

1 **SUBJECT: Price Forecast**

2

3 **QUESTION: CAC MB 10**

4 Based on the modelling work already performed, can Potomac Economics provide an estimate of  
5 the CO2 emitted per MWH supplied?

6

7 **RESPONSE:**

8 Please see page 23 of our Expert Report.

---

1 **SUBJECT: Price Forecast**

2  
3 **QUESTION: CAC MB 11a-c**

4 (a) Please set out the purported expertise of all authors to the report.

5 (b) Please provide the expertise that each author is purported to bring to the report.

6 (c) Please provide elements from each authors' *curriculum vitae* which demonstrate their  
7 purported expertise.  
8  
9

10 **RESPONSE:**

11 Please see generally attached resumes which show extensive experience working in MISO,  
12 which is the main market in which Manitoba participates. Since 2003 when MISO began  
13 operating as a centralized, multilateral RTO market, Potomac Economics has been involved in  
14 analyzing market structure, participant conduct, and market outcomes. This includes Manitoba  
15 Hydro's participation in these markets.

---

1   **SUBJECT: Price Forecast**

2

3   **QUESTION: CAC MB 16a**

4   In tables, figures and text throughout the report, specific values are given for future electricity,  
5   natural gas and carbon prices. Are these prices all quoted on the same basis (e.g., nominal dollar  
6   or real dollars with a common reference year)? If so, please indicate the basis for these prices  
7   (e.g. 2013\$).

8       .

9

10   **RESPONSE:**

11   All prices are in real 2013 \$US.

12

---

1 **SUBJECT: Price Forecast**

2

3 **QUESTION: CAC MB 16b**

4 If not, what are the different bases used? Also, please provide an annotated version of the Report  
5 indicating the valuation basis for the various tables, graphs and text references.

6

7 **RESPONSE:**

8 All valuations are in real 2013 \$US.

9

---

1   **SUBJECT: Price Forecast**

2

3   **QUESTION: CAC MB 17**

4   Is Mr. Craig Sabine's report commercially sensitive? If not, please provide a copy or a web-  
5   reference as to where it may be downloaded.

6

7   **RESPONSE:**

8   Please see PUB NFAT website for all IEC reports that are public.

9

---

1 **SUBJECT: Price Forecast**

2  
3 **QUESTION: CAC MB 18**

4 Please confirm that Brattle Group's forecast for natural gas prices to increase by 60% over the  
5 20-year period is in-line with PEL's natural gas reference price forecast as set out in Appendix  
6 A. If not, please explain the difference.  
7

8 **RESPONSE:**

9 This response assumes the term "PEL" in the question is intended to mean Potomac Economics.  
10 Our base case natural gas price assumption is \$3.26/mmbtu in 2015 and increases to  
11 \$6.31/mmbtu in 2034 (all in 2013\$US). This is an increase of \$3.05/mmbtu.  
12

---

1   **SUBJECT: Price Forecast**

2

3   **QUESTION: CAC MB 20**

4   Based on the relative CO2 content of coal-fired and natural gas-fired generation what is the  
5   assumed average CO2 content per MWH? Does this value change over the forecast period for  
6   export pricing purposes and, if so, how?

7

8

9   **RESPONSE:**

10   Please see page 23 of our Report. The values do not change over the forecast period.

---

1 **SUBJECT: Price Forecast**

2

3 **QUESTION: CAC MB 21**

4 Please confirm that the reference to natural gas prices showing little change over the next 20  
5 years in the Low Fuel Price case refers to little change in “real terms” (and not nominal prices).

6

7

8 **RESPONSE:**

9 The reference is to natural gas prices in constant 2013\$US.

---



**PROFESSIONAL BACKGROUND OF  
JASON K. FOGARTY**

**EDUCATION**

Bachelor of Arts, Economics, 2001  
Northwestern University, Evanston, IL

**EMPLOYMENT**

*Senior Market Analyst*, Potomac Economics, 2004 – present

Led update and redesign of Real-Time and Day-Ahead Automated Mitigation Procedure (AMP) software for the Midwest ISO ancillary services market.

Coded and implemented Reference Price calculation software that supports the Conduct & Impact market power mitigation framework of the Midwest ISO.

Managed the development of Default Energy Bid calculation software for the California ISO's Market Redesign and Technical Upgrade (MRTU) market.

