

COLLIN CAIN, MSC

Principal

AREAS OF EXPERTISE

- **Economic, regulatory and market analysis**
- **Market design**
- **Asset valuation**
- **Damages estimation**
- **Forensic analysis**



SUMMARY OF EXPERIENCE

Mr. Cain specializes in economic evaluation of wholesale electricity markets. He has extensive experience developing energy and capacity market pricing and risk analysis models, and has applied these models in a variety of consulting assignments to evaluate market design, value generation assets and power supply contracts and to develop supply hedging strategies. Mr. Cain assists clients in developing regulatory strategies, and has provided expert testimony in regulatory, court and arbitration proceedings. He has provided strategic advisory work on issues such as asset divestment, stranded cost recovery, and rate unbundling. Mr. Cain also applies his expertise in forensic analysis of the conduct and application of forecasts, market evaluation, and risk assessment by contract counterparties.

Mr. Cain has provided expert testimony on market design, supply procurement, power market modeling, cost/benefit analysis, market power, cost allocation, contract damages, and energy market bidding behavior.

EDUCATION

- MSc, Economics, London School of Economics
- BA, Economics and Political Science Specialist, University of Toronto

SELECTED EXPERIENCE

- Affidavit in FERC proceeding (FERC Docket No. ER18-1314-000) on behalf of the Electric Power Supply Association (EPSA) regarding proposed modifications to the PJM capacity market auctions to address state subsidies to certain generating units in PJM.
- Expert testimony on behalf of the Kansas Corporation Commission Staff regarding the proposed acquisition of 800 MW of wind generation by Empire District Electric Company. Analysis included an assessment of energy and capacity needs, projected value from proposed tax equity partnership, and risk allocation between investors and ratepayers.
- Expert testimony on behalf of the U.S. government regarding offsets to damages claimed by Alabama Power Company and Georgia Power Company resulting from the Government's partial breach of the spent nuclear fuel "Standard Contract."

- Affidavit on behalf of the Electric Power Supply Association in FERC's *Grid Reliability and Resilience Pricing* docket (RM18-1-000). Analyzed market effects of proposed out-of-market subsidy payments to coal and nuclear generating units in ISO/RTO markets.
- For the fuel audit of Nova Scotia Power for calendar years 2016 and 2017, on behalf of the Nova Scotia Utility and Review Board, evaluated the cost recovery provisions of the utility's Load Retention Tariff, and the effectiveness of provisions to shield other utility customers from incremental costs of serving load under the tariff.
- On behalf of the Mississippi Public Service Commission (MPSC), evaluated costs and benefits of Entergy's proposal to join the Midwest Independent System Operator (MISO) regional transmission organization. The analysis included assessment of prior cost-benefit studies as well as independent production cost modeling of the benefits to the Entergy region from joining MISO.
- Testimony on behalf of Catalyst Paper Operations, Inc., presenting an analysis of FERC's market power screens supporting Catalyst's market based rate application associated with its acquisition of power generating facilities.
- Quantified effects on New Jersey energy costs of the prospective merger between PSEG and Exelon Corp as part of a comprehensive cost-benefit analysis for the NJ BPU. Effects included wholesale price impacts from changes to nuclear plant availability, direct costs to the state arising from planned staff reductions, and reductions in PSE&G's regulated cost of service arising from estimated merger synergies.
- Submitted testimony on behalf of Constellation Energy Commodities Group, Inc. in a complaint proceeding before FERC (Docket No. EL07-47-000) regarding the Illinois electricity supply auction. Analyzed the conduct, bidding behavior and outcome of the auction, addressing auction structure and rules, and allegations of market manipulation.
- Evaluated the proposed spin-merge of Entergy's transmission assets to ITC Holdings Corp., and advised the Mississippi Public Service Commission on the costs and benefits to Mississippi, including impacts on state regulatory control.
- Conducted economic assessment of KCP&L's proposed \$1.2 billion environmental retrofit of La Cygne Generating Station, and testified before the Kansas Corporation Commission on behalf of Commission Staff. Developed analysis framework and key factor inputs for alternative economic assessment and evaluated supporting analyses submitted by KCP&L.
- Directed power market projections and economic benefit analyses in various applications, including: study of economic benefits for the Niagara Power Project (NYPA); cost-benefit analysis of environmental protection alternatives related to fueling of Salem Generation Station (PSE&G) and Indian Point Nuclear Power Plant (Entergy) and to the operation of Danskammer Point Generating Station (Dynergy).
- Submitted testimony at FERC on behalf of the Mississippi Public Service Commission regarding the allocation of settlement benefits among the Entergy operating companies. The testimony quantified shortfalls in benefits owed to Entergy Mississippi related to a settlement by Entergy resolving damage claims from a coal transportation disruption that restricted output at two of Entergy's generating plants.
- Conducted independent validation of Southern California Edison's (SCE) internal power supply risk assessment model, including the model's theoretical underpinnings, implementation, and interpretation of outputs. The SCE model assesses procurement cost risk based on stochastic simulation that accounts for dispatchable resources, supply contracts, power forward and gas forward positions.

