

Steven Stoft, Ph.D.

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Education

- 1982 Ph.D., Economics, University of California, Berkeley
- 1969 B.S., Engineering Mathematics, University of California, Berkeley

Consulting

- 9/2011 — 2014 **British Department of Energy and Climate Change**, advising on the design of a capacity market, and other capacity mechanisms.
- 1/2011 — 2013 **Maxim Power Corp., Alberta**, testify regarding Alberta's transmission loss factor methodology.
- 4/2011–9/2011 **California Independent System Operator**, Market Surveillance Committee
- 10/2010-7/2011 **World Bank**, "Transmission Expansion for Renewable Energy Scale-Up: Emerging Lessons and Recommendations," with Marcelino Madrigal, 2011.
- May, 2010 **Clean Air Task Force**, Report: "Renewable Fuel and the Global Rebound Effect."
- Sept. 2009 **Global Carbon Capture And Storage Institute**. External review of their "Report 2 Economic Assessment Of CCS Technologies."
- March, 2007 **Visiting Professor**, Lectures on locational pricing, The Erasmus Master Course on Economics and Management of Network Industries. University Paris-Sud 11, Campus de Fontenay
- 9/1999–present **Advisor to PJM's** Market Monitoring Unit
- 9/1999–present **Advisor to ATCo Power** Company, Alberta, CA
- 6/2001–3/2008 **Advisor to California's Electricity Oversight Board**. Expert witness in California's long-term contract case before the Federal Energy Regulatory Commission
- 9/2006—10/2006 **Advisor to U.S. DOE/EIA** on data collection
- 6/2006—11/2006 **Advisor to Columbia's** Compañía de Expertos en Mercado S.A. E.S.P. (XM). and Colombia's Comisión de Regulación de Energía y Gas (CREG) on development of a firm-energy market (analogous to a capacity market).
- 7/2004—6/2006 **Expert witness for ISO-NE** on Locational ICAP, before the Federal Energy Regulatory Commission.
- 9/2003—6/2004 **Advisor to U.S. DOE/EIA** Transmission Data Study
- July 2002 Expert witness for Perot Systems Corporation.
- 1/2002—6/2002 **Expert witness for the ATCo Power and CalPine** on transmission investment incentives, before the Alberta Energy and Utilities Board.

- May 2001 **Taught Transmission Pricing Session of Edison Electric Institute's** Power Market Design Fundamentals Workshop.
- 6/1999–11/1999 **Expert witness for Alberta Generator Coalition** (Duke, Enron, Trans-Canada, ...) on transmission charging matters, before Alberta Energy and Utilities Board.
- Spring 1999 Analysis of access charge proposals for CA ISO.
- Winter 1999 Preliminary market analysis for PJM.
- 9/1998–3/2000 Senior Advisor, Senior Consultant to The Brattle Group.
- 7/1996–7/1997 Pacific Gas & Electric, Systems Integration Department. Critique and design ancillary service market mechanisms.

Appointments

- 2/2000–6/2000 Visiting Senior Research Fellow, University of California Energy Institute
- 8/1997–9/1998 Economist, Office of Economic Policy, Federal Energy Regulatory Commission
- 1991–1997 Research Associate, University of California Energy Institute
- 1987–1997 Staff Scientist, Electricity Markets and Policy Group, Lawrence Berkeley National Laboratory
- 1986–1987 Visiting Assistant Professor, Department of Economics, University of California, Santa Cruz
- 1981–1985 Assistant Professor, Department of Economics, Boston University

Books

- November 2008 *Carbonomics: How to Fix the Climate and Charge It to OPEC*
- May 2002 *Power System Economic: Designing Markets for Electricity*
IEEE Press / Wiley-Interscience