*Consultant*, LECG, 2001-2004

Performed economic and statistical analyses in support of expert testimony for litigation. Projects included simulating multi-tiered demand systems in the beverage industry, modeling the decay curve of generic pharmaceutical prices, and analyzing the competitive effects and implications of several potential mergers.

Managed staff supporting subject matter experts in LECG's London and Chicago offices.

Conducted advanced SAS training sessions for LECG's US offices.

**PROFESSIONAL BACKGROUND OF  
DAVID B. PATTON, PH.D.**

**EDUCATION**

Ph.D., Economics, George Mason University  
Areas of specialization: Industrial Organization, International Finance

M.A., Economics, George Mason University

B.A., Economics, New Mexico State University  
Minor in Mathematics

**EMPLOYMENT**

*President, Potomac Economics, 2001 – present*

Serve as Market Advisor for the New York ISO and ISO New England, responsible for assisting in monitoring the markets to identify and remedy market design flaws and market power concerns.

Lead and direct Potomac Economics' activities in its role as Independent Market Monitor for the Midwest ISO. Responsible for developing and performing the market monitoring function in the Midwest ISO region.

Provide expert testimony, analysis, and advice for clients on competitive issues in the electricity and natural gas industries, including mergers, market power and antitrust issues, competitive market design, and transmission pricing.

*Director of Energy Practice, Capital Economics, 1997 – 2001*

Provided expert advice and testimony to clients in cases involving transmission pricing, wholesale electric market design, mergers, market power, and antitrust matters.

Assisted electric utilities in developing regional transmission organizations by providing expert advice regarding transmission pricing, congestion management, market development, and market monitoring.

Retained by the New York ISO to service as the Independent Market Advisor regarding the development and monitoring of the wholesale electricity market.

*Senior Economist, Office of Economic Policy, Federal Energy Regulatory Commission, 1995 – 1997*

---

Developed transmission open access policies, including power pool, ISO, and comparability requirements in FERC's Open Access Rule (Order 888).

Developed the analytical framework in FERC's Merger Policy Statement for assessing the competitive effects of electric and natural gas utility mergers.

Responsible for analysis of transmission and ancillary service pricing issues associated with restructuring of the electric utility industry.

*Director of Buildings Policy*, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, 1992 – 1995

Responsible for development of U.S. policy related to the energy efficiency of housing and commercial buildings. Managed data and analysis programs to estimate the effects of energy efficiency policies and programs.

*Staff Economist*, Office of Policy, Planning and Analysis, U.S. Department of Energy, 1989 – 1992

Responsible for development and assessment of energy policies in President Bush's National Energy Strategy and federal legislation, including the Energy Policy Act of 1992.

## **REPORTS AND ANALYSES**

Midwest ISO. Prepared Annual State of the Market Reports for 2004 through 2011 that review the performance of the New York electricity markets, including recommending improvements to the operation and design of the markets.

ISO New England. Prepared Annual Reports for 2003 to 2011 that analyze the performance of the nodal electricity markets implemented in New England in March 2003.

New York ISO. Prepared Annual Reports for 2001 through 2011 that review the performance of the New York electricity markets, including recommending improvements to the operation and design of the markets.

New York ISO. Prepared expert testimony and affidavits in 2007 to 2011 regarding market power in the New York City capacity market, including the design and execution of both supply-side and buyer-side mitigation measures to address the market power.

Midwest ISO. Prepared filed comments and answer in 2012 regarding capacity trading between MISO and PJM.

New York ISO. Filed multiple affidavits and supplemental affidavits regarding proposed installed capacity demand curves in 2007 to 2011.