- Calculated damages and submitted expert testimony on behalf of PG&E, SCE and SDG&E in separate cases before the U.S. Court of Federal Claims and Los Angeles Superior Court regarding unresolved claims stemming from energy sales by defendants into the PX and ISO markets during the California energy crisis.
- Developed RFP documents and evaluation procedures for the Ontario Ministry of Energy's 2500MW RFP. Directed the economic evaluation of generator proposals, including development of models used to estimate energy market revenues and contingent capacity support payments, and created analytical tools to evaluate aggregate costs, including transmission upgrade cost impacts, for every possible portfolio of submitted bids.
- Developed probabilistic risk management model for market price forecasting, asset valuation and power supply cost analysis. Adapted and implemented the model in applications for Oglethorpe Power Corporation (OPC), Central Maine Power Company, Vermont Yankee Nuclear Power Corporation, Commonwealth Electric Company, and Connecticut Yankee Atomic Power Company. Analyses included forecasting market clearing energy and capacity prices, and estimating hedge values for retained capacity, new unit construction, power supply bids, and financial derivatives.
- Evaluated power supply proposals for short-term and long-term RFPs by OPC, directing and assessing PROMOD scenarios for alternative supply portfolios. Created and applied an independent price forecasting model and Monte Carlo analysis to evaluate risk profiles of supply alternatives.
- Provided analytical support for RFP design and portfolio evaluation in the Ireland 500 MW capacity procurement.
- Assisted the development and implementation of BG&E's solicitation of standard offer supply service. Estimated market energy and capacity prices in a 15-year forecast applying a proprietary linear programming/optimal system expansion model.
- Served as testifying expert and produced expert report for OPC in arbitration proceedings between OPC and LG&E Power Marketing (LG&E) regarding LG&E's valuation of coal supply contracts associated with a long-term power purchase and sale agreement.
- Evaluated the Public Service Company of Oklahoma's 2008 Supply Side RFP in support of testimony for a potential bidder. Assessed bid evaluation methodology, credit and collateral requirements, and implementation of debt equivalence adjustments.
- Managed the Data and Rate Design Committees and Backup Bidding Team for the annual auctions of New Jersey Basic Generation Service (BGS). Participated in development of auction process, rules and protocols, and regulatory filings. Directed bidder information procedures and auction Data Room Team. Conducted PJM wholesale market price assessment to determine starting prices for the descending clock auction.
- Conducted benefits analysis of proposed hydroelectric power plant development in New York State, including reliability benefits, environmental benefits and wholesale market price impacts.
- Directed economic analyses and produced white papers on the economic benefits of baseload generation from nuclear power plants on behalf of Exelon Corporation. Benefit analysis examined impacts on wholesale market prices, and peak hour power flow impacts. (Separate assignments for 5 nuclear plants: Oyster Creek, Limerick, TMI, Peach Bottom, and proposed restart of Zion).
- On behalf of Occidental Chemical Corporation, evaluated proposed changes to cost allocation methods in the Entergy production cost sharing mechanism, in support of testimony in FERC proceeding (Docket No. ER07-682-000). The evaluation estimated the impact on the individual Entergy operating companies and assessed compliance with regulatory accounting principles.

