

Lawrence Kaufmann

Resume

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Education: Ph.D.: Economics, University of Wisconsin-Madison, 1993
BA & MA: Economics, University of Missouri-Columbia, 1984
High School: St. Louis University High, St. Louis, MO, 1980

Relevant Work Experience, Primary Positions:

December 2008 – present: President, Kaufmann Consulting
Senior Advisor, Pacific Economics Group and Navigant Consulting
Fellow, Canadian Energy Research Institute (since April 2015)

Advise companies and public agencies, particularly energy utilities and regulators, on various regulatory and industry restructuring issues. Duties include consultation on performance-based regulation (PBR), developing service quality incentive plans, analyzing appropriate code of conduct policies for competitive markets, and providing supporting empirical research. Duties involve preparing public testimony and written reports, overseeing empirical research, client contact and briefings, and public presentations.

January 2001 – December 2008: Partner, Pacific Economics Group, Madison, WI
November 1998 – December 2000: Vice President, Pacific Economics Group, Madison, WI

Advise energy utilities and regulators on various industry restructuring issues. Duties include consultation on performance-based regulation (PBR), developing service quality incentive plans, analyzing appropriate code of conduct policies for competitive markets, and providing supporting empirical research. Duties involve preparing public testimony and written reports, overseeing empirical research, client contact and briefings, and public presentations.

August 1993 – October 1998: Senior Economist, Christensen Associates, Madison, WI

Assisted in the development and evaluation of PBR plans for energy utilities and other regulated enterprises. Duties included theoretical and empirical research (including the estimation of total factor productivity trends), written reports, client contact and briefings, public presentations, and monitoring regulatory trends in the United States and overseas.

January 1993 - July 1993: Research Assistant to Dr. Robert Baldwin, Department of Economics, University of Wisconsin-Madison

Project investigated whether dumping penalties imposed by the United States have led to a diversion of imports from the nations on which the duties were assessed to other exporters.

January 1991 - May 1993: Dissertation research on the impact of foreign investment on Mexican firms.

Dissertation examined whether there has been any spillover of advanced multinational technologies to competing Mexican firms. Research included development of a theoretical model of spillovers through Mexican recruitment of multinational personnel, interviews and data collection in Mexico, and empirical tests of theoretical conclusions. Dissertation research was funded through a fellowship from the Mellon Foundation.

June 1989 - December 1990: Research Associate, Credit Union National Association, Madison, WI

Initiated and assisted on several long-term research projects, including the assessment of capital positions at Corporate credit unions, comparing the asset portfolios of credit unions and banks, and analysis concerning the development of credit union industries in Poland and Costa Rica.

January 1988 - August 1988: Investment Banking Officer and Associate Economist, Centerre Bank, St. Louis, MO

April 1985 - December 1987: Assistant Economist, Centerre Bank, St. Louis, MO

As Assistant Economist, the primary duty was to prepare country risk reports on nations to which the bank was lending. As Associate Economist and Investment Banking Officer, duties expanded to include writing a twice-weekly column on interest rate trends and preparing special reports on regional, national and international economic trends for senior management.

August 1983 - December 1984 and four semesters during the period September 1988 - May 1993:

Teaching assistant for classes in introductory microeconomics, introductory macroeconomics, international economics and the history of economic thought.

Professional Memberships: American Economic Association
National Association of Business Economists

Foreign Language Proficiency: Spanish

Major Consulting Projects:

1. Testimony on cost and wage benchmarking. Puerto Rico Electric Power Authority, 2016.
2. Recommend updated inflation escalators in performance-based regulation plan. Epcor Water, 2015-2016.
3. Recommend productivity factor for updated performance-based regulation plan. Epcor Water, 2015-2016.
4. Testimony on benefits of expanding bidding process for expansion of Alliant Riverside Energy Center facility. Associated Builders and Contractors of Wisconsin, 2015.
5. Cost benchmarking study. Puerto Rico Electric Power Authority, 2015.

