

**TODD SCHATZKI, PH.D.**  
**Principal**

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Dr. Schatzki is an economist with expertise in markets and regulated industries, particularly energy markets and regulation. Within the energy sector, his expertise includes market design, finance, competition, ratemaking, market impacts, and benefit-cost analysis in the electricity, natural gas, petroleum, and renewable energy sectors. Dr. Schatzki supports clients in a range of contexts, including regulatory and rulemaking proceedings, litigation, policy analysis, and strategic and financial advice.

His expertise in the electricity sector includes wholesale electricity market design; market conduct and competitive analysis; financial analysis, including valuation and cost of capital; utility regulation and ratemaking; economic analysis of new market rules, regulations, and infrastructure investments; and contract analysis and disputes. His clients include electricity system operators, market monitors, generation, transmission and distribution companies, government agencies, and non-government agencies. Dr. Schatzki has testified before US state and federal, as well as Canadian provincial, regulatory commissions. He has also provided testimony at bankruptcy court and arbitration.

Dr. Schatzki has worked extensively on environmental economics, policy, and regulation, with his recent work focusing on the intersection of climate policy and energy markets, and disputes involving water resources and environmental contamination. His research has been published in distinguished energy- and environment-related publications, and he has provided research for prominent organizations such as the Electric Power Research Institute, the Edison Electric Institute, and the Federal Energy Regulatory Commission.

## **EDUCATION**

- 1998            Ph.D., public policy, Harvard University  
Specialized fields: Microeconomics, econometrics, industrial organization, natural resources, and environmental economics
- Doctoral Fellow, Harvard University (1993–1995)
  - Crump Fellowship, Harvard University (1995–1996)
  - Pre-doctoral Fellow, Harvard Environmental Economics Program
- 1993            M.C.P., environmental policy and planning (urban studies and planning), Massachusetts Institute of Technology
- 1986            B.A., physics, Wesleyan University

## **PROFESSIONAL EXPERIENCE**

- 2005–Present    Analysis Group, Inc.  
*Principal*
- 2001–2005      LECG, LLC  
*Managing Economist*
- 1998–2001      National Economic Research Associates, Inc.  
*Senior Consultant*

1997–1998	Harvard Institute for International Development <i>Consultant</i>
1996–1997	Department of Economics, Harvard University <i>Teaching Fellow and Research Assistant</i>
1994	International Institute for Applied Systems Analysis (IIASA)
1992	Toxics Reduction Institute, University of Massachusetts
1987–1991	Tellus Institute <i>Research Associate</i>

## SELECTED CONSULTING AND LITIGATION EXPERIENCE

### Energy

- **Shell Energy North America**  
Analysis of cost of capital of merchant generation.
- **Talen Energy**  
Assessment of market, economic and ratemaking issues associated with co-location of generation and load.
- **Ameren Illinois**  
Analysis of economic and rate impacts to customers of existing transmission assets owned by GridLiance.
- **New York ISO**  
Demand curve reset for the New York ISO ICAP market including development of ICAP Demand Curve, financial parameters and after-tax weighted average cost of capital.
- **Ameren Transmission Company of Illinois**  
Analysis of the economic impact of the Northern Missouri Grid Transformation Program, a part of MISO's Long Range Transmission Planning portfolio.
- **Talen Energy**  
Estimation of the cost of service including cost of capital for two fossil-fired facilities for potential cost of service agreement.
- **Private equity firm**  
Assessment of potential transmission asset acquisition, including future investment potential, regulated return on capital, and market considerations.
- **Ameren Illinois and Ameren Transmission Company of Illinois**  
Analysis of the economic impact of the Central Illinois Grid Transformation Program, the Illinois portions of MISO's Long Range Transmission Planning portfolio.
- **Renewable fuel producer**  
Assessment of production, supply chain and input contract issues for a renewable fuel producer.
- **ISO New England**  
Assessment of prompt and seasonal capacity market approaches for New England's capacity market in light of region's grid resource transition.
- **ISO New England**  
Analysis of the cost of capital of new entry for the ISO New England Forward Capacity Market.
- **American Efficient**  
Evaluation of market impact associated with distributed energy resource businesses.

- **ISO New England**  
Assessment of the impact of wholesale market rule modifications on credit risks and financial assurance policy.
- **Xcel Energy**  
Evaluation of causes and potential remedies to growing system congestion, including transmission rights, interconnection and transmission planning market rules and procedures.
- **ISO New England**  
Updating rate and developing indexed rate approach for ISO New England's Inventoried Energy Program in light of volatile fuel markets.
- **ISO New England**  
Study of economic and market consequences of alternative policy approaches to future decarbonization of New England's electricity system.
- **Portland General Electric**  
Analysis of electricity trading.
- **Cheniere Energy**  
Analysis of life-cycle emissions associated with liquefied natural gas usage given substitution of existing energy sources.
- **Crescent Dunes Solar Energy Project**  
Analysis of economic issues associated with the future economic viability of the Crescent Dunes Solar Energy Projects.
- **New York ISO**  
Demand curve reset for the New York ISO ICAP market including development ICAP Demand Curve parameters, financial parameters and battery storage economic model.
- **Public Generating Pool and PacifiCorp**  
Develop a white paper evaluating mechanisms for the electricity sector to comply with zero-carbon emission requirements.
- **ISO New England**  
Assistance to market monitor in evaluating capacity market offers with respect to consideration of proposed Energy Security Improvements market rules changes.
- **Continental Buchanan**  
Analysis regarding contractual dispute over synthetic gypsum produced at coal-fired power generation facilities.
- **Singapore Electric Power Generators**  
Analysis of need for and design of proposed capacity market for Singapore's wholesale electric power market.
- **Ameren Missouri**  
Assessment of reliability and accuracy of evaluation, measurement and verification (EM&V) analysis of Ameren's energy efficiency programs performed by third-party consultant.
- **ISO New England**  
Assessment of the economic and operational impact of proposed Energy Security Improvements, market rule changes designed to address energy security concerns.
- **ISO New England**  
Assistance to market monitor in evaluating capacity market offers with respect to consideration of ISO New England's inventoried energy program.
- **Ameren Missouri**  
Assessment of economic issues associated with participation of baseload (coal-fired) power plants in RTO/ISO markets, including self-commitment and incremental energy offers.