- Evaluated PJM proposals to modify OATT allocation of cost responsibility for transmission upgrades under the Regional Transmission Expansion Plan (RTEP), supporting testimony in FERC Docket EL07-57-000 (Consolidated).
- Advised the Ontario Power Authority in generator contract dispute arising from rule modifications by the Independent Electric System Operator (IESO). Provided assessment of background and intent of contract payment mechanisms and preliminary analysis of revenue impacts of rule changes on generator counterparties.
- Submitted testimony before FERC on behalf of the MPSC regarding Entergy Louisiana's proposal to allocate cancelation costs of the Little Gypsy Repower Project through the Entergy Service Agreement's rough production cost equalization mechanism.
- Developed forecast model of the CFE (Mexican electric utility) short-run cost of generation (CTCP) in support of the acquisition of a large scale wind project in Oaxaca, México. The model allowed for evaluation of potential project revenue impacts associated with increased gas-fired and renewable generation on the CFE system.
- As an advisor to a major capital finance entity, evaluated the project financial model for a proposed hydroelectric generation project in western Mexico. The model review considered representation of the renewable energy banking mechanism under Mexican energy regulation, representation of seasonal production and demand patterns, and the associated projection of profit and loss and debt service coverage of the life of the project.
- In support of a major wind farm development in Mexico conducted a due diligence review of the project PPA price model and its application in projecting project revenues. The evaluation addressed the representation of the renewable energy banking mechanism and the priority lists for allocating project energy and capacity to load centers, and consistency with the CFE interconnection agreement.
- Conducted detailed valuation analysis of qualifying facility (QF) hydro plants for New York State Electric & Gas Corporation (NYSEG), supporting settlement negotiations with plant owners. The analysis considered the value to NYSEG of buying out the contracts or assuming ownership under expected default by the plant owners.
- Conducted assessment of potential effects on wholesale markets and default service procurement of the proposed merger of Exelon Corp. and Constellation Energy Group Inc., in support of testimony submitted to the Maryland Public Service Commission on behalf of Commission Staff.
- Evaluated power market modeling employed by a party in a major supply contract litigation. Evaluated the party's application of PROMOD and MIDAS models used to value the transaction, and associated risk analyses used to assess value at risk (VaR). Identified substantive errors in inputs, contemporaneous market assumptions, risk analysis and economic inference.
- Conducted due diligence assessment of the financial modeling of off-taker PPA revenues for the 396MW Mareña wind power project in southern Mexico, including the representation of off-taker priority list weighting and energy banking under CRE renewable interconnection rules.
- Conducted valuations of all Central Maine Power (CMP) power plants, supporting negotiated sale of generation assets to FPL. Applied market price forecasts and extensive monte carlo analyses to examine multiple transaction scenarios, including the value of retaining hydroelectric facilities as a supply hedge during the transition to competition. FPL Energy agreed to pay \$845 million for all of CMP's non-nuclear generating assets.

- Produced power plant valuation of the TNP One lignite-fueled unit for Texas-New Mexico Power Company to support asset sale strategy as well as litigation with respect to stranded costs.
- Directed power market price forecasts for multiple clients, applying proprietary linear programming model to evaluate optimal capacity expansion for fuel price, demand growth and technology scenarios.
- Provided consulting assistance to the U.S. Department of Justice in defending claims related to spent nuclear fuel breach of contract in *Vermont Nuclear Power Corporation, and Entergy Nuclear Vermont Yankee, LLC et al., v. The United States* in the United States Court of Federal Claims (Nos. 02898C & 03-2663C) and *Portland General Electric Company et al., v United States of America* in the United States Court of Federal Claims (No. 04-0009C).
- Assessed the benefit-cost evaluation methods and assumptions applied to the 2010-12 energy efficiency plans in Massachusetts, for the Office of the Attorney General of Massachusetts.
- Conducted extensive analyses for a California IOU in refund proceedings related to the California energy crisis. Examined impacts of the calculation and application of mitigated market clearing prices (MMCPs) in the determination of refunds owed by generators selling into the California markets.
- For Baltimore Gas & Electric (BGE) testimony before the Maryland Public Service Commission, estimated rate impacts for alternative supply scenarios. Conducted power market analysis, estimation of wholesale market impacts on retail supply auction results, and self-build generation analysis.
- Managed a multi-disciplinary team in the development of a new pricing mechanism for liquid fuels in South Africa. The work, performed for the South African Department of Minerals and Energy, established pricing methods and regulatory accounts to ensure that fuel prices appropriately reflect costs, and enhance industry investment incentives.
- Estimated benefits of competition in electric markets through four empirical analyses, and quantified the dollar benefits to Maryland consumers of wholesale competition in PJM and state retail restructuring.
- Developed economic analysis of PJM transmission cost allocation proposals for merchant transmission entity. Supported testimony filed at FERC in Docket No. ER06-880-000, *et al.*
- Directed the evaluation of the benefit-cost ratio methodology used to validate energy efficiency measures in Massachusetts.
- Evaluated PJM price formation, demand responsiveness, and DR compensation proposals for comments submitted on FERC's ANOPR on "Wholesale Competition in Regions with Organized Electric Markets" (Docket Nos. RM07-19-000 and AD07-7-000).
- Performed strategic consulting work for BGE. Prepared expert testimony submitted in Maryland electric utility restructuring proceedings and consulted on utility regulatory strategy. Addressed market impact and economic rationale of competition policy, strategic aspects of asset disposition, stranded cost recovery, and retail access.
- Consulted on asset valuation alternatives and stranded cost recovery strategy, including the application of an auction appraisal of generation assets, for Niagara Mohawk Power Corporation.
- Directed study reviewing current methods of load profiling for retail settlement and energy imbalance services in the U.S. and Canada. The work was included in a series of load profiling studies for Japan's Ministry of Economy, Trade, and Industry.