Publications and Testimonies

- “Capacity Market Fundamentals” (with Peter Cramton and Axel Ockenfels), *Economics of Energy & Environmental Policy*, September 2013.
- “How to Fix the Inefficiency of Global Cap and Trade” (with Peter Cramton), *The Economists' Voice*, 9, April 2012.
- “Global Climate Games: How Pricing and a Green Fund Foster Cooperation” (with Peter Cramton), *Economics of Energy & Environmental Policy*, 1:2, March 2012.
- “Transmission Expansion for Renewable Energy Scale-Up: Emerging Lessons and Recommendations,” a World Bank report, with Marcelino Madrigal, 2011.
- “Price is a Better Climate Commitment” (with Peter Cramton), *The Economists' Voice*, 7:1, www.bepress.com/ev/vol7/iss1/art3, February 2010.
- “Research and Development Programs for Hydrogen: US and EU,” with Cesar Dopazo. Published in “Security of Supply in Europe, Edward Elgar, 2010.
- “Forward reliability markets: Less risk, less market power, more efficiency,” with Peter Cramton. *Utilities Policy*, Volume 16, Issue 3, September 2008, Pages 194-201
- “Why We Need to Stick with Uniform-Price Auctions in Electricity Markets,” with Peter Cramton,

The Electricity Journal, Volume 20, Issue 1, January/February 2007.

A Dynamic Analysis of a Demand Curve-Based Capacity Market Proposal: The PJM Reliability Pricing Model, Hobbs, B. F.; Hu, M.-C.; Inon, J. G.; Stoft, S. E.; Bhavaraju, M. P. IEEE Transactions on Power Systems, Volume 22, Issue 1, Feb. 2007 Page(s):3 - 14.

"Transmission Investment in a Deregulated Power Market," Chapter 2 in *Competitive Electricity Markets and Sustainability*, Edited by François Lévêque. Edward Elgar Publishers, January 2007.

"The acquisition of Endesa by Gas Natural: Why antitrust authorities should be cautious," (with François Lévêque, and others) The Electricity Journal, Vol. 19, Issue 2, March 2006.

"The Acquisition of Endesa by Gas Natural: An Antitrust Perspective", (with Lévêque François and et al.) Journal of Network Industries - Competition and Regulation, Vol. 6, no 4, December 2005.

"A Capacity Market that Makes Sense," (with Peter Cramton) Electricity Journal, 18, 43-54, August/September 2005.

Testimony on Behalf of ISO New England on Locational Installed Capacity Market Proposal, Docket Number ER03-563-030; Rebuttal February 10, 2005.

Testimony on Behalf of ISO New England on Locational Installed Capacity Market Proposal, Submitted to Federal Energy Regulatory Commission, Docket Number ER03-563-030; Direct August 31, 2004.

"The Demand for Operating Reserves: Key to Price Spikes and Investment." IEEE Transactions on Power Systems, Vol. 18 (2): 470-477, Special Section on Tools for Managing Restructured Energy Systems, May 2003.

Prepared Testimony of Steven E. Stoft, Ph.D. on Behalf of the California Electricity Oversight Board and the California Public Utilities Commission (Exhibit CSA-2), in the "Long Term Contract Proceeding" before FERC, February 28, 2003.

Prepared Testimony of Steven E. Stoft, Ph.D. on Behalf of the California Electricity Oversight Board and the California Public Utilities Commission (Exhibit CAL-90), in the "Long Term Contract Proceeding" before FERC, October 17, 2002.

Installed capacity requirements and price caps: oil on the water, or fuel on the fire? With B. Hobbs and J. Iñón. Electricity Journal, July, 2001, 14(6): 23-34.

"The Competitive Effects of Transmission Capacity in a Deregulated Electricity Industry" with S. Borenstein and J. Bushnell, Rand Journal, Summer, 2000.

"PBR Designs for Transcos: Towards a Comparative Framework" with F. Graves, The Electricity Journal, September 2000.

"Before the Alberta Energy and Utilities Board: A Critique of the Phase II Tariff and a Proposal for Revisions," with Richard Tabors, July 30, 1999.

"Using Game Theory to Study Market Power in Simple Networks," in H. Singh, ed., Game Theory Applications in Electric Power Markets, IEEE Winter Power Meeting, IEEE, Parsippany, NJ, January 1999: 33-40.

"Financial Transmission Rights Meet Cournot: How TCCs Curb Market Power," The Energy Journal, January 1999.