---

- Midwest ISO. Prepared and filed multiple comments in 2011 with FERC regarding the need for a sloped capacity demand curve and market power mitigation in the MISO capacity market.
- New York ISO. Prepared affidavit in 2010 regarding market power and proposed mitigation associated with local reliability requirements.
- Midwest ISO. Prepared a report and multiple affidavits addressing cost-causation and the allocation of Revenue Sufficiency Guarantee Payments, 2008-2011.
- Midwest ISO. Prepared Market Power Study in 2007 evaluating market power issues in the proposed Ancillary Services Markets in the Midwest and proposing mitigation to address the market power concerns.
- Public Utility Commission of Texas. Provided expert testimony and rebuttal testimony in 2005 regarding the proposed design of the nodal energy markets to be implemented in 2009.
- Public Utility Commission of Texas. Prepared an assessment of the operation of the current ERCOT market in 2004, which provides detailed recommendations to address a number of issues identified in the report.
- Midwest ISO. Prepared quarterly reports regarding the effectiveness of market power mitigation from 2004 to 2011. Also prepared expert testimony supporting filings to renew the mitigation measures.
- Public Utility Commission of Texas. Prepared Annual Reports for 2003 to 2006 that evaluate the ERCOT electricity markets. The reports provide recommendations for improvements to the existing zonal markets.
- ISO New England. Prepared a report evaluating the market operations during the first six months of the new multi-settlement wholesale electricity markets in New England.
- Midwest ISO. Prepared annual reports for 2002 through 2004 evaluating the sale and utilization of electricity transmission capacity in the Midwest, the results of the wholesale market, and the potential for market power problems in the future.
- ISO New England. Prepared annual reports for 2001 and 2002 analyzing withholding and market power in the New England electricity markets.
- Midwest ISO. Assessed the economic efficiency and potential risks associated with the configuration of the RTO's in the Midwest.
- ISO New England. Prepared a report analyzing the pricing in New England's energy and ancillary services markets, and recommending changes in the market rules.
-

New England Power Pool. Developed and negotiated a market power monitoring and mitigation plan with the NEPOOL, the State Commissions, and the New England Independent System Operator.

TransConnect LLC. Provided expert advice and analysis to transmission owners seeking to form an independent transmission company regarding an incentive pricing proposal to promote efficient operation of and investment in the transmission network.

Northern States Power. Advised client on alternative transmission pricing and service proposals associated with the development of an independent transmission Co.

FirstEnergy Merger (Ohio Edison Company / Centerior). Advised client on competitive issues related to the merger and on market power mitigation alternatives.

Exxon and British Petroleum. Prepared economic analyses of wholesale gasoline prices in the California market.

Northern States Power/Wisconsin Electric Power merger (Primergy). Advised FERC regarding competitive issues associated with the merger.

Electricity and Transmission Pricing in Electric Utility Industry. Analyzed alternative auction and bilateral contracting regimes for FERC.

Ameren Merger (Union Electric/ Central Illinois Public Service). Advised FERC regarding competitive issues associated with the merger.

American Electric Power / Central & Southwest Merger. Negotiated market power mitigation commitments with FERC staff on behalf of client.

PJM Power Pool. Analyzed the generation and transmission pricing aspects of restructuring proposal for FERC.

Fannie Mae/U.S. Department of Energy. Developed partnership to use loan and mortgage products to improve the energy efficiency of U.S. housing.

Freddie Mac. Analyzed the issues related to liquidity and risk in the mortgage finance and asset-backed securities markets.

Gas Pipeline Analysis. Submitted a competitive analysis of a potential natural gas pipeline acquisition to the Federal Trade Commission.

Midwest Natural Gas Market. Submitted a competitive analysis of Midwest pipeline and storage capacity to the U.S. Department of Justice regarding a civil antitrust investigation of a natural gas marketing joint venture.

---

## **SELECTED PUBLICATIONS AND PRESENTATIONS**

- “RTO Energy Markets: Theory, Design and Challenges”, presented at the Energy Bar Association 2012 Annual Meeting, April 2012.
- “How Markets Improve Reliability in Wholesale Electricity Markets”, workshop presented to the Western Electricity Coordinating Council, December 2011.
- “Independent Market Monitoring: In RTO and Non-RTO Areas”, presented to the Entergy Regional State Committee and its stakeholders, August 2011.
- “Independent Market Monitoring: Current Issues”, presented to the Harvard Electricity Policy Group, June 2011.
- ” Emerging Issues in Forward Capacity Markets”, presented at an EUCI industry conference, October 2010.
- “The Role of Financial Entities in Wholesale Electricity Markets”, presented at the Energy Bar Association 2009 Annual Meeting, April 2009.
- “Comments of the Midwest ISO Independent Market Monitor”, presented at a Technical Conference hosted by the Federal Energy Regulatory Commission regarding market monitoring policies, April 2007.
- “Potential Market Power in the Midwest ISO Ancillary Services Markets”, presented to Midwest ISO Markets Committee and the Federal Energy Commission in Fall 2007.
- “Load Pockets and Local Market Power”, presented at a Technical Conference hosted by the Federal Energy Regulatory Commission, February 2004.
- “Electric Power: Generating Controversy”, with R.A. Sinclair, Industry Studies, 3<sup>rd</sup> edition, Larry Duetsch, editor, New York: M.E. Sharpe (2003).
- “Market Configuration and Coordination in the Midwest”, presented to the Energy Bar Association, October 2003.
- “Market Monitoring Roles and Responsibilities”, presented at the National Association of Regulatory Utility Commissioners’ 2003 Winter Meeting, Committee on Electricity, February 2003.
- “Lessons Learned from Market Monitoring in North American Electricity Markets”, presented at the World Bank Electricity Forum, February 2003.
- “Setting Efficient Wholesale Electricity Prices During Periods of Shortage”, presented to the Electric Power Supply Association, October 2002.
-

