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## Certifications

Registered Professional  
Engineer, Commonwealth of  
Massachusetts

## Professional Affiliations

Member, Board of Directors,  
Northeast Energy and  
Commerce Association, 2002-  
present

## Education

Massachusetts Institute of  
Technology, Cambridge, MA  
S.M. in Technology Policy, 1997

Tufts University, Medford, MA  
S.M. in Environmental  
Engineering, 1992

University of Connecticut,  
Storrs, CT  
B.S. Mechanical Engineering,  
1987

Joseph Cavicchi is a managing director with Lexecon (Harvard Square), an FTI Company. He provides wholesale and retail electricity market regulatory economic analyses in connection with the restructuring of the US electricity industry. In particular, he advises clients in a variety of Federal Energy Regulatory Commission and state regulatory proceedings, and files testimony and affidavits supported by economic analyses.

Mr. Cavicchi's work focuses extensively on analyzing the competitiveness of the U.S. wholesale electricity markets and developing an in-depth understanding of the operations of the wholesale markets. His work involves conducting wholesale market power screens, analyzing the competitive impact of mergers and acquisitions, and overseeing the development of complex analytical modeling to assess electricity system operations. His work combines extensive knowledge of wholesale market operations with general economic theory of contracting and electricity generation plant dispatch in order to provide companies with detailed analyses that can impact both regulatory and business decisions. He has been actively involved in the electricity industry both before and after restructuring for a total of nearly 20 years.

Prior to joining Lexecon, Mr. Cavicchi was a staff mechanical engineer and a project manager at the Massachusetts Institute of Technology, overseeing the development, permitting, engineering, construction, and start-up of a \$40 million, 20 megawatt gas turbine-based cogeneration facility at the Cambridge campus.

## Professional Experience

### Federal and State Regulatory Proceedings

#### *Affidavits and Testimonies*

- PPL Electric Utilities Corporation  
*Before The Pennsylvania Public Utility Commission, Re: Petition of PPL Electric Utilities Corporation for Approval of A Competitive Bridge Plan, Docket No. P-00062227, Statement No. 2, Direct Testimony of Joseph Cavicchi, September 15, 2006. Written, Public.*
- Independent Energy Producers Association of California  
*Before the Federal Energy Regulatory Commission, Docket No. EL05-146-000, Reply Comments of the Independent Energy Producers Association, September 26, 2006; Affidavit of Joseph Cavicchi, August 26, 2006, Written, Public.*
- Independent Energy Producers Association of California  
*Before the Federal Energy Regulatory Commission, Docket No. EL05-146-000, Affidavit in Support of Justness and Reasonableness of the Offer of Settlement's Reference Resource's Cost and Performance Characteristics, Affidavit of Joseph Cavicchi, August 21, 2006, Written, Public.*
- PPL Maine, LLC  
*Before the Federal Energy Regulatory Commission, RE: PPL Maine, LLC, Docket No. ER00-2186-002, Triennial Market-Based Rate Update. Affidavit of A. Joseph Cavicchi on behalf of the PPL Companies, June 19, 2006. Written, Public.*
- FirstEnergy Solutions Corp.  
*United States of America, Before the Federal Regulatory Commission, FirstEnergy*

*Solutions Corp., Docket No. ER06-117-000, Prepared Direct Testimony of Scott T. Jones, Ph.D, and A. Joseph Cavicchi on behalf of FirstEnergy Solutions Corporation, March 15, 2006, confirming the auction price result of the Competitive Bidding Process carried out by the Ohio Public Utilities Commission in December 2004, and establishing that Solutions is not charging a rate greater than market prices for wholesale electricity sold to its affiliated Ohio based regulated distribution companies.*