- **ISO New England**  
Analysis of costs of securing energy inventory, including forward LNG contracts, for purposes of establishing the rate for ISO New England's inventoried energy program.
- **Capital Power**  
Analysis of design of proposed capacity market for Alberta, Canada.
- **New England Electricity Markets**  
Confidential analyses related to natural gas supply contracts, including contracts from liquefied natural gas terminals, and market rules to mitigate fuel security challenges.
- **Global Crude Oil Producer**  
Analysis of alternative approaches and contractual structures for marketing crude oil, including econometric analysis of customer price responsiveness.
- **New York ISO**  
Evaluation of performance issues associated with capacity market resources and potential changes to market designs.
- ***Merced v. Barclays***  
Analysis of alleged monopolization of western US electric power markets.
- **ISO New England**  
For the New England Power Pool (NEPOOL) 2016 Economic Analysis, analysis of Forward Capacity Market implications of alternative scenarios with varying assumptions about retirements and clean energy resources.
- **New England Electricity Markets**  
Confidential assessment of interactions between state policies affecting electric power resources, including long-term contracts, and wholesale electricity markets.
- ***FERC v. Barclays***  
Analysis of alleged manipulation of western US electric power exchange markets.
- **New York ISO**  
Demand curve reset for the New York ISO ICAP market including development annual updating process between resets and ICAP Demand Curve parameters.
- **Confidential Client**  
Analysis of factors contributing to assessment of fines associated with an operational incident in the context of a shareholder derivative suit.
- **ISO New England**  
Assessment of framework for evaluating capacity market offers from elective transmission projects for market mitigation.
- **Southwest Power Pool Power Suppliers**  
Analysis and testimony related to the types of costs are appropriately short-run marginal costs and thereby should be incorporated into energy market resource offers.
- **New York ISO**  
Evaluation of capacity market rule changes including a forward market structure and multi-year price lock-in, including quantitative economic analysis of changes in market outcomes under alternative market structures.
- **Ameren Missouri**  
Analysis of the economic impact of the Mark Twain Project, a new transmission project designed to support renewable energy requirements and other objectives (using PROMOD).
- **ISO New England**  
Assistance to the ISO New England market monitor in the development of a de-list offer model consistent with new market rules.

- **Zaremba v. Encana**  
Evaluate operating agreements, the structure of the oil and gas industry, and trends in gas pricing in regards to antitrust claims in the market for oil and gas leases.
- **ISO New England**  
Assistance in the development of winter fuel assurance programs for 2013/2014, 2014/2015 and 2015/2016, including oil inventory, dual fuel, liquefied natural gas and demand response programs
- **Ameren Transmission**  
Analysis of the impact of Multi Value Project No. 16, a new transmission project, on energy market competition in Illinois (using PROMOD).
- **Vancouver Energy**  
Assessment of economic impacts of a new energy distribution terminal, including change in economic activity, property value impacts, and changes in rail congestion.
- **ISO New England**  
Assessment of the economic costs associated with winter 2013/2014 reliability programs, including oil inventory, dual fuel, liquefied natural gas, and demand response programs.
- **ISO New England**  
Assessment of and testimony regarding the economic and reliability impacts of proposed capacity market rules introducing new performance incentives.
- **ITC Midwest**  
Analysis of and testimony regarding the LMP and production cost impacts of new transmission infrastructure (using PROMOD).
- **Entergy**  
Evaluation of economic damages associated with an alleged contract breach.
- **Ameren Transmission**  
Analysis of the impact of the Illinois River Project, a new transmission project, on energy market competition in Illinois (using PROMOD).
- **Dayton Power and Light**  
Evaluation of the aggregate benefits created by a proposed rate plan.
- **Corporation with Distribution Companies Across Multiple Jurisdictions**  
Regulatory assessment considering current ratemaking models, regulatory environment, and alternative ratemaking structures.
- **ISO New England**  
Assessment of the costs, feasibility, and effectiveness of technical options to securing fuel supply for gas-fired generators.
- **ISO New England**  
Assessment of reliability risks and potential market and regulatory solutions to electric-gas interdependencies.
- **Pacific Gas and Electric**  
Assessment of ratemaking issues, including cost of capital adjustments, associated with a gas pipeline safety plan.
- **Confidential Technology Company**  
Analysis of the regional economic impacts of a prototype biofuels production facility at two potential development sites (using the IMPLAN model).
- **ISO New England**  
Statistical analysis of the performance of resources responding to system contingencies.

- **Direct Energy**  
Assistance developing regulatory options for promoting retail competition in Pennsylvania, including development of customer service auctions.
- **ISO New England**  
Assistance developing design enhancements for the region's Forward Reserve Markets.
- **Confidential Client**  
Analysis of energy and capacity market implications of a potential asset agreement (using GE's Multi-Area Production Simulation Software).
- **Confidential Client**  
Analysis of fleet turnover decisions and outcomes (using GE's Multi-Area Production Simulation Software).
- **Confidential Regulated Utility**  
Development of a white paper on transmission planning and policy needed to support legislative and regulatory goals for renewable development.
- **Commonwealth Edison**  
Analysis of appropriate ratemaking tools (cost of equity adjustment) in light of energy efficiency program requirements.
- **New England Power Generators Association**  
Analysis of impacts of proposed electric power company merger.
- **Confidential Technology Company**  
Development of a quantitative model of energy savings associated with end-use technological modifications.
- ***In the Matter of Current and Future Conditions of Baltimore Gas and Electric Company***  
Analysis of financial and credit implications of the sale of a portion of power generation assets.
- **National Grid**  
Development of an internal white paper assessing the potential for alternative ratemaking tools to mitigate multiple utility capital, load, and service challenges.
- **EDF Group**  
Analysis of financial and credit implications of the sale of a portion of power generation assets.
- **Niagara Mohawk**  
Assistance developing ratemaking plans including revenue decoupling and associated revenue adjustments.
- **New England States Committee on Electricity**  
Technical support and analysis related to design of regulations and wholesale electricity markets to achieve resource adequacy.
- **Rhode Island Energy (National Grid)**  
Assistance developing ratemaking plans including revenue decoupling and associated revenue adjustments.
- **Massachusetts Electric (National Grid)**  
Assistance developing ratemaking plans including revenue decoupling and associated revenue adjustments.
- **NARUC and FERC**  
Analysis of "best practices" in state policies for competitive procurement of retail electricity supply.
- **New York ISO**  
Analysis of single-clearing-price versus pay-as-bid market designs.