- “Development of Competitive Wholesale Markets in the Northeast”, presented to the NARUC Winter Meeting, February 2002.
- “Detecting and Mitigating Market Power in Deregulated Electric Markets”, presented at the Market Monitoring Conference hosted by the American Antitrust Institute, December 2001.
- “Monitoring Wholesale Electric Markets”, presented to the MIT Energy and Environmental Policy Workshop, December 2001.
- “The Role of Market Monitoring in Competitive Electric Markets”, presented to the Energy Bar Association, November 2001.
- “Assessing the Competitive Performance of Electricity Markets”, presented at the Market Monitoring and Mitigation Workshop by the Edison Electric Institute, June 2001.
- “Transmission Pricing Issues”, presented to the EEI Transmission Pricing Workshop, May 2001.
- “Developing Efficient Incentives for A Transco”, presented to the Electric Power 2001 Conference, March 2001.
- “Managing and Pricing Congestion in Competitive Electric Markets”, presented to the Energy Bar Association, February 2001.
- “Defining an Appropriate Role for Market Monitoring in a Deregulated Electric Industry”, Association of Power Exchanges and International Electric Industry Conference, October 2000.
- “Defending Innovative Pricing Proposals for Regional Transmission Organizations”, Edison Electric Institute Members’ Workshop -- Developing Incentive Rates: Applications and Problems, July 2000.
- “Cost Shifting and Other RTO Pricing Issues”, EEI – Energy Daily Incentive Transmission Ratemaking Conference, July 2000.
- “Innovative Pricing Workshop: Developing and Defending Proposals for RTOs”, Infocast Transmission Pricing Conference, May 2000.
- “Addressing Market Power in Deregulated Electric Markets”, presented at the Spring Meeting, Antitrust Law Section of the American Bar Association, April 2000.
- “Evaluating Investment Opportunities in Emerging Competitive Power Markets”, presented at Lehman Brothers’ Competitive Generation Conference, March 2000.
- “RTO Monitoring of Competitive Electric Markets”, presented at the Annual Energy & Project Finance Conference, February 2000.
-

“Monitoring Competitive Electric Markets”, presented at 1999 Mid-Year Meeting of the Federal Energy Bar Association, November 1999.

“Merger Review and Analysis”, presented at Antitrust Issues in Competitive Electric and Natural Gas Markets sponsored by Howrey and Simon, September 1999.

“The Role of Regional Transmission Organizations in Emerging Competitive Electric Markets”, *CCH Power and Telecom Law*, July 1999.

“Transmission Congestion in Competitive Electric Markets”, presented at the Transmission Business Forum, July 1999

“Designing Efficient Performance Based Rates”, Incentive Ratemaking Workshop conducted at Independent Transmission Company conference hosted by Infocast, April 1999.

“Designing an Independent Transmission Company to Promote Competition and Efficiency”, presented at Independent Transmission Company conference hosted by Infocast, April 1999.

“Mitigating Market Power in a Deregulated Electric Utility Industry”, *CCH Power and Telecom Law*, May 1998.

"ISOs as a Safeguard Against Market Power Abuse", presented at Independent System Operator conference sponsored by Howrey & Simon, May 1998.

“Competitive Analysis of Electric Utility Mergers: An Evolving Standard”, *CCH Power and Telecom Law*, March 1998.

"Key Transmission Issues for an Independent System Operator", presented to Desert Star Independent System Operator participants, August 1997.

“FERC Perspective on Electricity Trading and Derivatives”, presented at Electricity Trading and Derivatives Strategies Conference hosted by Infocast, March 1997.