- PPL Montana, LLC  
*United States of America, Before the Federal Energy Regulatory Commission, RE: PPL Montana, LLC, Docket No. ER99-3491-003; PPL Colstrip I, LLC, Docket No. ER00-2184-001; PPL Colstrip II, LLC, Docket No. ER00-2185-001; Answer of the PPL Montana Parties to Montana Consumer Counsel's New Uncommitted Capacity Pivotal Supplier Analysis and Uncommitted Capacity Market Share Analysis, Affidavit (filed with Joseph Kalt), February 28, 2005; Affidavit (filed with Joseph Kalt), November 14, 2005 (original October 31, 2005); First Supplemental Affidavit on Behalf of the PPL Montana Parties, (filed with Joseph Kalt), December 23, 2005; Affidavit (filed with Joseph Kalt), February 1, 2006.*
- PPL Corporation  
*United States of America, Before the Federal Energy Regulatory Commission, Triennial Market-Based Rate Update, Submitted by PPL Great Works, Docket No. ER05-4503-004, Affidavit, January 24, 2006.*
- Independent Energy Producers Association of California  
*Before the Public Utilities Commission of the State of California, Evidentiary Hearings, Dockets Nos. R04-04-025 and R04-04-003. Testimony of Joseph Cavicchi and David Reishus on behalf of Independent Energy Producers Association of California, January 23 and 24, 2006. Oral, Public.*
- PPL Corporation  
*United States of America, Before the Federal Energy Regulatory Commission, Docket No. ER05-1416-000, Affidavit of A. Joseph Cavicchi, Joseph P. Kalt, Ph.D., and David A. Reishus, Ph.D. on Behalf of the PPL Parties, Affidavit, October 19, 2005.*
- Independent Energy Producers Association of California  
*United States of America, Before the Federal Energy Regulatory Commission, Docket No. EL05-146-000, Affidavit in Support of the Complaint of the Independent Energy Producers Association to Implement CAISO Market Design Modifications, Affidavit, August 26, 2005.*
- PPL Corporation  
*United States of America, Before the Federal Energy Regulatory Commission, "A Policy Analysis of PJM's Proposed Four-Year Forward Capacity Market." With Joseph P. Kalt, submitted in PPL Resource Adequacy Market Proposal, Docket No. PL05-7-000, June 16, 2005.*
- PPL EnergyPlus  
*United States of America, Before the Federal Energy Regulatory Commission, Docket ER00-1712-004, Request for Leave to Respond and Response of PPL Parties to Protest of PJM Industrial Customer Coalition and the PP&L Industrial Customer Alliance and to Comments of Joint Consumer Advocates, Supplemental Affidavit, December 16, 2004.*

- PPL Montana, LLC  
*United States of America, Before the Federal Energy Regulatory Commission, RE: PPL Montana, LLC; PPL Colstrip I, LLC; PPL Colstrip II, LLC; Docket No. ER99-3491-\_\_, Compliance Filing: Triennial Market-Based Rate Update and Revised Tariff Sheet, Affidavit (filed with Joseph Kalt), November 9, 2004.*  
  
*United States of America, Before the Federal Energy Regulatory Commission, PPL Colstrip I, LLC; PPL Colstrip II, LLC; Docket No. ER99-3491-003, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates, Affidavit (filed with Joseph Kalt), November 9, 2004.*
- PPL EnergyPlus  
*United States of America, Before the Federal Energy Regulatory Commission, PPL EnergyPlus et al., Docket ER00-1712-004, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates, Supplemental Affidavit, November 9, 2004.*
- PPL Southwest Generation Holdings, LLC  
*United States of America, Before the Federal Energy Regulatory Commission, PPL Southwest Generation Holdings, LLC, Docket No. ER01-1870-002, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates. Supplemental Affidavit, October 25, 2004.*
- PPL Wallingford Energy LLC  
*United States of America, Before the Federal Energy Regulatory Commission, PPL Wallingford Energy LLC, Docket No. ER01-1559-002, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates, Supplemental Affidavit, October 8, 2004.*
- PPL Wallingford Energy LLC  
*United States of America, Before the Federal Energy Regulatory Commission, PPL Wallingford Energy LLC, Docket No. ER01-1559-002, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates. Affidavit, July 12, 2004.*
- PPL Southwest Generation Holdings, LLC  
*United States of America, Before the Federal Energy Regulatory Commission, PPL Southwest Generation Holdings, LLC, Docket No. ER01-1870-002, market power analysis in support of application for renewal of authority to sell electric energy and capacity at market-based rates. Affidavit, July 12, 2004.*
- PPL Wallingford Energy LLC  
*United States of America, Before the Federal Energy Regulatory Commission, PPL Wallingford Energy LLC and PPL EnergyPlus, LLC, Petition for Rehearing, Request for Clarification and Request for Expedited Action on Rehearing and Clarification of PPL Wallingford Energy LLC and PPL EnergyPlus, LLC. Affidavit, June 16, 2003.*
- Massachusetts Department of Telecommunications and Energy  
Submission of comments on the investigation by the Massachusetts DTE. on its own motion into the Provision of Default Service, DTE 02-40-B (with Charles Augustine). May 28, 2003.