- **Confidential System Operator**  
Analysis of metrics for characterizing the economic value provided by regional transmission organizations.
- **TransCanada**  
Assessment of regulatory and finance issues involved in fuel adjustment clauses within long-term standard offer service contracts.
- **New York ISO**  
Analysis of market implications of fuel diversity issues.
- ***Vitol S.A. Inc. vs. BP Products North America, Inc.***  
Analysis of damages from breach of commodity swap contract (petroleum).
- **Confidential**  
Analysis of alleged exercise and extension of market power in a wholesale electricity market, including statistical analysis of spot and real-time electricity markets and statistical modeling of outages using hazard model methods to examine potential physical withholding.
- **Confidential**  
Financial and strategic analysis of gas supply contracting alternatives.
- **Confidential**  
Analysis of value of generating assets using real options analysis.
- **Confidential**  
Statistical analysis of prices in the spot and forward markets using time-series methods for an energy trading firm in a federal proceeding related to the reasonableness of the terms of certain forward market contracts.
- **Confidential**  
Financial and strategic analysis of renewable generation technologies.

## Environment

- **Western States Petroleum Association**  
Analysis of the design and initial performance of Washington GHG cap-and-trade market rule, particularly with regard to linkage and cost containment provisions.
- ***Koch Industries, Inc. and Koch Supply & Trading, LP v. Government of Canada***  
Evaluation of market design, market participant, policy issues and compensation associated with termination of Ontario's GHG cap-and-trade program.
- **Economic Impact of Lotusland Resort Development**  
Analysis of the employment, income and tax benefits of a new resort development in Napa Valley, California.
- **Novartis**  
Evaluation of global greenhouse gas emission impacts associated with alternative asthma treatments and greenhouse gas emission impacts of asthma exacerbations.
- **California State Auditor**  
Assist the Auditor in its assessment of GHG-related transportation regulation and program evaluations performed by the California Air Resources Board.
- **Western States Petroleum Association**  
Analysis of approaches to transitioning to long-run efficient climate policies.
- **Western States Petroleum Association**  
Analysis of the implications of a GHG cap-and-trade market rule for other climate policies for the state of Oregon.
- **Greater Boston Real Estate Board**

Development of a white paper evaluating mandatory residential energy labeling/benchmarking policies.

- **Western States Petroleum Association**  
Analysis of key changes to California's GHG cap-and-trade market rule for the 2021–2030 compliance period.
- ***Florida v. Georgia***  
Analysis of economic issues related to current and proposed alternative apportionment of water between the states of Florida and Georgia before the US Supreme Court.
- **Western States Petroleum Association and Chevron**  
Analysis of key regulatory issues in the design of California's GHG cap-and-trade system for the 2021–2030 period
- ***New Jersey DEP v. Occidental Chemical Corp., et al.***  
One behalf of Maxus, assessment of reliability of analyses and conclusions reached regarding settlement of claims related to environmental contamination.
- **Chevron**  
Development of a white paper on post-2020 climate policy for California.
- ***C&A Carbone v. County of Rockland***  
Support of expert testimony regarding a violation of the dormant commerce clause.
- ***New Jersey DEP v. ExxonMobil***  
Assessment of methods for valuation of environmental contamination.
- **American Petroleum Institute**  
Assessment of issues related to the impact of changes to National Ambient Air Quality Standard Requirements on oil and gas exploration and production.
- **Greater Boston Real Estate Board**  
Development of a white paper on mandatory building energy labeling/benchmarking policies.
- **Little Hoover Commission**  
Analysis of the economic and environmental consequences of a local climate policy plan implemented in the context of a state-wide cap-and-trade system.
- **Exelon**  
Analysis of the economic and market consequences of EPA's Clean Air Transport Rule.
- **Chevron**  
Assessment of lessons learned from federal requirements for regulatory review for the potential development of state requirements.
- **Western States Petroleum Association and Chevron**  
Regulatory support and analysis related to climate policy in California, including submission of various comments and reports to the Air Resources Board.
- **Honeywell**  
Analysis of proposed limits on HFC consumption under domestic climate policy.
- **Electric Power Research Institute**  
Analysis of three 2006 studies on the economic impact of meeting the California carbon emissions reduction targets (in the California Global Warming Solutions Act of 2006).
- **Confidential**  
Analysis of alleged monopolization of energy price indices.
- **Mirant**  
Analysis of long-term contracts for electricity supply entered into following the California Electricity Crisis.

- **Confidential**  
Assessment of various policy issues in the design of national climate change policies, including market-based policies, approaches to cost containment, offset projects, and non-CO<sub>2</sub> GHGs.
- **Confidential**  
Quantitative analysis of the impacts for technology, consumers, and asset owners of a market-based domestic climate policy.
- **Toyota**  
Analysis of the economic value of emissions for a major auto manufacturer associated with alleged non-compliance with emissions control requirements.
- **Barajas Airport**  
Evaluation of the regional economic impacts of runway expansions at the Barajas airport in Spain.

#### **Finance and Commercial Damages (Non-Energy)**

- ***K.C. Company, Inc. v. Pella Corp.***  
Assessment the business structure of a potential regional distributor for consistency with the distribution system and strategy.
- ***Todd J. Mortier et al. v. LivaNova USA, Inc.***  
Analysis of economic framework for medical device investments and strategic and economic considerations related to investment in certain heart valve replacement technologies.
- ***Anderson, et al. v. American Family Insurance***  
Analysis of reliability of methodologies to estimate diminution in property value associated with remediated property damage.
- **Confidential Client**  
Support during settlement, including analysis of factors contributing to assessment of fines associated with an operational incident in the context of a shareholder derivative suite.
- ***Becarra, et al. v. The Argentine Republic***  
Analysis of bond pricing, transactions, and holdings related to default of sovereign bonds.
- ***Capital One Financial v. Commissioner of Internal Revenue***  
Analysis of transfers between financial institutions within credit card networks.
- **Confidential Client**  
Analysis of the impact of product taxes on firm market shares related to determination of payments under a settlement agreement.
- ***Kourosch A. Dastgheib v. Genentech***  
Analysis of damages related to breached contract and appropriation of trade secrets in the development of a pharmaceutical product.
- **Confidential Client**  
Analysis of allegations regarding mutual fund day trading, including analysis of trading patterns and calculation of dilution.