“Market Power in Electricity: Analysis and Mitigation”, presented to National Association of Regulatory Utility Commissioners’ Winter Meeting, February 1997.

## **PROFESSIONAL ACTIVITIES AND AWARDS**

American Economic Association

International Association of Energy Economists

National Association of Business Economists

U.S. Department of Energy, Commendation from Secretary of Energy, 1992

Phi Kappa Phi honorary society

Omicron Delta Epsilon, economics honorary society

---



# GABRIEL MURTAUGH

4211 Ridge Top Road Apt 3522

Fairfax, VA 22030

(315) 418-8569 (cell)

[gabriel.murtaugh@gmail.com](mailto:gabriel.murtaugh@gmail.com)

---

## WORK EXPERIENCE

### Potomac Economics

Associate

Oct 2013 - Present

- Monitor behavior of energy market participants.
- Evaluate claims regarding power plant operating characteristics, outage events, variable operating costs, maintenance costs, and environmental compliance costs.
- Review and evaluate estimated costs to develop new resources or repower existing resources.
- Collaborate with power system engineers, software programmers, economists, other team members to develop custom software for assessing generator performance.

### SNL Financial

Content Manager, Mergers & Acquisitions

Feb 2012 - Sept 2013

**Key Results:** Improved time-to-market for critical M&A data by 40%. Started a global operations team in Manila. Expanded data collection into European and Asian markets. Executed on key initiatives increasing robustness of the core data set.

- Oversaw all mergers and acquisitions data collection and planned initiatives to expand content.
- Managed a team of 80+ employees.
- Managed a \$1.3mm annual budget.
- Oversaw global operations in India, Pakistan and Manila.
- Developed employees and delivered feedback for 7 direct reports.
- Worked with an Agile development team to execute on software enhancements.

Content Owner – Statutory insurance Financials

March 2011 – Feb 2012

Senior Systems Analyst, Automated Content – Statutory Insurance

Nov 2010- Feb 2012

UAT Lead

Oct 2010 – Feb 2012

Systems Analyst, Automated Content – Statutory Insurance

Aug 2010-Nov 2010

- Reviewed, analyzed, and evaluated content systems and user needs.
- Worked with multiple Agile teams to deliver data management software solutions.
- Used relational database tools to provide tier-4 support for data testing, troubleshooting, and end-user support.

### University of Virginia

Head Teaching Assistant, Principles of Microeconomics, Macroeconomics

Fall 2007-Spring 2009

- Coordinated and managed all technical, scheduling, and administrative logistics for 1000+ student courses.
- Served as liaison between professor(s) and 17 Teaching Assistants each semester.
- Assisted in exam writing.
- Taught weekly discussion sections.

### IBM

Programmer/Technical Writer

2005-2006

- Worked on multiple accounts for the IBM Global Services focused on strategic outsourcing.
- Database management using in house data and document management software.
- Wrote white paper on outsourcing standards, emphasizing Process and Quality Management.

## EDUCATION

University of Virginia, M.A. in Economics

2007

Bucknell University, B.S. in Computer Science

2005

Minors in Mathematics, Economics, and History

## PROGRAMMING LANGUAGES:

- SQL, SAS, MATLAB, C++, C, Java, Stata

**ROBERT A. SINCLAIR**  
**(January 2014)**

**Business Address**

Potomac Economics  
9990 Fairfax Blvd Suite 560  
Fairfax VA 22030

**Education**

Ph.D., Economics, University of Pittsburgh (1993)  
B.A., Economics, Indiana University of Pennsylvania (1986)

**Fields of Concentration**

Applied Microeconomics, Law and Economics, Empirical Industrial Organization

**Professional Experience**

2001 - Vice President, Potomac Economics, Fairfax, VA  
2000 - 2001, Economic Consultant, Micronomics, Washington, DC  
1993 - 2000, Economic Consultant, J.W. Wilson and Associates, Washington, DC

**Expert Testimony**

*Before the Louisiana Public Service Commission, Application Entergy Gulf States, Inc. for Authorization to Participate in an MSS-4 Contracts, etc. (2011), Docket No. U-32031; and Joint Application of Entergy Louisiana, LLC for approval to Construct Unit 6 at Ninemile Station and of Entergy Gulf States, etc. (2011), Docket No. U-31971; prepared and filed expert testimony at the request of the Louisiana Public Service Commission Staff on the independent monitoring of Entergy's evaluation of power supply proposals.*