- For ISO-NE, the NYISO and PJM Interconnection, in the evaluation of the proposed centralized resource adequacy model (CRAM): assessed capacity cost recovery for varied market conditions and implications for timing and frequency of capacity auctions.
- Conducted an analysis of reserve margin impacts on energy price volatility in the development of a power supply procurement process for Acquirente Unico, the Italian electric market single buyer.
- Directed analysis of optimal market hedge ratios by customer class for Dayton Power and Light. Analysis examined risk exposure due to price-driven customer migration under proposed retail access program.
- Produced pro forma valuation for the non-nuclear portion of the Connecticut Yankee nuclear site. Study considered unique site value and costs for a new generating plant, project financing costs, and the future competitive environment including market energy and capacity prices.
- Served as testifying expert on market modeling before the Massachusetts Department of Telecommunications and Energy on behalf of Commonwealth Electric. Testimony supported analysis of Commonwealth Electric's stranded costs and buyout options for legacy power purchase agreements.
- Directed new coal generation feasibility study for proposed investment in the Four Corners region of New Mexico. The analysis included market demand, competing supply, availability and cost of electrical transmission, cost and deliverability of coal, availability of water, and environmental concerns.
- Conducted a comprehensive review of the retail access experience in New England states. Developed state-by-state profiles that outlined the regulatory regime, transition period, standard-offer and default-service provisions. Evaluated end-user and supplier exposure to variable market prices.
- Provided consulting services to Niagara Mohawk Power Corporation on the modeling of transaction value for outsourcing standard offer service.
- Evaluated the competitive market of potential suppliers for PSE&G's auction of standard offer supply.
- Advised on the theoretic foundations of economic cost concepts and regulatory applications in avoided cost cases for a group of northeast electric utilities.
- Evaluated measures of competitiveness in present and future wholesale power markets and developed several models for use in assessing forward product prices for a large U.S. public power company.
- Participated in power purchase prudence analyses for PG&E, Nevada Power Company, Texas New Mexico Power Company, and Public Service Company of Colorado.

PROFESSIONAL EXPERIENCE

Prior to joining Bates White, Mr. Cain served as a Consultant at National Economic Research Associates (NERA). In this position, he conducted a variety of power sector analyses in NERA's energy practice. Mr. Cain also served as an Economist with Jones Lang Wootton USA, where he directed economic research and market analysis for a range of corporate clients. Previously, Mr. Cain was a Consultant with Apogee Research, where he conducted economic impact analyses, and participated in a variety of transportation and environmental economics consulting assignments.

EXPERT TESTIMONY

- On behalf of the United States, *Alabama Power Company and Georgia Power Company v. The United States*, in the U.S. Court of Federal Claims (No. 14-167C and No. 14-168C). Expert report.