"Congestion Pricing with Fewer Prices Than Zones," The Electricity Journal, May 1998: 23-31.

"Transmission Rights and Wrongs," The Electricity Journal, December 1997: 91-95.

"What Should a Power Marketer Want?," The Electricity Journal, June 1997: 34-45.

"Improving Private Incentives for Electric Grid Investment" with J. Bushnell, Resource and Energy

Economics, 19 (1997) 85-108.

"The Theory and Practice of Decoupling Utility Revenues from Sales" with J. Eto and T. Beldon, *Utilities Policy*, Vol. 6, No. 1, 1997: 43-55.

"Zones: Simple or Complex?," *The Electricity Journal*, January/February 1997: 24-31.

"California's ISO: Why Not Clear the Market?," *The Electricity Journal*, December 1996: 38-43.

"Electric Grid Investment Under a Contract Network Regime" with J. Bushnell, *Journal of Regulatory Economics*, July 1996: 61-79.

"Six Useful Observations for Designers of PBR Plans" with G. A. Comnes, N. Greene and L. Hill, *The Electricity Journal*, Vol. 9, No. 3, April 1996: 16-23.

"Grid Investment: Can a Market do the Job?" with J. Bushnell, *The Electricity Journal*, January 1996.

"The Economics of Conserved-Energy 'Supply' Curves," *The Energy Journal*, Vol. 16, No. 4, 1995.

"Technical Efficiency, Production Functions and Conservation Supply Curves" with C. Blumstein, *Energy Policy*, Vol. 23, No 9 1995: 765-768.

"How High Are Option Values In Energy-Efficiency Investments?" with A. H. Sanstad and C. Blumstein, *Energy Policy*, Vol. 23, No. 9, 1995: 739-743.

"Market power in California electricity markets" with S. Borenstein, J. Bushnell and E. Kahn, *Utilities Policy*, Vol. 5, No. 3, 1995: 219-236.

"Impact of Power Purchases from Non-utilities on the Utility Cost of Capital" with E. Kahn and T. Beldon, *Utilities Policy*, Vol. 5, No. 1, 1995.

"A Review and Analysis of Electric Utility Conservation Incentives" with R. Gilbert, *Yale Journal on Regulation*, Vol. 11, No. 1, Winter 1994.

"Appliance Standards and the Welfare of Poor Families," *The Energy Journal*, Vol. 14, No. 4., pp.123-128, Fall 1994.

"Coal Gasification in a De-Integrated Electric Industry" with E. Kahn, *Utilities Policy*, Vol. 4, No. 1, pp. 46-54, January 1994.

"Auction Markets for Dispatchable Power: How to Score the Bids" with E. Kahn, *Journal of Regulatory Economics*, Vol. 3, No. 3, September 1991: 275-86.

"Optimization Methods for Evaluating Competitive Bids from Private Producers" with E. Kahn, D. Berman and T. Grahame, *IEEE Transactions on Power Systems*, Vol. 6, No. 2, May 1991, pp. 729-735.

"Evaluation of Front Loading in Auctions for Wholesale Power" with E. Kahn, *Utilities Policy*, Vol. 1, No. 1, pp. 28-35, October 1990.

Reports and Working Paper

"[How to Negotiate Ambitious Global Emissions Abatement](#)" (with Peter Cramton and Axel Ockenfels), www.priccarbon.info, May 2013.

"Flexible Global Carbon Pricing: A Backward-Compatible Upgrade for the Kyoto Protocol," European University Institute Working Paper No. RSCAS 2009/35, July, 2009.

"The Surprising Value of Wind Farms as Generating Capacity," June 2008, written for the Workshop on Wind Power and Market design, University Paris XI – Campus de Fontenay aux Roses, June 6, 2008. Available on SSRN.

"Brief academic opinion of economic professors and scholars on the project of acquisition of

Endesa by Gas Natural," Paris, October 28 2005. With Lévêque François et al.