- PPL Global  
Co-authored reports (with Susan F. Tierney) on "Air Pollution Reductions Resulting from the Kings Park Energy Project," January 24, 2001; "Economic and Environmental Benefits of the Kings Park Energy Project: System Production Modeling Report," January 25, 2002. Provided ongoing regulatory and analytical support as necessary.
- Wawayanda Energy Center, LLC  
Co-authored report (with Susan F. Tierney) on "Economic and Environmental Benefits of the Wawayanda Energy Center: System Production Modeling Report," August 24, 2001.

### *Consulting*

- Independent Energy Producers Association of California  
Provides regulatory economic analyses and consulting services focused on the development of state resource adequacy regulation rules and California Independent System operation wholesale market rule modifications currently being considered in California. Ongoing.
- PPL Corporation  
Manages and develops market power delivered price test analyses associated with the proposed Exelon and PSE&G merger. Assisting in the development of state and federal testimony focused on the impact of the proposed merger on market competitiveness. Ongoing.
- Arizona Competitive Power Alliance  
Arizona Public Service (APS) Company 2003 Rate Case Filing: Develop various analyses and testimonial structures focused on disputing APS's request to move electricity generation assets built by its unregulated affiliate Pinnacle West Energy Company into its rate base. Manage and contribute to the development and writing of expert testimonies submitted in the rate case proceeding. 2003-2004.
- Western US Electricity Generation Companies and Power Marketers  
Long-Term Electricity Forward Contract Complaints: Conceived and managed the qualitative and quantitative analysis of several complaints that were filed at the Federal Energy Regulatory Commission requesting primarily reformation of contract pricing terms. These electricity forward contracts were executed during the period in 2000-2001 when western electricity prices were elevated. When forward electricity prices declined, complainants asserted that contract prices were unjust and unreasonable for a variety of reasons. Using results of analysis, assisted in the development of strategy and writing of testimony offered by expert witnesses to the Federal Energy Regulatory Commission. 2002-2003.
- California Electricity Spot Market Refund Proceedings  
Managed and participated in the conception of numerous complex data-intensive analyses focused on estimating spot market refunds related to various Federal Energy Regulatory Commission Orders establishing spot market refunds. Oversaw the creation of the software necessary to resettle the California spot markets. Synthesized numerous sources of data to develop strategies and testimony offered by expert witnesses at Federal Energy Regulatory Commission hearings. 2001-2002.