#### **Antitrust (including Financial Markets)**

- ***City of Philadelphia, et al. v. Bank of Am. Corp., et al.***  
Analysis of alleged manipulation of variable rate demand obligation market.
- ***Nypl et al. v. JPMorgan Chase & Co., et al.***  
Analysis of impact of alleged manipulation of foreign exchange benchmarks on retail transactions.
- **BlackRock**  
Analysis of potential impact of common ownership on competition, including econometric analysis of such impacts in the commercial airline industry.

- ***Allianz Global Investors GmbH et al. v. Bank of America Corporation et al.***  
Analysis of economic issues associated with alleged manipulation of foreign exchange benchmarks.
- ***Central Garden & Pet v. Monsanto***  
Estimation of damages associated with an alleged monopolization and foreclosure resulting from a distribution agreement.
- ***In re: Vitamins Antitrust Litigation***  
In a price-fixing case across multiple markets in the pharmaceutical industry, estimated overcharges and cartel periods based on a time-series analysis of price data.
- **Confidential Retail Consumer Product Company**  
Analysis of multiple antitrust claims (including foreclosure, monopolization, and vertical restraints) related to an alleged collusive distribution arrangement.
- ***Michlin Diazo Products v. Oce-USA and Oce Printing Systems***  
Analysis of alleged tying of aftermarket products and the provision of service, including evaluation of the alleged tie, competitive effects, and damages.
- **Confidential Petrochemical Company**  
Analysis of liability, timing, geographic scope, and damages issues for a petrochemical company facing potential price-fixing charges by the Department of Justice (DOJ) and private parties.
- **Confidential Scientific Equipment Company**  
Analysis of tying, monopolization, and patent abuse claims involving a patent licensing scheme for process and instrument patents.
- ***Endobionics, Inc. v. Medtronic, Inc.***  
Analysis of foreclosure, attempted monopolization of innovation markets, and damages claims arising from the termination of an investment/licensing agreement.
- **Confidential Scientific Equipment Company**  
Estimation of damages related to alleged invalid patents and tying of products to patent rights associated with a process patent.

## TESTIMONY AND OTHER FILINGS

- **Testimony**  
*Federal Energy Regulatory Commission, Docket No. EL02-60-015, 018, EL02-62-014, 017, on behalf of Shell Energy North America*  
February 4, 2025
- **Supplemental Affidavit**  
*Federal Energy Regulatory Commission, Docket No. ER25-596-000, New York Independent System Operator, ICAP Demand Curve Reset Proposal*  
January 3, 2025
- **Affidavit**  
*Federal Energy Regulatory Commission, Docket No. ER25-596-000, New York Independent System Operator, ICAP Demand Curve Reset Proposal*  
November 29, 2024
- **Declaration**  
*Federal Energy Regulatory Commission, Docket No. ER24-2172-000, Amendment to ISA, Susquehanna Nuclear*  
September 24, 2024
- **Rebuttal Testimony on Behalf of Ameren Illinois Company**  
*Illinois Commerce Commission, Docket No. 23- 0061, GridLiance Heartland LLC Application for Certificate of Public Convenience and Necessity*  
August 26, 2024

- **Direct Testimony on Behalf of Ameren Transmission Company of Illinois**  
*Missouri Public Service Commission, File No. EA-2024-0303, Application for Certificate of Convenience and Necessity*  
July 9, 2024
- **Direct Testimony on Behalf of Ameren Illinois Company**  
*Illinois Commerce Commission, Docket No. 23- 0061, GridLiance Heartland LLC Application for Certificate of Public Convenience and Necessity*  
June 17, 2024
- **Testimony on Behalf of Talen Energy Company**  
*Federal Energy Regulatory Commission, Docket No. ER24- 1790-000, Brandon Shores LLC, Continuing Operations Rate Schedule*  
April 18, 2024
- **Testimony on Behalf of Talen Energy Company**  
*Federal Energy Regulatory Commission, Docket No. ER24-1787-000, H.A. Wagner LLC, Continuing Operations Rate Schedule*  
April 18, 2024
- **Affidavit on Behalf of the New England Independent System Operator**  
*Federal Energy Regulatory Commission, Docket No. ER24-1407-000, Revisions to ISO New England Tariff to Further Delay the Nineteenth Forward Capacity Auction*  
April 5, 2024
- **Direct Testimony on Behalf of Ameren Illinois and Ameren Transmission Company of Illinois**  
*Illinois Commerce Commission, Docket No. 24-0088, Application for Certificate of Public Convenience and Necessity*  
February 5, 2024
- **Affidavit on Behalf of the New England Independent System Operator**  
*Federal Energy Regulatory Commission, Docket No. ER24-401-000, Targeted Adjustments to Certain Forward Capacity Market Parameters to Reflect the Minimum Offer Price Rule Elimination, Analysis of the After-Tax Weighted Average Cost of Capital of New Entry for the ISO New England Forward Capacity Market*  
November 15, 2023
- **Declaration on Behalf of American Efficient, et al.**  
*Federal Energy Regulatory Commission, Declaration in Response to Preliminary Findings*  
September 5, 2023
- **Testimony on Behalf of ISO New England**  
*Federal Energy Regulatory Commission, Docket No. ER23-1588-000, Revisions to Update the Inventoried Energy Program*  
April 7, 2023
- **Testimony**  
*In re: Tonopah Solar Energy LLC, Case No. 20-11884 (KBO), in the U.S. Bankruptcy Court for the District of Delaware*  
November 20, 2020
- **Affidavit on Behalf of the New York Independent System Operator**  
*Federal Energy Regulatory Commission, Docket No. ER21-502-000, 2021-2025 ICAP Demand Curve Reset Proposal*  
November 18, 2020
- **Affidavit on Behalf of the New England Independent System Operator**  
*Federal Energy Regulatory Commission, Docket No. EL18-182-000, Filing of Energy Security Improvements*  
April 14, 2020