"Soft Price Caps and Underscheduling Penalties: How Would the FERC Plan Affect California Electricity Markets?," POWER Working Paper PWP-079, November 2000

"PJM's Capacity Market in a Price-Spike World," POWER Working Paper PWP-077, May 2000.

"MW-Mile Charges: Do They Work?," FERC White Paper, June 1998.

"Charging for Losses," FERC White Paper, May 1998.

"Primer on Electricity Futures and Other Derivatives," S. Stoft, T. Belden, C. Goldman, and S. Pickle, LBNL Report #41098, January 1998.

"How Financial Transmission Rights Curb Market Power," LBNL Report #40568, June 1997.

"Transmission Pricing and Renewables: Issues, Options and Recommendations," S. Stoft, C. Webber and R. Wiser, LBNL Report #39845, May 1997.

"The Benefits of Physical Bilateral Contracts: In Search of Example #1," Report to EPRI Workshop, May 22, 1997.

"The Competitive Effects of Transmission Capacity in a Deregulated Electricity Industry," S. Borenstein, J. Bushnell and S. Stoft, POWER Working Paper PWP-040, September 1996.

"Analysis of the California WEPEX Applications to FERC," POWER Working Paper PWP-042A, October 1996. Also filed by the DOE with FERC in the WEPEX proceeding.

"Market Power in California Electricity Markets," S. Borenstein, J. Bushnell, E. Kahn, and S. Stoft, POWER Working Paper PWP-036, December 1995.

"Organization of Bulk Power Markets: A Concept Paper," E. Kahn and S. Stoft, LBL-37508, December 1995.

"Performance-Based Ratemaking for Electric Utilities," G.A. Comnes, S. Stoft, N. Greene, and L.J. Hill, LBL-37577, November 1995.

"Electric Grid Investment Under a Contract Network Regime," J. Bushnell and S. Stoft, POWER Working Paper PWP-034, August 1995.

"Electric Grid Investment Under a Contract Network," J. Bushnell and S. Stoft, POWER Working Paper PWP-032, July 1995.

"Transmission and Generation Investment In a Competitive Electric Power Industry," J. Bushnell and S. Stoft, POWER Working Paper PWP-030, March 1995.

"Technical Efficiency, Production Functions and Conservation Supply Curves S." C. Blumstein and S. Stoft, POWER Working Paper PWP-029, April 1995.

"The Economics of Conserved-Energy 'Supply' Curves," POWER Working Paper PWP-028, April 1995.

"How High Are Option Values In Energy-Efficiency Investments?," C. Blumstein, A. Sanstad, and S. Stoft, POWER Working Paper PWP-027, March 1995.

"DSM Shareholder Incentives: Current Designs and Economic Theory," S. Stoft, J. Eto and S. Kito, LBL-36580, January 1995.

"Impact of Power Purchases from Nonutilities on the Utility Cost of Capital," E. Kahn, S. Stoft, and T. Belden, LBL-34741, March 1994.

"The Theory and Practice of Decoupling," J. Eto, S. Stoft, and T. Belden, LBL-34555, January 1994.

"Review of Integrated Resource Bidding at Niagara Mohawk," C. Goldman, J. Busch, E. Kahn, S. Stoft, and S. Cohen., LBL-31667, May 1992.

- “Contracts for Dispatchable Power: Economic Implications for the Competitive Bidding Market,” E. Kahn, S. Stoft, C. Marnay and D. Berman, LBL-29447, October 1990.
- “Progress Report, Energy Use in the Developing Countries, A Statistical Analysis: Focus on Transportation,” S. Stoft and J. Sathaye, November 1989.
- “Designing a Performance Based Cost-Sharing System for the Clean Coal Technology Program,” E. Kahn and S. Stoft, LBL-28057, September 1989.
- “Evaluation Methods in Competitive Bidding for Electric Power,” E. Kahn, C. Goldman, S. Stoft and D. Berman, LBL-26924, June 1989.
- “Evaluation of Front-Loaded Bids in Competitive Auctions,” *Proceedings of the National Science Foundation on Resource Planning Under Uncertainty for Electric Power Systems*, January 1989.
- Technical Support Document: Energy Conservation Standards for Consumer Products: Dishwashers, Clothes Washers, and Clothes Dryers*, DOE/CE-0386, November 1989.
- Technical Support Document: Energy Conservation Standards for Consumer Products: Refrigerators, Furnaces, and Television Sets*, DOE/CE-0239, November 1988.
- “Efficiency Wages in a Share Economy,” S. Stoft and B. Elbaum, University of California, Santa Cruz Working Paper #184, October 1988.
- “The Elasticity of Appliance Demand for Energy with Respect to Efficiency,” LBL-25785, January 1988.