6. Multi-client “Utility of the Future” and PBR study. Clients wish to remain confidential at this time, 2015.
7. Advise on benchmarking methods for electricity distribution. ANEEL, Brazilian Electricity Regulatory Agency, 2014.
8. The impact of gas extension tariffs on the development of the CNG market in Wisconsin. Reinhart Boerner Van Deuren on behalf of Kwik Trip, 2014.
9. TFP study and review of price controls in New Zealand. New Zealand Electricity Network Association, 2014.
10. Advise on benchmarking and regulatory issues in Toronto Hydro Custom IR application. Ontario Energy Board, 2014-15.
11. Advise on interrogatory responses. Consumer Energy Coalition of British Columbia, 2014.
12. Survey and analysis of implementation issues associated with customer-specific reliability metrics. Ontario Energy Board, 2013-15.
13. Empirical analysis and recommendation of appropriate reliability benchmarks. Ontario Energy Board, 2013-15.
14. Cost of service review (transmission and distribution operations) and cost benchmarking for Israel Electric Corporation. Public Utility Authority of Israel, 2013-15.
15. Value of reliability improvements from undergrounding power lines. Wisconsin Public Service, 2013.
16. Advise on and assess gas distribution incentive regulation plans. Ontario Energy Board, 2013-14.
17. Advise on price control application. UK Power Networks, 2013.
18. Advise on electricity distribution incentive regulation plans and other aspects of renewed regulatory framework for electricity. Ontario Energy Board, 2012-13.
19. Response to Productivity Commission Report on Energy Network Regulatory Frameworks. Energy Safe Victoria, 2012.
20. Statement on appropriate opt-out policies for smart meters to Wisconsin Public Service Commission. SMART Water, 2012.
21. Submission to Australia’s Productivity Commission on the role of benchmarking in utility regulation. Energy Safe Victoria, 2012.
22. Assist Staff on review of cost of service applications for Enbridge Gas Distribution and Union Gas. Ontario Energy Board, 2012.
23. Assist with responses on data requests in testimony on alternative regulation plan. Potomac Electric Power, 2011-12.
24. Assess incentive regulation plans for Union Gas and Enbridge Gas Distribution in Ontario. Ontario Energy Board, 2011.
25. Advise on demand-side management and decoupling plans, and utility involvement in conservation and renewable energy businesses. ATCO Gas, 2011.

26. Advise on defining and measuring utility performance and the use of performance measures and standards in electric utility regulation. Ontario Energy Board, 2011-12.
27. Advise on rate mitigation strategies. Ontario Energy Board, 2011.
28. Advise on PBR strategy in Alberta. EDTI, 2011-12.
29. Estimate total factor productivity trend for gas distributors in New Zealand. Powerco, on behalf of industry, 2011.
30. Evaluation of reliability standards and alternative regulatory approaches for maintaining the reliability of electricity supplies. Ontario Energy Board, 2010-12
31. Prepare submission on rule change application and respond to consultant reports on TFP spreadsheet simulations and the impact of the regulatory framework on energy safety. Energy Safe Victoria, 2010.
32. Research on operating productivity and input price changes and testimony in support of an incentive-based formula to recover changes in gas distribution operating expenses. National Grid, 2010.
33. Prepare submission on rule change application and respond to consultant reports on TFP methodology. Essential Services Commission, 2010.
34. Advise on submission on rule change application. Victoria Department of Primary Industries, 2010.
35. Productivity research Victoria gas distribution industry, Essential Services Commission, 2010.
36. Productivity research Victorian power distribution industry, Essential Services Commission, 2010.
37. Advise on revenue decoupling and alternative regulatory strategies in context of upcoming gas distribution rate case. Northwest Natural Gas, 2009-2010.
38. Advise on revenue decoupling. Ontario Energy Board, 2009-2010.
39. Develop a “top down,” econometrically-based measure of reductions in gas consumption resulting from utility DSM programs, and evaluate the merits of this approach compared to the existing “bottom up” methodology. Ontario Energy Board, 2009-2010.
40. Respond to proposals to amend National Energy Regulatory Framework to allow alternative approaches to incentive regulation. Essential Services Commission, 2009-2010.
41. Evaluate consultant reports and prepare submission on the update of price control formulas. New Zealand Energy Network Association, 2009.
42. Evaluate consultant reports in review on alternate regulatory arrangements. Essential Services Commission 2009.
43. Estimate TFP trend for New Zealand electricity distributors. New Zealand Energy Network Association 2009.
44. Evaluate consultant reports in review on alternate regulatory arrangements. Essential Services Commission 2009.