- **Expert Report**  
*Continental Buchanan, LLC v. GenOn Mid-Atlantic LLC*, American Arbitration Association, Case No. 01-19-0002-8683  
April 3, 2020.
- **Testimony on Behalf of Ameren Missouri**  
*Missouri Public Service Commission, Case No. ER-2019-0335*, Regarding Unit Commitments and Unit Offers  
January 21, 2020
- **Testimony (Additional Evidence) on Behalf of Capital Power**  
*Alberta Utilities Commission, Proceeding No. 23757*, Regarding the Design for Alberta's Capacity Market, April 4, 2019
- **Testimony on Behalf of ISO New England**  
*Federal Energy Regulatory Commission, Docket No. ER19-1428-000*, Inventoried Energy Program  
March 25, 2019
- **Testimony (Evidence) On Behalf of Capital Power**  
*Alberta Utilities Commission, Proceeding No. 23757*, Regarding Design for Alberta's Capacity Market  
February 28, 2019
- **Direct Testimony on Behalf of Ameren Transmission Company of Illinois**  
*Missouri Public Service Commission, Case No. EA-2017-0345*, Application for Certificate of Convenience and Necessity  
September 14, 2017
- **Supplemental Affidavit on Behalf of New York Independent System Operator**  
*Federal Energy Regulatory Commission, Docket No. ER17-386-000*, ICAP Demand Curve Reset Proposal  
December 21, 2016
- **Affidavit on Behalf of New York Independent System Operator**  
*Federal Energy Regulatory Commission, Docket No. ER17-386-000*, Proposed ICAP Demand Curve and Parameters for Annual Updates  
November 18, 2016
- **Testimony and Pre-Filed Testimony on Behalf of Vancouver Energy**  
*Washington Energy Facilities Site Evaluation Council, Case No. 15-001*  
May 2016
- **Surrebuttal Testimony on Behalf of Ameren Transmission Company of Illinois**  
*Missouri Public Service Commission, Case No. EA-2015-0146*  
November 16, 2015
- **Affidavit on Behalf of Joint Filing Group, Southwest Power Pool**  
*Federal Energy Regulatory Commission, Docket No. ER15-2268-000*  
August 31, 2015
- **Direct Testimony on Behalf of Ameren Transmission Company of Illinois**  
*Missouri Public Service Commission, Case No. EA-2015-0146*  
May 29, 2015
- **Rebuttal Testimony on Behalf of Ameren Transmission Company of Illinois**  
*Illinois Commerce Commission, Docket No. 14-0514*  
March 5, 2015
- **Rebuttal Testimony on Behalf of MidAmerican Transmission Company**  
*Illinois Commerce Commission, Docket No. 14-0494*  
March 5, 2015

- **Direct Testimony on Behalf of Ameren Transmission Company of Illinois**  
*Illinois Commerce Commission, Docket No. 14-0514*  
August 21, 2014
- **Direct Testimony on Behalf of MidAmerican Transmission Company**  
*Illinois Commerce Commission, Docket No. 14-0494*  
August 4, 2014
- **Rebuttal Testimony on Behalf of ITC Midwest LLC**  
*Minnesota Public Utilities Commission, Docket No. CN-12-1053*  
April 25, 2014
- **Direct Testimony on Behalf of ITC Midwest LLC**  
*Minnesota Public Utilities Commission, Docket No. CN-12-1053*  
February 24, 2014
- **Testimony on Behalf of ISO New England**  
*Federal Energy Regulatory Commission, Docket No. ER14-1050-001*  
February 12, 2014
- **Affidavit on Behalf of ISO New England, Performance Incentives Market Rule Changes**  
*Federal Energy Regulatory Commission, Docket No. ER14-1050-001*  
January 14, 2014
- **Comments Regarding AB 32 Cap-and-Trade Program Amendments Related to Allowance Allocations (with Robert N. Stavins)**  
*California Air Resources Board*  
August 2013
- **Comments Regarding on the Proposed Regulation to Implement the AB 32 Cap-and-Trade Program (with Robert N. Stavins)**  
*California Air Resources Board*  
August 2011
- **Comments Submitted to the Little Hoover Commission’s Study of Regulatory Reform in California (with Robert N. Stavins)**  
January 2011
- **Comments Regarding on the Proposed Regulation to Implement the AB 32 Cap-and-Trade Program**  
*California Air Resources Board*  
December 2010
- **Comments Regarding Cost Containment Provisions of Preliminary Draft Cap-and-Trade Regulation**  
*California Air Resources Board*  
July 2010
- **Comments Regarding the Draft Report “Allocating Emissions Allowances Under California’s Cap-and-Trade System” (with Robert N. Stavins)**  
*Economics and Allocation Advisory Committee, California Air Resources Board*  
December 1, 2009

## ARTICLES AND PAPERS

“Impact of Choice of Inhalers for Asthma Care on Global Carbon Footprint and Societal Costs: A Long-term Economic Evaluation,” with Kponee-Shovein, K., et al, *Journal of Medical Economics*, 25(1):940-953, 2022.