- Pacific Northwest Electricity Spot Market Refund Proceedings  
Conceived and managed the qualitative and quantitative analysis focused on determining whether spot market refunds should be considered for the Pacific Northwest region. Synthesized numerous sources of data to develop strategies and testimony offered by expert witnesses at Federal Energy Regulatory Commission hearings. 2001-2002.
- FirstEnergy  
Managed the development of a model to estimate the value of the FirstEnergy generation facilities. The analysis required an extensive investigation of the future dispatch pattern of generation resources in the Midwest as well as a careful review of pending and future environmental regulation in the Midwestern and Northeastern United States. The analytical results were used to support oral and written testimony provided to the Ohio Public Utility Commission in support of FirstEnergy's stranded cost proceeding. 1999-2000.
- Reading Municipal Light Department  
Managed the development of an economic analysis of the viability of a proposed natural gas pipeline dedicated to an existing electricity generation facility located in New England. The analysis was subsequently submitted with written and oral testimony at a state regulatory proceeding that reviewed the proposed pipeline. 1998-2000.
- Natural Resources Canada  
Co-authored a white paper that investigated the implications for Canadian electricity system reliability as result of recent changes in US electricity markets and policy. Managed all aspects of the research underlying the report. 1999.
- WPS Power Development, Inc.  
*United States of America, Before the Federal Energy Regulatory Commission, Sunbury Generation, LLC, Docket No. ER99-3420-000*, prepared market power analysis and managed the development of direct testimony submitted in support of PDI's newly acquired Sunbury generation facility's application for authority to charge wholesale and retail market-based rates in and outside of PJM. June 30, 1999.
- Penobscot Hydro, LLC  
*United States of America, Before the Federal Energy Regulatory Commission, Penobscot Hydro, LLC, Docket No. ER99-1940-000*, prepared market power analysis and managed the development of direct testimony submitted in support of Penobscot's application for authority to sell energy, capacity, and ancillary services at market-based rates. February 25, 1999.
- Pennsylvania Power & Light Company, PFG Gas, Inc., North Penn Gas Company  
Managed the economic analysis and market power determination in support of the application of Pennsylvania Power & Light Company, PFG Gas, Inc., and North Penn Gas Company for approval of a proposed merger. 1997-98.
- Pennsylvania Power & Light Company  
Applied economic theory and regulatory policy principles to support the evaluation of a stranded cost dispute arising between PP&L, Inc., and UGI Utilities, Inc. 1997.

### Business Strategy Analyses

- **Electricity Generation Facility Developers**  
Oversees the development and implementation of transmission-constrained dispatch modeling for proposed electricity generation units locating in the Northeastern, Mid-Atlantic, and Midwestern United States. Analyses typically focus on determining likely facility capacity factors and impacts on local and regional air pollutant emissions as well as on wholesale electricity prices. In addition, these analyses provide detailed knowledge of new facilities' impacts on the operation of the electricity transmission system that is critical to assessing the ability of a generating unit to deliver its power in a wide geographical area. Most recently (2003-2004), Mr. Cavicchi has been supporting the State of Vermont in its efforts to assess the viability of purchasing hydroelectric assets from the bankrupt PG&E National Energy Group.
- **Electricity Distribution Companies**  
Provide extensive strategic advice and analytical support to electricity distribution companies that are required to assess new wholesale marketplaces in order to fulfill their regulatory commitments as providers of last resort or default electricity service. In most instances these companies require assistance with the development and issuance of requests for proposals as well as rapid evaluation of commodity bids. The assignments combine extensive knowledge of wholesale market operations with general economic theory of contracting and electricity generation plant dispatch in order to provide companies with an approach to commodity procurement that agrees with their risk profile. In most cases there are numerous business and regulatory concerns that are incorporated into the procurement strategies. Additionally, each assignment typically requires extensive analysis of customer demand patterns and wholesale market prices in order to develop market-based customer service cost forecasts.

### **Engineering and Academic Experience**

- Tufts University, Medford, MA  
*Adjunct Instructor, Summer 2000*

Taught graduate-level environmental economics.

- Massachusetts Institute of Technology, Cambridge, MA  
*Research Engineer, 1997*  
*Research Assistant, 1995-1997*

Performed an analysis of water and electricity resources in Mendoza, Argentina. Developed a computer simulation model to support analysis and permit the display of results to a diverse group of stakeholders. Traveled frequently to Mendoza to interact with government officials and relevant institutions in an effort to establish electricity and water policy.

*Project Manager/Staff Mechanical Engineer, 1989-1995*

Managed the development, engineering, and construction of a \$40 million, 20 MW gas turbine-based cogeneration facility at the Cambridge campus. Directed all attributes of the project for its three-year duration. Involved extensively in energy conservation programs with emphasis on building and utility plant optimization through innovative

engineering applications.

- Carrier Building Systems and Services, Waltham, MA  
*Project Engineer, 1987-1988*

Engineered and managed the installation of Energy Management Systems used exclusively for demand-side management. Interfaced direct digital control systems to mechanical equipment associated with thermal systems of industrial, commercial, and educational buildings.

### **Publications**

"Competition and Regulation in the Power Industry, Part III: Tensions Evolve Between Regulation and Competition", with Charles Augustine and Joseph Kalt, published in *Electric Light & Power*, January/February 2006: volume 84.01, pp 24-25.