Invited Talks

- “How to Fix Climate Policy and Why It Would Help Electricity Markets,” EEM 13, 10th International Conference on the European Energy Market, Stockholm Sweden, 30 May 2013.
- “Cap and Trade: Economics and Incentives,” Wisconsin Public Utility Institute, June 2009.
- “Why Subsidize Transmission for Coal and Wind?” A talk for the University of Calgary’s “Transforming the Grid” conference, October, 2009.
- “Research and Development in the U.S. for a Hydrogen Economy,” 3rd CESSA Conference: Prospects for a European Hydrogen Economy, Madrid, April 14 & 15, 2008, Comillas University. CESSA (Coordinating Energy Security in Supply Activities) is funded by the EU 6th RTD Framework Programme.
- “Market Design and Competition: An Auction to Procure Capacity in a Load Pocket,” Conference on Competition And Coordination In The Electricity Industry, Toulouse, January, 2004.
- “Overview of U.S. Electricity Markets,” French Electricity Forum, Paris, June, 2002.
- “Transmission Planning in a Market Environment,” APEC Conference, Mexico City, May, 2002.
- “Price Spikes, Reliability and Investment,” National Science Foundation, March, 2000.
- “Assessing Market Power in Wholesale Power Markets,” The World Bank, April, 1999
- “Incentives for Regional Transmission Organizations,” FERC, November, 1998.
- “Bilateral Nodal Pricing, Price Spikes and Transcos,” EEI, November, 1998,
- “Congestion Pricing with Fewer Prices than Zones,” ELCON, June 9, 1998.
- “Congestion Pricing with Fewer Prices than Zones,” EEI, April 17, 1998.
- “Congestion Pricing with Fewer Prices than Zones,” DOE-EIA, April 14, 1998
- “Why Experiment with Congested Lines?,” UC Energy Institute Restructuring Conference, March 20, 1998.

- “Gaming Intra-Zonal Congestion in California,” UC Energy Institute Restructuring Conference, March 20, 1998.
- “The Recovery of Fixed Transmission Costs,” NARUC-DOE National Electricity Forum, December 7 1997.
- “Why an Energy-Based Transmission Charge is Better (for Intermittent Renewables),” US Dept. of Energy, July 8, 1997.
- “Five Things You Should Know about Grid Investment,” Special Session on Transmission Expansion Harvard Energy Policy Group, April 10, 1997.
- “What Should a Power Marketer Want?,” Second Annual POWER Research Conference on Restructuring, March 14, 1997.
- “Grid Investment: Can a Market Do the Job?,” Edison Electric Institute Economic Committee, January 30, 1997.
- “Nodal Pricing and Multilateral Trading,” Western Regional Transmission Association, May 15, 1996.
- “Transmission Investment,” Harvard Electricity Policy Group, September 27, 1995.
- “Long-Run Efficiency of Transmission Networks in a Competitive Electric Power Industry,” California Energy Commission, June 23, 1995.
- “Transmission Pricing and Planning.” LBL/NARUC Advanced Integrated Resource Planning Seminar, June 9, 1995.
- “Nodal Pricing and Multilateral Trading,” Western Regional Transmission Association, May 15, 1996.
- “Transmission Investment,” Harvard Electricity Policy Group, September 27, 1995.
- “Long-Run Efficiency of Transmission Networks in a Competitive Electric Power Industry,” California Energy Commission, June 23, 1995.
- “Transmission Pricing and Planning.” LBL/NARUC Advanced Integrated Resource Planning Seminar, June 9, 1995.