45. Submission on the application of total factor productivity in utility network regulation. Essential Services Commission, 2008-09.
46. Estimate total factor productivity trends, benchmark gas distribution cost performance, and testify in support of research. Bay State Gas, 2008-09.
47. Advise on appropriate regulatory treatment of early termination fees in retail energy markets. Essential Services Commission, 2008.
48. Advise on appropriate regulation of gas connection charges. Essential Services Commission, 2008.
49. Advise on appropriate cost of capital. Jamaica Public Service, 2008.
50. Estimate total factor productivity trends and benchmark bundled power cost performance for use in a productivity based regulation plan. Jamaica Public Service, 2008.
51. Estimate gas distribution total factor productivity trends. Essential Services Commission, 2008.
52. Update estimate total factor productivity trends electricity distributors. Essential Services Commission, 2008.
53. Respond to productivity and benchmarking studies. New Zealand Electricity Networks Association, 2008.
54. Response to comments on appropriate productivity and input price measures to be used to update gas distributors' operating expenses. Essential Services Commission, 2007-08.
55. Advise on update of performance based regulatory plan for power distributors, including recommendations for total-factor productivity based X factors. Ontario Energy Board, 2007-08.
56. Estimate lost wage and health damages. Wolfgram and Associates, 2007.
57. Response to critique of X factor recommendations. Ontario Energy Board, 2007.
58. Review of benchmarking methods and proposed benchmarking for the pricing of unbundled copper local loop. Telecom NZ, 2007.
59. Report on the relationship between revenue decoupling and performance-based regulatory mechanisms. Massachusetts energy distribution companies, 2007.
60. Research on revenue decoupling experience in California. National Grid, 2007.
61. Report on regulatory reforms needed to facilitate demand response, advanced metering infrastructure and energy efficiency objectives. Essential Services Commission, 2007.
62. Estimate lost wage and health damages. Wolfgram and Associates, 2007.
63. Evaluation of gas distribution construction cost trends. Essential Services Commission, 2007.
64. Appropriate productivity trends and labor inflation rates to be used to adjust operating expenses in incentive-based ratemaking. Essential Services Commission, 2007.
65. Testify in support of rate adjustment under a performance based regulation plan. Bay State Gas, 2007.

66. Report on service quality regulation and benchmarking, submitted as expert witness testimony. Detroit Edison, 2007.
67. Develop and testify in support of alternative regulation plan for gas distribution services. Client confidential at this time, 2007.
68. Evolution of energy asset management companies and outsourcing relationships. Davidson Kempner Advisers, 2007.
69. O&M partial factor productivity trends for gas distribution services. Essential Services Commission, 2006-07.
70. Principles for designing gas supply PBR plans and assessing the impact of retail gas costs. DLA Piper Rudnick, 2006-07.
71. Framework for analyzing appropriate early termination fees in competitive retail electricity markets. Essential Services Commission, 2006-07.
72. Testify in support of exogenous factor recovery of revenues lost due to declining natural gas usage. Bay State Gas, 2006.
73. Service quality benchmarking. Canadian Electricity Association, 2006.
74. Analyze natural resource and recreational damage calculations for environmental damage to trout stream. Michael, Best and Friedrich, 2006.
75. Evaluate outsourcing contract and report benchmarking Envestra's gas distribution operations and maintenance expenses. ESCOSA, 2006.
76. Report on the use of partial factor productivity trends in the updated gas access arrangement. Essential Services Commission, 2006.
77. Advise on approved X factors and total factor productivity trends in approved alternative regulation plans for electric utilities. Central Maine Power, 2006.
78. Estimate total factor productivity and input price trends power distribution industries in all Australian States and territories, Essential Services Commission, 2006.
79. Develop and testify in support of an alternative regulation plan for gas distribution services. Client wishes to remain confidential at this time, 2006.
80. Develop and testify in support of an alternative regulation plan for gas distribution services. Client wishes to remain confidential at this time, 2006.
81. Testimony on treatment of outsourcing contract costs and labor-nonlabor cost allocations. Essential Services Commission, 2005-06.
82. Incorporate lessons from incentive regulation and benchmarking overseas into newly-established regulatory framework for nation's electric utilities. Bundesnetzagentur (BNA), Bonn Germany, 2005-2006.
83. Submission to Ministerial Council on Energy related to Regulatory Rulemaking. Essential Services Commission, 2005.
84. Evaluation of early termination fee policies for energy retailers. Essential Services Commission, 2005.