- “Carbon footprint and associated costs of asthma exacerbation case amount UK adults,” with Kponee-Shovein, K., et al, *Journal of Medical Economics*, April 26, 2022.
- “Transitioning to Long-Run Effective and Efficient Climate Policies”, with Robert Stavins and Rebecca Scott, The Harvard Project on Climate Agreements, Discussion Paper 19-94, April 2019.
- “GHG Cap-and-Trade: Implications for Effective and Efficiency Climate Policy in Oregon,” with Robert N. Stavins, The Harvard Project on Climate Agreements, Discussion Paper 18-92, November 2018.
- “Key Issues Facing California’s GHG Cap-and-Trade System for 2021-2030,” with Robert N. Stavins, M-RCBG Faculty Working Paper 2018-02, Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School, July 2018.
- “Beyond AB 32: Post-2020 Climate Policy for California,” with Robert N. Stavins, Regulatory Policy Program, Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School, January 2014.
- “Three Lingering Design Issues Affecting Market Performance in California’s GHG Cap-and-Trade Program,” with Robert N. Stavins, Regulatory Policy Program, Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School, January 2013.
- “Using the Value of Allowances from California’s GHG Cap-and-Trade System,” with Robert N. Stavins, Regulatory Policy Program, Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School, August 27, 2012.
- “Implications of Policy Interactions for California’s Climate Policy,” with Robert N. Stavins, Regulatory Policy Program, Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School, August 27, 2012.
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- “California’s Cap-and-Trade Decisions,” *Forbes.com*, August 19, 2010.
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- “Pay-as-Bid vs. Uniform Pricing: Discriminatory Auctions Promote Strategic Bidding and Market Manipulation,” with Susan F. Tierney and Rana Mukerji, *Public Utilities Fortnightly*, March 2008.
- “Free Greenhouse Gas Cuts: Too Good to Be True?” with Judson Jaffe and Robert Stavins, VoxEU.org, January 3, 2008.
- “Too Good to Be True? An Examination of Three Economic Assessments of California Climate Change Policy,” with Robert N. Stavins and Judson Jaffe, AEI-Brookings Joint Center for Regulatory Studies, Related Publication 07-01. Jan 2007.
- “Options, Uncertainty and Sunk Costs: An Empirical Analysis of Land Use,” *Journal of Environmental Economics and Management*, Vol. 46, p. 86-105, 2003.
- “The database on the economics and management of endangered species (DEMES),” with David Cash, Andrew Metrick, and Martin Weitzman, in *Protecting Endangered Species in the United States: Biological Needs, Political Realities, Economic Choices*. Cambridge University Press, 2001.
- “The Issue of Climate,” *Fundamentals of the Global Power Industry, Petroleum Economist*, 2000.
- “Review of “Sustainable Cities: Urbanization and the Environment in International Perspective,” *Environmental Impact Assessment Review*, (Vol. 12, No, 4), 1993.
- “Bottle Bills and Municipal Recycling,” *Resource Recycling*, June 1991.

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*Co-Located Load, Market, Economic and Rate Implications*, prepared for Talen Energy, with Joseph Cavicchi, Megan Accordino, October 2024.

*Study to Establish New York ICAP Demand Curve Parameters for the 2025/2026 through 2028/2029 Capability Years - Final Report*, prepared for the New York Independent System Operator, Hibbard, P., Schatzki, T., Cavicchi, J., Wu, C. and Stuart, D., September 2024.

*Capacity Market Alternatives for a Decarbonized Grid: Prompt and Seasonal Markets*, prepared for ISO New England, with Joseph Cavicchi, Phillip Ross, January 2024.

*Pathways Study, Evaluation of Pathways to a Future Grid*, prepared for ISO New England, with Llop C., et al., April 2022.

*Study to Establish New York ICAP Demand Curve Parameters for the 2021/2022 through 2024/2025 Capability Years - Final Report*, prepared for the New York Independent System Operator, Hibbard, P., Schatzki, S. Wu, C. and Llop, C., September 9, 2020.

*Energy Security Improvements Impact Assessment*, prepared for ISO New England, with Llop, C., Wu, C., and Spittle, T., April 2020.

*Achieving Western States Greenhouse Gas (GHG) Reduction Objectives: Least-Cost Compliance in a Constantly Evolving Policy Environment*, with Joseph Cavicchi, prepared for the Public Generating Pool and PacifiCorp, August 2020.

*Capacity Resource Performance in NYISO Markets, An Assessment of Wholesale Market Options*, with Hibbard, P. and Bolthrunis, S., prepared for the New York Independent System Operator, October 2017.

*Capacity Market Impacts and Implications of Alternative Resource Expansion Scenarios, An Element of the ISO New England 2016 Economic Analysis*, with Llop, C., prepared for ISO New England, July 3, 2017.

*Study to Establish New York Electricity Market ICAP Demand Curve Parameters*, with Hibbard, P., Aubuchon, C., Berk, E., and Llop, C., prepared for the New York Independent System Operator, June 2016.

*NYISO Capacity Market: Evaluation of Options*, with Hibbard, P., Aubuchon, C., and Wu, C., prepared for the New York Independent System Operator, May 2015.

*Assessment of the Impact of ISO-NE's Proposed Forward Capacity Market Performance Incentives*, with Hibbard, P., prepared for ISO New England, September 2013.

*LMP Impacts of Proposed Minnesota-Iowa 345 kV Transmission Project: Supplemental Analysis*, with Frame, R. and Darling, P., Appendix M, ITC Midwest LLC, Application to the Minnesota Public Utilities Commission for a Certificate of Need, Docket No. ET6675/CN-12-1053, April 9, 2013.

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*Analysis of Reserve Resources: Activation Response following Contingency Events*, prepared for ISO New England, May 29, 2012.

*Economic and Environmental Implications of Allowance Benchmark Choices*, with Stavins, R., prepared for the Western States Petroleum Association, October 2011.

*Next Steps for California Climate Policy II: Moving Ahead under Uncertain Circumstances*, with Stavins, R., prepared for the Western States Petroleum Association, April 2010.

*Options for Addressing Leakage in California's Climate Policy*, with Borck, J. and Stavins, R., prepared for the Western States Petroleum Association, February 2010.

*Addressing Environmental Justice Concerns in the Design of California's Climate Policy*, with Stavins, R., prepared for the Western States Petroleum Association and the AB 32 Implementation Group, November 2009.

*Next Steps for California with Federal Cap-and-Trade Policy On the Horizon*, with Stavins, R. and Borck, J., prepared for the Western States Petroleum Association, July 2009.

*Evolving GHG Trading Systems Outside Its Borders: How Should California Respond?* with Stavins, R. and Borck, J., prepared for the Western States Petroleum Association, July 2009.

*Competitive Procurement of Retail Electricity Supply: Recent Trends in State Policies and Utility Practices*, with Tierney, S., prepared for the National Association of Regulatory Utility Commissioners in collaboration with the Federal Energy Regulatory Commission, July 2008.

