Enterprise Institute, Invited talk (with Schubert and Adib): Achieving Resource Adequacy in Texas via an Energy Only Market”, Washington DC, January 25, 2008.

World Bank, Invited Keynote Speaker, “Alternative Pathways to Electricity Market Reform: Risk Management Approach”, SDN Week 2008, Washington DC, February 26, 2008.

International Conference on Industrial Logistics (ICIL 2008), Invited Keynote Speaker, “Electricity Markets: Managing the Most Challenging Supply Chain”, Tel Aviv Israel, March 9-15, 2008.



ASU, Dept of Electrical Engineering, Invited colloquium presentation, “Modeling and Computing Oligopolistic Strategic Forward Market Equilibrium in a Transmission Constrained Electricity Market”, Phoenix, AZ, April 18, 2008.

ERCOT Energized, Invited Keynote Speaker, “The Texas Nodal Market”, Austin, Texas, May 2, 2008.

PSERC Industry Advisory Board Meeting Project presentation, “Evaluating the Economic Impact of Transmission Projects”, Iowa State University, May 14-16, 2008.

4th Seoul International Conference on Electricity Markets (SICEM), Keynote presentation, “The Texas Nodal Electricity Market Design”, Korean Power Exchange, Seoul, Korea, June 19, 2007.

International Conference on Financial Methods and Modelling in Electricity Markets, Invited paper “Optimal VaR Constrained Hedging of Fixed Price Load-following Obligations in Competitive Electricity Markets”, (with Yumi Oum), Oxford University, UK, July 9-10, 2008.

IFORS 2008 Triennial Conference , Invited paper “Optimal VaR Constrained Hedging of Fixed Price Load-following Obligations in Competitive Electricity Markets”, (with Yumi Oum), Sandton, South Africa, July 14-18, 2008.

CLAIO 2008, Keynote Lecture, “Competitive Electricity Markets: The most Challenging Supply Chain.”, Cartagena, Colombia, September 9-12, 2008.

INFORMS 2008, Invited paper, “A Multi-period Equilibrium Pricing Model for Weather Derivatives” (with Yongheon Lee), Washington DC, October 11-14, 2008.

INFORMS 2008, Invited paper, “Mike Rothkopf’s Contribution to the Analysis of Bidding in Sequential Auctions”, Washington DC, October 11-14, 2008.

INFORMS 2008, Invited paper, “Economic Analysis of the Right of First Refusal” (with Shehzad Wadalawala), Washington DC, October 11-14, 2008.

INFORMS 2008, Invited paper, “Who Have Incentives to Expand Power Transmission Systems” (with Enzo Sauma), Washington DC, October 11-14, 2008.

Center for Energy and Environmental Markets, University of New South Wales, “Hedging Fixed Price Load Following Obligations in Competitive Electricity Markets”, Invited public lecture, Sydney, Australia, October 29, 2008.

The 2nd IAEE Asian Conference, “An Equilibrium Pricing Model for Weather Derivatives”, Perth, Australia, November 5-7, 2008.

University of Auckland, Invited Seminar, “Modeling and Computing Oligopolistic Strategic Forward Market Equilibrium in a Congested Electricity Market”, Auckland, New Zealand, November 14, 2008.



University of Auckland, Invited Seminar, “Hedging Fixed Price Load Following Obligations in Competitive Electricity Markets”, Auckland, New Zealand, November 19, 2008.

i-PCGRID Conference, Plenary talk, “Improving Economic Dispatch through Transmission Switching: new Opportunities for a Smart Grid”, San Francisco, California, March 18-20, 2009.

Power Systems Modeling 2009, Keynote lecture, “Improving Economic Dispatch through Transmission Switching: new Opportunities for a Smart Grid”, University of Florida, Gainesville, Florida March 18-20, 2009.

MIT LIDS Energy Seminar Series, Invited Lecture, “Improving Economic Dispatch through Transmission Switching: new Opportunities for a Smart Grid”, Cambridge, Massachusetts, April 3, 2009.

PARC Forum, Invited Lecture, “Smart Wholesale Electricity Markets: Application and Challenges for Optimization”, Palo Alto, CA April 16, 2009.

University of Montreal, Optimization Days Conference, Plenary lecture, “Application of optimization and new optimization challenges in electricity markets”, Montreal, Canada May 4-5, 2009.

Rutgers 28th Annual Eastern Conference on Regulation and Competition, Presentation, “An Equilibrium Pricing Model for Weather Derivatives in a Multi Commodity Setting” (with Y. Lee), Skytop, Pennsylvania May 13-15, 2009.

Michael H. Rothkopf Memorial Conference, Keynote Speaker, “Optimal Static Hedging of Volumetric Risk in a Competitive Electricity Market” (with Y. Oum), Penn State, State College Pennsylvania, June 1-3, 2009.

PSERC Teleseminar, “Improving Economic Dispatch through Transmission Switching: New Opportunities for a Smart Grid”, June 9, 2009.

Powertech 2009, Presentation “Equilibrium Pricing of Weather Derivatives in a Multi-Period Trading Environment” (with Yongheon Lee), Bucharest, Romania July 1, 2009.

Karlsruhe Institute of Technology, Invited Seminar, “Modeling and Computing Two-Settlement Oligopolistic Equilibrium in Congested Electricity Markets”, Karlsruhe, Germany, July 17, 2009

IEEE PES GM, Invited Panel presentation, “Environmental Regulation in Transmission Constrained Electricity Markets”, (with Y. Chen and A. Papavasiliou) Calgary, Canada, July 30, 2009.

International Symposium on mathematical Programming, Invited talk “Hybrid Bertrand-Cournot Models of Electricity Market with Strategic Decoupling”, Chicago , IL August 23-28, 2009

Los Alamos National Lab., Invited Seminar, “Improving Economic Dispatch through Transmission Switching: new Opportunities for a Smart Grid”, Los Alamos, NM, September 8, 2009.



Workshop on Electricity Auctions, Invited talk, “Three part auctions versus self-commitment in day ahead electricity markets “ Research Institute of Industrial Economics, Stockholm, Sweden, September 15-16, 2009

Mannheim University School of Business, Invited Seminar, “Hedging Load Following Obligations in Competitive Electricity Markets”, Mannheim, Germany, September 21, 2009

PSERC Teleseminar, “Economic Impact Assessment of Transmission Enhancement Projects”, November 10, 2009

Toulane University Energy Institute, Invited Seminar, “Improving Economic Dispatch through Transmission Switching: new Opportunities for a Smart Grid”, New Orleans LA, November 13, 2009.

IDEI Conference on the Economics of Energy Markets, Invited talk, “Optimal Transmission Switching: When Economic Efficiency and FTR Markets Collide”, Toulouse France, January 28-29, 2010.

CONTACT INFORMATION

Shmuel S. Oren, PhD.
Professor, University of California
4119 Etcheverry Hall
University of California
Berkeley, CA 94720

Phone: 925-258-9600
Fax: 925-258-9096
Email: soren@finsch.com

September 2011

FSG



Finance Scholars Group
Accounting • Economics • Finance
Intellectual Property • Marketing • Valuation
California • Illinois • New York • Texas • Washington, DC
www.fsgexperts.com

FSG provides consulting and expert witness services related to complex issues in accounting, economics, finance, intellectual property, marketing, and valuation. Our experts include prominent professors from leading universities and experienced, highly-credentialed staff professionals, including CPAs, CFAs, MBAs, and PhDs.