- On behalf of the Electric Power Supply Association, *PJM Interconnection, L.L.C.*, Federal Energy Regulatory Commission (Docket No. ER18-1314-000). Affidavit.
- On behalf of the Staff of the Kansas Corporation Commission, *IMO the Petition of The Empire District Electric Company for Approval of Its Customer Savings Plan*, before the Kansas Corporation Commission (Docket No. 18-EPDE-184-PRE). Written testimony.
- On behalf of the Electric Power Supply Association, *Grid Reliability and Resilience Pricing*, Federal Energy Regulatory Commission (Docket No. RM18-1-000). Affidavit.
- On behalf of Calpine Corporation and NRG Energy, Inc., Application of Centerpoint Energy Houston Electric, LLC to Amend a Certificate of Convenience and Necessity for a Proposed 345-kV Transmission Line (...), Public Utility Commission of Texas (Docket No. 473-15-3595). Written testimony; live testimony at hearing.
- On behalf of Catalyst Paper Operations, Inc., *Catalyst Paper Operations Inc.*, Federal Energy Regulatory Commission (Docket No. ER15-794-002). Written testimony.
- On behalf of the Mississippi Public Service Commission, *Entergy Services, Inc.*, Federal Energy Regulatory Commission (Docket No. ER13-432-002). Written testimony; deposition testimony; live testimony at hearing.
- On behalf of Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and the State of California, *Pacific Gas and Electric Company and Southern California Edison Company v. The United States; San Diego Gas & Electric Company v. The United States*, in the U.S. Court of Federal Claims (No. 07-157C and No. 07-167C, Consolidated; No. 07184C). Written testimony; deposition testimony.
- On behalf of the Mississippi Public Service Commission, *Louisiana Public Service Commission v. Entergy Services, Inc., et al.*, before the Federal Energy Regulatory Commission, (Docket No. EL09-61-004). Written testimony; deposition testimony; live testimony at hearing.
- On behalf of the Mississippi Public Service Commission, *Louisiana Public Service Commission v. Entergy Services Inc., et al.*, before the Federal Energy Regulatory Commission (Docket Nos. ER12-1384, *et al.*). Written testimony; deposition testimony; live testimony at hearing.
- On behalf of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company, *Electric Refund Cases*, in the Superior Court of the State of California (Judicial Council Coordination Proceeding No. JCCP 4512). Written testimony; deposition testimony.
- On behalf of the Staff of the Kansas Corporation Commission, *IMO the Petition of Kansas City Power & Light Company for Determination of the Ratemaking Principles and Treatment that Will Apply to Recovery in Rates of the Cost to be Incurred by KCP&L for Certain Electric Generation Facilities Under K.S.A. 66-1239*, before the Kansas Corporation Commission (Docket No. 11-KCPE-581-PRE). Expert report; live testimony at hearing.
- On behalf of Constellation Energy Commodities Group, Inc., *The People of the State of Illinois, ex rel. Illinois Attorney General Lisa Madigan v. Exelon Generation Co., LLC, et al.*, before the Federal Energy Regulatory Commission (Docket No. EL07-47-000). Affidavit.
- On behalf of Oglethorpe Power Corporation, in contract dispute brought by LG&E Energy Corp. and LG&E Energy Marketing, Inc. (CPR Arbitration proceeding). Expert report; deposition testimony; live testimony.
- On behalf of Commonwealth Electric Company, *Petition of Cambridge Electric Light Company and Commonwealth Electric Company requesting approval of their Transition Charge Reconciliation Filing*, before the Massachusetts Department of Telecommunications and Energy (Docket No. DTE 99-90). Live testimony.

PUBLICATIONS AND PRESENTATIONS

- "Biodiesel Distribution in the US and Implications for RFS2 Volume Mandates," (July 2016).
- "Clean Energy Certificates: The Key to Renewable Energy Financing," with Nicolás Puga. Electricity Future Forum Mexico 2014 (November 2014).
- "Evaluation of the Entergy Mississippi Proposal to Join MISO," Report to the Mississippi Public Service Commission. (August 2012, Revised)
- "Beyond Loan Guarantees: Fostering U.S. Nuclear Investment in a Post-Fukushima World," with Glenn George. Conference paper and presentation, Center for Research in Regulated Industries 30th Annual Eastern Conference. Skytop, PA (May 2011).
- "Retail Rate Comparisons and the Electric Restructuring Debate," with Jonathan Lesser. Bates White briefing paper, 2008-E-11-01. (November 2008).
- "Economic and System Reliability Benefits of the Three Mile Island Generating Station," with Spencer Yang and Jonathan Lesser. White paper (April 2008).
- "Trends in Electricity Deregulation." Conference presentation at DTN/Meteorlogix Energy Summit. Minneapolis (June 2008).
- "A Common Sense Guide to Wholesale Electric Markets," with Jonathan Lesser. White paper (April 2007).
- "Utility Mergers: The Exelon-PSEG Merger." Workshop presentation, Market Power, Mergers, and Governance, Center for Research in Regulated Industries. Newark (January 2007).
- "The Fallacy of High Prices," with Howard Axelrod and David DeRamus. Public Utilities Fortnightly 144 (November 2006).
- "Nuclear Power in Future Electric Rate Cases." Conference presentation, Managing the Modern Utility Rate Case, Law Seminars International. Las Vegas (February 2006).
- "Applications of Probabilistic Price Modeling." Workshop presentation, Marginal Cost Working Group. Washington, DC (September 2004).
- "The 2004 BGS Auctions," Presentation to American PowerNet. PJM Interconnection, Norristown, PA (December 2003).
- "RTO Formation in the Central and Southeast United States." Presentation to Iberdrola S.A. Washington, DC (July 2003).
- "Risk Analysis in U.S. Power Markets." Presentation to Companhia Energetica de Pernambuco. New York (December 2000).