*Uniform Pricing versus Pay-as-bid: Does it Make a Difference?* with Tierney, S. and Mukerji, R., prepared for the New York Independent System Operator, March 2008.

*Prospects for the U.S. Nuclear Industry*, coauthor, prepared for a major Japanese electric power company, January 2001.

*Costs and Benefits of Fish Protection Alternatives at Mercer Generating Station*, with Harrison, D. and Lovenheim, M., prepared for Public Service Enterprise Group, September 2000.

*Economic Evaluation of EPA's Proposed Rules for Cooling Water Intake Structures for New Facilities*, with Harrison, H., prepared for the Utility Water Act Group, November 2000.

*The Impacts of Revised Salem Refueling Schedules on the Wholesale and Retail Electric Market*, with Harrison, D. and Meehan, G., prepared for Public Service Enterprise Group as a filing to New Jersey Department of Environmental Protection, September 2000.

*Setting Baselines for Greenhouse Gas Credit Trading Programs: Lessons from Experience with Environmental and Non-Environmental Program*, with Harrison, D., Electric Power Research Institute Report #1000147, December 2000.

*Fueling Electricity Growth for a Growing Economy, Background Paper*, with Harrison, D., prepared for the Edison Electric Institute, July 2000.

*Energy-Environment Policy Integration and Coordination Study (E-EPIC) Phase 2 Executive Report*, contributor, Electric Power Research Institute, Technical Report 1000097, December 2000.

*Economic Evaluation of Alternative Revised Refueling Outage Schedules for Salem Power Plant*, with Harrison, D. and Murphy, J., prepared for Public Service Electric and Gas Company as a filing to New Jersey Department of Environmental Protection, July 2000.

*Critical Review of "Economic Impacts of On Board Diagnostic Regulations"*, with Harrison, D. and Chamberlain, S., prepared for Alliance of Automobile Manufacturers, January 2000.

*Costs and Benefits of Alternative Revised Refueling Outage Schedules*, with Harrison, D. and Murphy, J., prepared for Public Service Electric and Gas Company, July 1999.

*Costs and Benefits of Fish Protection Alternatives at the Salem Facility*, with Harrison, D. and Murphy J., prepared for Public Service Electric and Gas Company as a filing to New Jersey Department of Environmental Protection, March 1999.

*Energy-Environment Policy Integration and Coordination Study (E-EPIC) Phase 1 Executive Report*, contributor, Electric Power Research Institute, February 1999.

*Economic Benefits of Barajas Airport to the Madrid Region and the Neighboring Communities*, with Harrison, D., Garcia-Cobos J., and Rowland, D., prepared on behalf of the Spanish Government, January 1999.

*Costs and Benefits of Alternatives for Modifying Cooling Water Intake at the Hudson Facility*, with Harrison, D., Rowland, D., and Murphy, J., prepared for Public Service Electric and Gas Company, November 1998.

*Disposal Cost Fee Study*, with Ackerman, F., McClain, G., Peters, I., and Schall, J., prepared for the California Integrated Waste Management Board, 1991.

*The Marginal Cost of Handling Packaging Materials in the New Jersey Solid Waste System*, with Schall, J., prepared for The Council of State Governments and the New Jersey Department of Environmental Protection, 1990.

*Energy Implications of Alternative Solid Waste Management Systems*, with Becker, M., and White, A., prepared for the Northeast Regional Biomass Program, Coalition of Northeastern Governors Policy Research Center, 1990.

## **WORKING PAPERS**

*Reassessing Common Ownership: Corrections to Azar, Schmalz, and Tecu*, with Mark Eglund, Owen Hearey, and Channing Verbeck, October 2, 2019.

*Quality and Quantity: Alternatives for Addressing Reliability Concerns from Shifting Resource Mixes*, June 23, 2014.

*Reliability and Resource Performance*, May 16, 2012.

*Can Cost Containment Raise Costs? Allowance Reserves in Practice*, March 2012.

*Generation Fleet Turnover in New England: Modeling Energy Market Impacts*, with Paul Hibbard, Pavel Darling, and Bentley Clinton, June 2011.

*A Hazard Rate Analysis of Mirant's Generating Plant Outages in California*, with William Hogan and Scott Harvey, presented at the IDEI Conference on Competition and Coordination in the Electricity Sector, Toulouse, France, January 16–17, 2004.

*The Pollution Control and Management Response of Thai Firms to Formal and Informal Regulation*, with Theodore Panayotou, 1999.

*Differential Industry Response to Formal and Informal Environmental Regulations in Newly Industrializing Economies: The Case of Thailand*, with Theodore Panayotou and Qwanruedee Limvorapitak, presented at Harvard Institute for International Development 1997 Asia Environmental Economics Policy Seminar, Bangkok, Thailand, February 1997.

*The Effects of Uncertainty on Landowner Conversion Decisions*, John F. Kennedy School of Government, Center for Science and International Affairs, Environment and Natural Resources Program, Discussion Paper 95-14, December 1995.

## **SELECTED PRESENTATIONS**

“Effects of Technology Shifts on Power Markets, System Operations, and Customers,” Energy Bar Association, Annual Meeting, April 2024.

“Making Wholesale Electricity Markets Work for Clean Energy Transition,” Renewable Energy Markets, September 20, 2023.

“Pathways Study: Evaluation of Pathways to a Future Grid for New England,” Restructuring Roundtable, June 10, 2022.

“The Transmission Evolution: The Role of Transmission in Supporting Clean and Carbon-Free Initiatives,” 2021 Energy Bar Association Western Chapter Annual Meeting, February 25, 2021.

“Achieving Western States Greenhouse Gas (GHG) Reduction Objectives: Effective, Least-Cost Compliance in a Constantly Evolving Policy Environment,” Washington CETA Markets Work Group, August 28, 2020.

“Market Implications of Evolving “Cleaner”, “Greener” Resource Mixes,” 2020 Energy Bar Association Midwest Chapter Annual Meeting, March 10, 2020.