85. Advise on alternative regulation strategies for gas distribution services. Client wishes to remain confidential at this time, 2005-2006.
86. Report on comprehensive framework for using performance indicators to evaluate market power abuses, efficiency gains, and the distribution of benefits to stakeholders. Essential Services Commission, 2005.
87. Evaluation of regulatory options and estimation of total factor productivity for Port of Melbourne Corporation. Essential Services Commission, 2005.
88. Evaluation of regulatory options for taxi services in Melbourne, Australia. Essential Services Commission, 2005.
89. White Paper advising government agency on regulatory reform of State's electric power industry. Department of Natural Resources Newfoundland and Labrador, 2005.
90. Review report on CAPM and differences in beta between rural and urban power distributors. Essential Services Commission, 2005.
91. Develop "incentive power" model and apply towards evaluation of regulatory options in Victoria, Australia. Essential Services Commission, 2004-2005.
92. Review report on labor price forecasts for Victoria, Australia. Essential Services Commission, 2004-2005.
93. Develop and testify in support of performance-based regulation plan. Bay State Gas, 2004-2005.
94. Review of gas regulatory framework in Ontario, Canada. Ontario Energy Board, 2004-2005.
95. Benchmarking gas distribution operations. Powerco, Vector, NGC (New Zealand), 2004.
96. Report on methodologies for updating CPI-X price controls and assemble US gas transmission pipeline data, to be used in update of price controls for gas transmission services. Comision Reguladora de Energia (Mexico), 2004-2005.
97. Benchmark comprehensive power and water utility operations. Aqualectra (Curacao, Netherlands Antilles), 2004-2005.
98. Benchmarking power distribution operations. Energex and Ergon Energy, 2004.
99. Regulatory treatment of hub and storage facilities. NICOR Gas, 2004.
100. Review and comment on proposed service quality regulation. Essential Services Commission, 2004.
101. Review and contribute to report on ring fencing policies. Essential Services Commission, Victoria Australia, 2004.
102. Estimate lost earnings in litigation case. Wolfgram and Gherardini, 2004.
103. Respond to Productivity Commission report on Gas Access Arrangements. Essential Services Commission, Victoria Australia, 2004.
104. Analysis of PBR plans for rates and service quality worldwide. Jamaica Public Service, 2004.

105. Undertake benchmarking and total factor productivity studies in support of an X factor in a performance-based regulatory plan. Jamaica Public Service, 2003-2004.
106. Evaluate incentive regulation options. Questar Gas, 2003-2004.
107. Project evaluating implementation of total factor productivity in energy utility regulation. Essential Services Commission, Victoria Australia, 2003-2005.
108. Evaluate incentive regulation reports commissioned by Australian Competition and Consumer Commission. Essential Services Commission, Victoria Australia, 2003.
109. Evaluate proposed regulatory thresholds regime. Powerco New Zealand, 2003.
110. Evaluate benchmarking methods and regulatory reform proposals. Jamaica Public Service, 2003.
111. Evaluate proposals for service quality regulation in province of Ontario. Hydro One, 2003.
112. Evaluate benchmarking methods and regulatory reform proposals. Overseas New Zealand client wishes to remain confidential at this time, 2003.
113. US-Japan power transmission benchmarking. Central Research Institute of Electric Power Industry (Japan), 2003.
114. Benchmarking power distribution operations and maintenance (O&M) costs benchmarking and O&M productivity growth. Superintendente de Electricidad (Bolivia), 2003.
115. Benchmarking gas distribution operations and maintenance expenses. ACTEW (Australia), 2003.
116. Estimate lost earnings in wrongful death case. Wolfgram and Gherardini, 2003.
117. Advise on updating incentive plan for demand-side management. Hawaiian Electric, 2003.
118. Estimate and testify in support of damages in patent infringement case, Trombetta, LLC vs. Dana Corporation and AEC. Ryan, Kromholz and Mannion, 2003.
119. Analyze service quality proposals for a natural gas distributor, recommend modifications and testify in support of recommendations. New England Gas, 2002-2003.
120. Develop a service quality incentive plan for power distributors in Queensland, Australia; the plan is to be developed through a consultative process between the companies, major customer groups, and the regulator. Queensland Competition Authority, 2002-2003.
121. Consultation on developments regarding Wisconsin Electric's "Power the Future" initiative. Fidelity Investments, 2002.
122. Confidential report on US experience with benchmarking and alternative regulation. Central Research Institute of Electric Power Industry (Japan), 2002-2003.
123. Confidential report on capital cost measurement. Central Research Institute of Electric Power Industry (Japan), 2002-2003.
124. Report on merits and feasibility of benchmarking New Zealand power distributors. United Networks, 2002.
125. Impact of gas marketing expenditures on residential gas consumption. Envestra, 2002.