"Gradualism in Retail Restructuring." with Charles Augustine and Joseph P. Kalt, published in *Electric Light & Power*, September/October 2005: volume 83.05, pp 26-30.

"Competition and Regulation in the Power Industry: Can the Two Coexist?", with Charles Augustine and Joseph Kalt, published in *Electric Light & Power*, July/August 2005: volume 83.04, pp 28-31.

"Ensuring The Future Construction of Electricity Generation Plants: The Challenge of Maintaining Reliability in New U.S. Wholesale Electricity Markets." with Andrew Kolesnikov, published in *International Association for Energy Economics Newsletter*, First Quarter 2005.

"Electricity Company Affiliate Asset Transfer Self Build Policies: Renewed Regulatory Challenges," with Scott T. Jones, *The Electricity Journal*, November, 2004.

Onward Restructuring, *Hart Energy Markets*, September 2004, Vol. 9, No. 9 at Page 64.

"Competition and Regulation in the North American Electricity Industry: Can These Two Seemingly Opposed Forces Coexist?" with Charlie Augustine and Joseph P. Kalt, Published in the 24<sup>th</sup> Annual North American Conference of the USAEE/IAEE Proceedings, July 9, 2004, Washington, DC.

Wholesale Electricity Procurement Strategies for Serving Retail Demand, *International Association for Energy Economics Newsletter*, First Quarter, 2004.

### **Presentations**

"Competition and Regulation in the North American Electricity Industry: Can These Two Seemingly Opposed Forces Coexist?" 24<sup>th</sup> Annual North American Conference of the USAEE/IAEE, July 9, 2004, Washington, DC.

"Merchant Transmission Investment Regimes: An Outsider's Observations," *The East Coast Energy Group*, April 16, 2004.

"Wholesale Procurement Strategies for the Restructured Electricity Markets: Experiences from the Field," *Platts First Annual Electricity Market Design Imperative*, Chicago, IL, November 6,

2003.

“Power Plant Technologies and Characteristics,” The Harvard Institute for International Development’s Third Annual Program on Climate Change and Development, Cambridge, MA, June 19, 2000.

“Transmission Planning & Investment in the RTO Era” (with John Farr and Susan F. Tierney), workshop at Infocast Conference on Transmission Pricing, Chicago, IL, May 1, 2000.

“The US Market for Merchant Plants—Outlooks, Opportunities and Impediments,” CBI’s 4<sup>th</sup> Annual Profit from Merchant Plants Conference, January 31, 2000.

“Projecting Electricity Prices for a Restructured Electricity Industry,” EXNET Merchant Power Plant Conference, Washington, DC, June 3, 1999.

“Transmission Planning and Competitive Generation Markets: The New England Case,” EUCI conference on Transmission Restructuring for Retail Competition, Denver, CO, March 25, 1999.

“Key Issues in Ancillary Service Markets,” IBC conference on Pricing and Selling Ancillary Services in a Competitive Market Conference, San Francisco, CA, March 11, 1999.

“Successfully Forecasting the Price of Energy and Other Products,” workshop presented at IBC’s conference on Successful Load Profiling, San Francisco, CA, December 2, 1998.

“International Perspective: Lessons from the US Deregulation Experience,” Nordic Power ’98, Stockholm, Sweden, October 7, 1998.

“Successfully Forecasting the Price of Energy and Other Products in a Restructured Electric Power Industry,” workshop presented at IBC’s 3<sup>rd</sup> Strategic Forum on Market Price Forecasting, Baltimore, MD, August 24, 1998.

“Managing Market Share Loss with the Opening of Retail Markets to Competition,” Electric Utility Business Environment Conference, Denver, CO, June 24, 1998.

“Multi-Attribute Trade-Off Analysis for Water and Electricity Policy Development,” presented in Mendoza, Argentina, July 1996 and April 1997.

“The Basics of Cogeneration,” presented at the Tufts University Forum on Energy Conservation, December 1993.

“Implications and History of the MIT Cogeneration Project,” presented to the Massachusetts Society of Professional Engineers, November 1993.