*Before the Federal Energy Regulatory Commission, Northeast Utilities Service Company and NSTAR Electric (2009), Docket No. EL09-20-000; prepared affidavit on behalf of Nalcor Energy addressing vertical market power issues associated with a participant-funded transmission line.*

*Before the Régie de Énergie, Quebec, Complaint by Transmission Customer Newfoundland and Labrador Hydro concerning Transmission provider Hydro Quebec's Administration of its Tariff, etc. (2008), Case No: P-110-1692; prepared and filed expert testimony on behalf of Newfoundland and Labrador Hydro on issues relating to the technical requirements for receiving certain-transmission service.*

*Before the Régie de Énergie, Quebec, Complaint by Transmission Customer Newfoundland and Labrador Hydro concerning Transmission provider Hydro Quebec's Administration of its Tariff, etc. (2008), Case No: P-110-1565 and No: P-110-1597; prepared and filed expert testimony on behalf of Newfoundland and Labrador Hydro on issues relating to calculation of available transmission capacity and open access policies.*

*Before the Louisiana Public Service Commission, Joint Application of Entergy Louisiana, LLC. And Entergy Gulf States, Inc. for Authorization to Participate in Contracts for the Purchase of Electric Power (2007), Docket No.U-29955; prepared and filed expert testimony at the request of the Louisiana Public Service Commission Staff on the independent monitoring of Entergy's evaluation of power supply proposals.*

*Before the Federal Energy Regulatory Commission, Progress Energy, Inc. (2003), Docket No. ER03-1389-000, *et al*; prepared affidavit on behalf of Florida Municipal Power Agency and Seminole Electric Power Cooperative addressing market power issues associated with Progress Energy's application to sell wholesale power at market-based rates.*

*Before the United States District Court for the Northern District of California—San Jose Division, ABB Power T&D Company v. Alstom ESCA Corporation (2001), Case No. C-99-21242 SW PVT ENE; prepared expert report on behalf of plaintiff on economic and structural issues in the electric power industry.*

*Before the Connecticut Department of Environmental Protection, In the Matter of the Determination to Issue the Draft Air and Water Permits to Towantic Energy (2001); prepared expert report on behalf of citizens group opposing new plant construction; report addressed economic benefits of new plant construction.*

*Before the Federal Communications Commission, In the Matter of Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities (2000), GN Docket No. 00-185; prepared affidavit to support comments on behalf of various consumer groups and Internet Service Providers relating to policies on open access cable broadband.*

*Before the Superior Court of the State of Arizona in and for the County of Santa Cruz, Sam and Sherri Chilcote, et al., v. Citizens Utilities Company, et al. (2000), Case No. CV 98-471; prepared expert report on behalf of a class of electricity customers relating to damages resulting from inadequate electric service.*

*Before the United States District Court for the Southern District of Ohio -- Western Division, PepsiCo, Inc. v. Central Investment Corporation (2000), Case No. C-1-98-389; prepared expert report on behalf of PepsiCo on economic issues relating to soft drink production and distribution (co-authored with Roy Weinstein).*

*Before the Federal Energy Regulatory Commission, Western Resources, Inc. (1998), Docket No. ER98-2157-000; prepared affidavit on behalf of the Kansas City Board of Public Utilities addressing market power issues associated with Western Resources' application to sell wholesale power at market-based rates.*

*Before the Corporation Commission of the State of Oklahoma, Joint Application of American Electric Power Company, Inc. Public Service Company of Oklahoma and Central and South West Corporation Regarding Proposed Merger (1999), Cause No. PUD 980000444; prepared testimony on behalf of public power entities on merger-related market power issues.*

*Before the Public Service Commission of the State of Wisconsin, In the matter of Proposed Revision of Chapter PSC 100, Wis. Admin. Code – Rules for Wholesale Merchant Plants* (1999), Docket No. 1-AC-174; prepared testimony on behalf of various intervenors concerning market power issues relating to merchant plant development.

*Before the Federal Energy Regulatory Commission, New England Electric Power Company, et al.* (1998), Docket Nos. ER98-6-000 and EC98-1-000; prepared affidavit on behalf of the Town of Norwood addressing market power issues associated with the New England Power's sale of generating assets to U.S. Generating Company.