126. Advise on index-based performance-based regulation plan for a power distribution utility. Client wishes to remain confidential at this time, 2002.
127. Estimate productivity trend gas distribution industry and testify in support of trend. Boston Gas, 2002-2003.
128. Gas distribution benchmarking study. TXU Australia, Envestra and Multinet, 2002.
129. Benchmarking power transmission cost. Transend, 2002.
130. Advise on the development of an incentive regulation proposal for a North American power transmission utility. Hydro One Networks, 2001-2002.
131. Application of productivity and econometric benchmarking in an update of an incentive regulation plan. Ameren UE, 2001-2002.
132. Litigation regarding violations of Unfair Trade Practices Act for Tamoxifen, Taxol, and Buspar prescription drugs. Miner, Barnhill, and Galland, P.C., 2001-2002.
133. Recommend reforms of Western Australia power market, including reforms of wholesale markets, retail markets, structure of the incumbent utility, and regulatory arrangements; work was summarized in a report to the Electricity Reform Task Force. Western Power, 2001.
134. Faculty member of Regulatory Training Seminar in Bolivia. Seminar organized by the Public Utility Research Center and sponsored by SIRESE, 2001.
135. White Paper on implementing total factor productivity measures in regulation for the Utility Distributor's Forum. CitiPower, 2001.
136. Electronic forum on service quality incentives and research topics. Edison Electric Institute, 2001.
137. Economies of scale and scope in power services. Western Power, 2001.
138. Report evaluating the merits of alternative benchmarking methods and their application to energy distributors. Electricity Supply Association of Australia, 2001.
139. Response to report on benchmarking and incentive regulation. Client confidential at this time, 2000-2001.
140. Report on consistency of Price Determination with legislative mandates. TXU Australia, 2000-2001.
141. Develop methodology for service quality benchmarking and construction of appropriate deadbands. Massachusetts Gas and Electric Distribution Companies, 2000.
142. Advise on Performance-Based Regulation strategy, including development of a service quality incentive. BCGas, 2000.
143. Power distribution benchmarking. Queensland Competition Authority, 2000.
144. Develop and testify in support of service quality incentive. Western Resources, 2000.
145. Response to regulatory proposals for "ring fencing" operations. CitiPower, 2000.
146. Benchmarking evaluation of power distribution costs. Client name withheld, 2000.