“Regional Generation Trends – State Policy Drivers and Responses,” EBA Energizer, Energy Bar Association, Power Generation and Marketing Subcommittee, December 3, 2019.

“Cost Containment – Which Cap-and-Trade Features Matter Most?” Climate Forum on California’s Cap-And-Trade Program, International Emissions Trading Association, Carbon Market Compliance Association, Latham and Watkins, LLC, September 19, 2018.

“Northeast Power Markets Outlook: Addressing the Capacity and Reliability Crunch” and “Natural Gas: Cross-Border Trade, Market Dynamics, and Infrastructure Woes,” EUCI 4TH Annual US Canada Cross-Border Energy Summit, March 12–13, 2018.

“Implications of the Expansion of “Non-Traditional” Resources for the Northeast Power Markets,” Northeast Energy and Commerce Association’s Power Markets Conference, November 14, 2017.

“The FERC’s Anti-Market Manipulation Rule: Trends and Developments,” webinar, The Knowledge Group, April 12, 2017.

“State Policy and Wholesale Power Markets: Emerging Issues Across the Markets,” Northeast Energy and Commerce Association, Power Markets Conference, November 1, 2016.

“Net Metering,” workshop, EUCI, Residential Demand Charges, October 20, 2016.

“Evaluating Carbon Risk Measures Under Policy Uncertainty,” workshop, EUCI U.S./Canada Cross-Border Power Summit, March 14–15, 2016.

“Implications of Policy Initiatives for Wholesale Markets,” Northeast Energy and Commerce Association, Power Markets Conference, November 17, 2015.

“The Western United States’ Impact On Global Climate Change Policy,” 2015 WSPA Issues Conference, September 30, 2015.

“Capacity Performance (and Incentive) Reform” and “Out of Market Actions,” EUCI Conference: Capacity Markets: Gauging Their Real Impact on Resource Development & Reliability, August 31–September 1, 2015.

“California Climate Goals for 2030 to 2050,” California Council on Environmental and Economic Balance, Summer Issues Seminar, July 14, 2015.

“Local and Regional Climate Protection Efforts,” California Council on Environmental and Economic Balance, Summer Issues Seminar, July 14, 2015.

“Current Regional Transmission Planning and Issues in New England,” Law Seminar International Transmission in the Northeast, March 19, 2015.

“Stakeholder Assessment and Outlook for the Markets,” Power Markets Conference, Northeast Energy and Commerce Association, October 20, 2014.

“Market Changes to Promote Fuel Adequacy – Capacity Markets to Promote Fuel Adequacy,” moderator of panel discussion, Northeast Energy Summit 2014, September 17–19, 2014.

“Quality *and* Quantity: Alternatives for Addressing Reliability Concerns from Shifting Resource Mixes,” Center for Research In Regulated Industries 27th Annual Western Conference June 26, 2014.

“Climate Policy Choices – RPS, Cap-and-Trade & the Implications for Actions (and Exits) that Affect Emissions,” Electric Utilities Environmental Conference, February 4, 2014.

“Multiple Dimensions of Gas-Electric Coordination Concerns,” Electric Utilities Environmental Conference, February 3, 2014.

“The Economics of Cap-and-Trade in the California Power Markets,” EUCI Conference, California Carbon Policy Impacts on Western Power Markets, January 27, 2014.

“An Economic Perspective on Building Labeling Policies,” Greater Boston Real Estate Board, April 26, 2013.

“Market-Based Policies to Address Climate Change,” Sustainable Middlesex, May 4, 2013.

“Market Forces and Prospects/Economic Ripple Effects, 5-10 Years Ahead,” Air & Waste Management Association, New England Section, October 12, 2012.

“Gas and Electric Coordination: Is It Needed? If So, To What End?” Harvard Electric Policy Group, Cambridge, MA, October 11, 2012.

“Reliability and Resource Performance,” Center for Research In Regulated Industries 31st Annual Eastern Conference May 16, 2012.

“Can Cost Containment Raise Costs? Allowance Reserves in Practice,” International Industrial Organization Conference, Boston, MA, April 9, 2011.

“Ratemaking Mechanisms/Tools as Carrots for Achieving Desirable Regulatory Outcomes,” Conference on Electric Utility Rate Cases, Law Seminars International, Boston, Massachusetts, November 9, 2010.

“Evolving Issues in Revenue Decoupling: Designs for an Era of Rising Costs,” Center for Research In Regulated Industries 29th Annual Eastern Conference May 19, 2010.

“Aligning Interest with Duty: Revenue Decoupling as a Key Element of Accomplishing Energy Efficiency Goals,” National Conference of State Legislatures, Fall Forum, December 8, 2009.

“Federal Proposals to Limit Carbon Emissions and How They Would Affect Market Structures – Regional Trading Programs’ Futures in Light of New Federal Interest in Reducing GHG Emissions,” Energy in California, Law Seminars International, San Francisco, California, September 15, 2009.

“Current Market, Technology and Regulatory Risks: Impact on Investment and Implications for Policy,” Utility Rate Case, Issues and Strategy 2009, Law Seminars International, Las Vegas, Nevada, February 9, 2009.

“An Economic Perspective on the Benefits of Going Green,” Harvard Electricity Policy Group, Atlanta, Georgia, December 11–12, 2008.

“Implications of Current Regulatory, Technology and Market Risks,” Energy in California, Law Seminars International, San Francisco, California, September 22–23, 2008.

“Competitive Procurement of Retail Electricity Supply: Recent Trends in State Policies and Utility Practices,” National Association of Regulatory Utility Commissioners Summer Committee Meetings, Portland, Oregon, July 20, 2008.

“Too Good to Be True? An Examination of Three Economic Assessments of California Climate Change Policy, Key Findings and Lessons Learned,” POWER Research Conference on Electricity Markets and Regulation, University of California at Berkeley, March 21, 2008.

“Preliminary Findings: Study of Model State and Utility Practices for Competitive Procurement of Retail Electric Supply,” National Association of Regulatory Utility Commissioners Annual Meeting, Washington, DC, February 17, 2008.

“The ABC’s of California’s AB 32: Issues and Analysis, Cost Analyses and Policy Design,” Environmental Market Association Webinar, April 12, 2007.