*Before the Mississippi Public Service Commission, Report on Retail Market Power Issues* (1998), Docket No. 96-UA-389; prepared expert report on market power issues associated with electric utility restructuring in Mississippi on behalf of the Municipal Energy Agency of Mississippi.

*Before the Connecticut Department of Public Utility Control, Review of the Connecticut Light & Power Company Rates and Charges* (1998), Docket No. 98-01-02; prepared testimony and exhibits on cost allocation and rate design issues on behalf of the Connecticut Office of Consumer Counsel.

*In United States District Court for the District of Massachusetts, Town of Norwood, Massachusetts v. New England Power Company, et al.* (1998), Case No. 97-CV10818-PBS; prepared affidavit on behalf of the Town of Norwood addressing antitrust issues associated with New England Power Company's sale of generating assets.

*In United States District Court for the District of Massachusetts, Town of Norwood, Massachusetts v. New England Power Company, et al.* (1998), Case No. 97-CV10818-PBS; prepared affidavit on behalf of the Town of Norwood addressing recent changes in the corporate organization of Pacific Gas & Electric Company pertinent to New England Power's sale of its generating assets to an affiliate of Pacific Gas & Electric Company.

*Before the Federal Energy Regulatory Commission, San Diego Gas & Electric Company, Enova Energy, Inc.* (1997), Docket No. EC97-12-000; prepared affidavit on behalf of Southern California Public Power Authority addressing market power issues associated with the San Diego Gas & Electric/Southern California Gas merger.

*Before the Federal Energy Regulatory Commission, The Cleveland Electric Illuminating Company and Market Responsive Energy, Inc.* (1997), Docket Nos. ER96-372-000 and ER95-1295-000, respectively; prepared affidavit on behalf of Cleveland Public Power in opposition to CEI's and MREI's settlement offer to resolve market power issues in their filing under §206 of the Energy Policy Act to sell power at market-based rates.

*Before the California Public Service Commission, Joint Application of Pacific Enterprises, Enova, et al.* (merger of San Diego Gas & Electric Company and Southern California Gas Company, (1997)), Application No. A96-10-038; prepared testimony on behalf of Southern California Public Power Authority addressing market power issues associated with the merger.

*Before the Public Utilities Commission of Ohio, Application of the Toledo Edison Company and the Cleveland Electric Illuminating Company for authority to increase rates (1996), Case No. 95-299-EL-AIR and 95-300-EL-AIR; prepared testimony on cost allocation and rate design issues on behalf of the Ohio Office of Consumers' Counsel.*

*Before the South Carolina Public Service Commission, South Carolina Electric & Gas Company Application for Increases in Electric Rates and Charges (1995), Docket No. 95-1000-E; prepared testimony on behalf of the South Carolina Department of Consumer Affairs analyzing the Company's proposal to shift depreciation reserves and shorten amortization schedules in order to reduce the unrecovered costs of generation assets in preparation for retail competition.*

*Before the Public Service Commission of the District of Columbia, Application of the Potomac Electric Power Company for an Increase in its Retail Rates (1995), Formal Case No. 939; prepared testimony on cost allocation and rate design issues on behalf of the District of Columbia Office of People's Counsel.*

#### Other Expert Reports

*To the Federal Energy Regulatory Commission, Quarterly Independent Monitoring Report on Entergy's Weekly Procurement Process, (2012-2013) Docket No. ER09-555, principal author of report to FERC on the Energy weekly activities to procuring network resources from third-party suppliers.*

*Energy Community Regulatory Board – Electricity Working Group, Market Monitoring Guidelines for the 8<sup>th</sup> Congestion Management Region of Europe, (2010); Developed draft Market Monitoring Guidelines to South East Europe Regulators for screens and indices to monitor cross-border transmission capacity market.*

*To the Federal Energy Regulatory Commission, Seasonal Independent Monitoring Report on Duke Energy Corporation and Progress Energy, (2011-2013) Docket No. EC11-60, principal author of independent monitoring report to FERC addressing interim market power mitigation issues relating to seasonal power sale agreements.*

*International Upper Great Lakes Study Hydropower Technical Working Group, IUGLS Hydropower Technical Working Group (TWG) Contextual Narrative, (2009); Provided technical economic analysis of Hydro production at Sault Ste. Marie to inform the final TWG narrative.*