147. Updated White Paper on Metering and Billing Competition in California. Edison Electric Institute, 2000.
148. Economies of scale and scope in power delivery and metering services. Massachusetts Utility Distribution Companies, 2000.
149. Evaluation of merger benefits. Client wishes to remain anonymous at this time, 2000.
150. Response to study on benchmarking capital spending. CitiPower, 2000.
151. Response to incentive regulation proposals of Pareto Economics in Victorian distribution price review. CitiPower, 2000.
152. Estimate scale economies in power generation, scope economies between power transmission and power generation, and implications for public policy in Western Australia. Western Power, 2000.
153. White Paper on “best practice” regulation and evaluation of price and non-price regulation of energy and water utilities in Australia, the US, and the UK. Electricity Association of New South Wales, 2000.
154. Power transmission benchmarking. Client confidential at this time, 2000.
155. Development of performance-based regulation plan for power distribution services. Texas Utilities, 2000.
156. Response to UMS benchmarking study on O&M costs. Victorian power distributors, 2000.
157. Response to Consultation Paper on Detailed Proposal for Form of the Price Control. CitiPower, 1999-2000.
158. White Paper on cost structure of power distribution. Australian power distributors (coalition contact: the Electricity Supply Association of Australia), 1999-2000.
159. White Paper on benchmarking principles and applications. Victorian power distributors, 1999-2000.
160. Service quality testimony. Hawaiian Electric, Maui Electric, and Hawaii Electric Light, 1999.
161. Faculty member of Regulatory Training Seminar in Argentina. Seminar organized by the Public Utility Research Center and sponsored by Enargas, 1999.
162. Service quality benchmarking study. Southern California Edison, 1999.
163. US-Australia performance benchmarking study. Victorian Distribution Businesses, Victoria, Australia, 1999.
164. Cost benchmarking for power delivery and customer services. Southern California Edison, 1999.
165. Development of Service Quality Incentive and Testimony in Support of Plan. Oklahoma Gas and Electric, 1999.
166. Evaluation of Intervenor Assessments of Customer Benefits in Proposed Merger. Western Resources, 1999.
167. Response to Regulator Proposals for Regulatory Methodology, Efficiency Measurement and Benefit-Sharing, and Form of Distribution Price Controls. CitiPower, Australia, 1999.

168. Response to Incentive Regulation Proposal of Australian Competition and Consumer Commission. CitiPower, Australia, 1998.
169. Report on Metering and Billing Competition in California. Edison Electric Institute, 1998-99.
170. Evaluation of Economies of Vertical Integration for Electric Utilities in Illinois. Edison Electric Institute, 1998.
171. Assessment of Cost Performance of Power Distributors in the United States and Australian state of Victoria. Victorian Power Distributors, 1998.
172. Formal Response to Regulatory Proposals for Price Cap Regulation/Development of Regulatory Options. Victorian Power Distributors, 1998.
173. Development of Service Quality Incentive and Testimony in Support of Plan. Louisville Gas and Electric/Kentucky Utilities, 1998.
174. Regulatory Support for Overall PBR Strategy. Louisville Gas and Electric/Kentucky Utilities, 1998.
175. Testimony on Impact of Brand Name Restrictions in Maine's Retail Energy Markets. Edison Electric Institute, 1998.
176. Development of Service Quality Incentive. Hawaiian Electric, 1998.
177. Regulatory Support for Comprehensive PBR Strategy and Feasibility of Retail Competition in Power Supply Services. Hawaiian Electric, 1997-98.
178. White Paper on Controlling Cross-Subsidization in Electric Utility Regulation. Edison Electric Institute, 1997-98.
179. White Paper on Cost Structure of Integrated Electric Utilities and Implications for Retail Competition. Edison Electric Institute, 1997-98.
180. Regulatory Support for a Price Cap Plan for Combination Utility. San Diego Gas and Electric, 1997-98.
181. White Paper on Price Cap Methodologies for Power Distributors in Victoria, Australia. Victorian Power Distributors, 1997.
182. Development of a Price Cap Plan for a Local Gas Distribution Utility. Atlanta Gas Light, 1997.
183. White Paper on Price Cap Regulation for Power Distribution. Edison Electric Institute, 1997.
184. Comprehensive Report on Performance-Based Regulatory Options for a Local Gas Distribution Utility. Atlanta Gas Light, 1997.
185. White Paper on Use of Electric Utility Brand Names in Competitive Markets. Edison Electric Institute, 1997.
186. Options for Price Cap Regulation for Power Distribution in Colombia. Comision Reguladora de Energía y Gas en Colombia, 1997.
187. Options for Performance-Based Regulation for Power Transmission and Stranded Cost Recovery for an Electric Utility. Client wishes to remain confidential at this time, 1997.