*To the South East Europe Energy Regulation Forum, Report on Market Monitoring in South East Europe (2007-2008), principal author of market monitoring report for the United States Agency for International Development Market Monitoring Pilot Project addressing electricity market activities among the countries of South East Europe.*

*To the Federal Energy Regulatory Commission, Quarterly Market Monitoring Report on the Public Service Co. of New Mexico, (2005-2010) Docket No. EC05-29-000, principal author of market monitoring report to FERC addressing the potential for market power related to the company's operation of its transmission and generation facilities.*

*To the Federal Energy Regulatory Commission, Quarterly Market Monitoring Report on the Arizona Public Service Co., (2005-2010) Docket No. EC03-131-000, principal author of market monitoring report to FERC addressing the potential for market power related to the company's operation of its transmission and generation facilities.*

*To the Federal Energy Regulatory Commission, Quarterly Market Monitoring Report on the Oklahoma Gas & Electric Company, (2004-2006) Docket No. EC03-131-000, principal author of market monitoring report to FERC addressing the potential for market power related to the company's operation of its transmission and generation facilities.*

## **Publications and Papers**

### ARTICLES

1. "Electric Power: Generating Controversy," with D.B. Patton Industry Studies, 3<sup>rd</sup> edition, Larry Duetsch, editor, New York: M.E. Sharpe (2002).
2. "An Empirical Model of Entry and Exit in Airline Markets," (October 1995) 10 *Review of Industrial Organization*
3. "Incremental Transmission Pricing, the Comparability Standard, and an Alternative to the FERC's 'Higher of' Policy," with D. F. Greer and J.W. Wilson (December 1994) *The Electricity Journal*
4. "Airport Dominance and State Action Antitrust Immunity for Airport Operators," (Fall 1991), 96 *Dickinson Law Review*

### BOOK REVIEWS

1. "Designing Competitive Electricity Markets," by Hung-po Chao and Hillard G. Huntington (eds.), for the *Review of Industrial Organization* 2000.
2. "Power Structure - Ownership, Integration, and Competition in the U.S. Electric Utility Industry," by John Kwoka for the *Review of Industrial Organization*, 1998
3. "Electric Utility Mergers - Principles of Antitrust Analysis", by M. Frankena and B. Owens for the *Review of Industrial Organization*, 1994

## Teaching Experience

*The George Washington University* (2005)

Law and Economics

*The University of Pittsburgh* (1989-1993)

Microeconomics (intro and advanced), Industrial Organization and Antitrust, Macroeconomics (intro),

Department of Economics Outstanding Teaching Award (1992)

## Speeches

1. “Market Monitoring Process in South East Europe,” presented at Regional Workshop on Emerging Issues in Cross-Border Trade, Market Monitoring and Regulatory Role in Energy Efficiency in the Black Sea Region, sponsored by USAID and NARUC, Kiev, Ukraine, October 2013.
2. “Who Should be the Market Monitor?” presented at Southeast Europe Electricity Market Monitoring Workshop, sponsored by USAID and NARUC, Athens, Greece, October 2005.
3. “Market Monitoring and Standard Market Design,” presented at Standard Market Design – Dealing with the New Giga-NOPR sponsored by Infocast, Washington, D.C., December 5, 2002.
4. “The Role of Market Monitoring in Competitive Electricity Markets,” presented at How’s It Going – Snapshots of the Status of Electric Restructuring sponsored by the Energy Bar Association, Midwest Energy Conference, Kansas City Missouri, February 7, 2002.
5. “Measuring Market Shares in the ‘Energy Services’ Market,” presented at Communicating Competitive Concerns, sponsored by the American Gas Association, Arlington, VA, February 25, 1998.
6. “Hostile Takeovers in the Electric Utility Merger Wave,” presented at Antitrust, Merger Guidelines, and Regulation of Utility Consolidation, sponsored by the Institute of Public Utilities at Michigan State University, Washington D.C., November 7, 1996.
7. “Telecommunications: Developing the Future at Home and Abroad,” presented at The Future of Competition, sponsored by National Association of Regulatory Utility Commissioners, Columbus, OH, September 13, 1996.
8. “Economic Aspects of FERC’s Policy on Electric Utility Mergers,” presented at Mergers: A Threat to Competition? sponsored by the McGraw-Hill Company, Washington, D.C., March 15, 1996.