188. Regulatory Support for an Index-Based Incentive Plan of a Local Gas Distribution Utility. BCGas, 1997.
189. Recommendations for a service quality incentive plan. Hawaiian Electric, 1997.
190. Survey of Service Quality Incentive Plans and Assessment of Options. BCGas, 1996.
191. Regulatory Support for a Price Cap Plan. Southern California Gas, 1996.
192. Determination of service territories for newly-privatized gas distributors in Mexico. Comisión Reguladora de Energía, 1996.
193. Assessment of Regulatory Options for a Public Enterprise. United States Postal Service, 1996-97.
194. Regulatory support for a Price Cap Plan of a Local Gas Distribution Utility. Brooklyn Union Gas, 1996.
195. Development of a Price Cap Plan for the Gas Operations of a Combination Utility. Client wishes to remain confidential at this time, 1996.
196. Assessment of Options for Service Quality Incentives. Client wishes to remain confidential at this time, 1996.
197. Development of a Price Cap Plan for an Electric Utility. Client wishes to remain confidential at this time, 1996.
198. Assessment of Lessons from Natural Gas Restructuring for Electric Utilities. Client wishes to remain confidential at this time, 1996.
199. Advised on the Establishment of a Regulatory Framework for the Mexican Natural Gas Industry. Comisión Reguladora de Energía, 1996.
200. White Paper on Unbundling Electric Utility Services. Edison Electric Institute, 1996.
201. Regulatory support for a Price Cap Plan of a Local Gas Distribution Utility. Boston Gas, 1995.
202. Development of a Price Cap Plan for a Local Gas Distribution Utility. Client wishes to remain confidential at this time, 1995.
203. Assessment of Incentive Regulation Options in the Context of a Proposed Restructuring of the Electric Utility Industry. Client outside of the United States wishes to remain confidential at this time, 1995.
204. Organization of a Conference on Price Cap Regulation. Edison Electric Institute, 1995.
205. Development of Regulatory Strategies Regarding the Transition to Retail Competition in the Electric Power Industry. Niagara Mohawk Power, 1995.
206. Assessment of Incentive Regulation Options in the Context of a Proposed Restructuring of the Electric Utility Industry. Alberta Power Limited, 1995.
207. Development of a Price Cap Plan for the Gas Operations of a Combination Utility. Public Service Electric and Gas, 1995.
208. Development of a Price Cap Plan for the Electric Operations of a Combination Utility. Public Service Electric and Gas, 1995.

209. White Paper on Incentive Regulation Theory and Its Application to Electric Utilities. Electric Power Research Institute, 1994-95.
210. Productivity Trends of U.S. Gas Distributors. Southern California Gas, 1994-95.
211. White Paper on Price Cap Regulation. Edison Electric Institute, 1994.
212. Regulatory Support for a Price Cap Plan. Central Maine Power, 1994.
213. Advanced Benchmarking Methods for U.S. Electric Utilities. Southern Electrical System, 1994.
214. Development of and Regulatory Support for a Price Cap Plan. Niagara Mohawk Power, 1994.
215. Competitive Price Scenarios for Power Markets in the Northeastern U.S. Niagara Mohawk Power, 1993-94.
216. Survey of Price Cap Plans in the U.S. and Abroad. Niagara Mohawk Power, 1993.

Expert Witness Testimony:

1. Before the Puerto Rico Energy Commission, evidence on behalf of the Puerto Rico Electric Power Authority, 2016. Subject: national and international cost and wage benchmarking.
2. Before the Wisconsin Public Service Commission, evidence on behalf of Associated Builders and Contractors of Wisconsin, 2015. Subject: assessing the merits of an expanded bidding process for the expansion of the Alliant Riverside Energy Center facility.
3. Before the Ontario Energy Board, evidence on behalf of OEB Staff, 2015. Subject: review of Custom Incentive Regulation proposal and benchmarking evidence of Toronto Hydro.
4. Before the Wisconsin Public Service Commission; evidence on behalf of Kwik Trip, 2014. Subject: surrebuttal testimony on the impact of gas extension tariffs on the development of the CNG marketplace in Wisconsin.
5. Before the Wisconsin Public Service Commission; evidence on behalf of Kwik Trip, 2014. Subject: the impact of gas extension tariffs on the development of the CNG marketplace in Wisconsin.
6. Before the Ontario Energy Board; evidence on behalf of OEB Staff, 2014: Subject: review of Customized Incentive Regulation proposal for Enbridge Gas Distribution.
7. Before the Ontario Energy Board; evidence on behalf of OEB Staff, 2013. Subject: total factor productivity estimation, cost benchmarking, and establishing incentive regulation plans for Ontario electricity distributors.
8. Before the Wisconsin Public Service Commission; evidence on behalf of Wisconsin Public Service, 2013. Subject: sur-surrebuttal testimony on the value of reliability improvements from undergrounding power lines.
9. Before the Wisconsin Public Service Commission; evidence on behalf of Wisconsin Public Service, 2013. Subject: rebuttal testimony on the value of reliability improvements from undergrounding power lines.

10. Before the Wisconsin Public Service Commission; evidence on behalf of SMART Water, 2012. Subject: Statement on appropriate opt-out policies for smart meters.
11. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of National Grid, 2010. Subject: rebuttal testimony in support of a net inflation adjustment mechanism applied to operating and maintenance expenditures.
12. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of National Grid, 2010. Subject: empirical support for a net inflation adjustment mechanism applied to operating and maintenance expenditures.
13. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2009. Subject: direct testimony on performance based regulation.
14. Before the Appeal Panel Constituted Pursuant to Section 55 of the *Essential Services Commission Act* 2001, Victoria Australia; evidence on behalf of the Essential Services Commission, 2008. Subject: estimating partial factor productivity growth for O&M expenditures for natural gas distributors.
15. Before the Ontario Energy Board, 2008. Subject: appropriate values for total factor productivity-based productivity factor; benchmarking-based productivity “stretch factors;” and appropriate thresholds for capital investment modules; in an incentive regulation plan for electricity distributors in the Province.
16. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2007. Subject: direct testimony on performance based regulation.
17. Before the Circuit Court of the City of St. Louis, Missouri, Division 9, in Michele Thrash v. Freightliner *et al*, 2007. Subject: deposition testimony on estimated damages for lost income and medical treatment.
18. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2007. Subject: panel testimony on revenue decoupling and performance based regulation.
19. Before the New Zealand Commerce Commission, evidence on behalf of Telecom New Zealand, 2007. Subject: principles for price benchmarking and the merits of alternative methods of benchmarking unbundled copper local loop prices.
20. Before the Circuit Court of the City of St. Louis, Missouri, Division 13, in Anastacia McNutt v. Globe Transport, Inc *et al*, 2007. Subject: deposition testimony on estimated damages for lost income and past and future medical treatment.
21. Before the Michigan Public Service Commission; evidence on behalf of Detroit Edison, 2007. Subject: service quality regulation and benchmarking.
22. Before the Appeal Panel, South Australia, Australia; evidence on behalf of the Essential Services Commission of South Australia, 2006. Subject: the operating expenditures and outsourcing management fee of Envestra Ltd.
23. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2006. Subject: rebuttal testimony on exogenous recovery of revenues lost due to declining natural gas usage.

24. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2006. Subject: direct testimony on exogenous recovery of revenues lost due to declining natural gas usage.
25. Before the Appeal Panel Constituted Pursuant to Section 55 of the *Essential Services Commission Act* 2001, Victoria Australia; evidence on behalf of the Essential Services Commission, 2006. Subject: regulatory treatment of an outsourcing contract to a related corporate party in a power distribution price determination.
26. Before the Appeal Panel Constituted Pursuant to Section 55 of the *Essential Services Commission Act* 2001, Victoria Australia; evidence on behalf of the Essential Services Commission, 2005. Subject: labor and non-labor shares in operating expenditures.
27. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2005. Subject: rebuttal testimony on performance based regulation and benchmarking.
28. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Bay State Gas, 2005. Subject: performance based regulation and benchmarking.
29. Before the New Zealand Commerce Commission, evidence on behalf of Vector and NGC, 2004. Benchmarking evidence for New Zealand gas distributors.
30. Before the New Zealand Commerce Commission, evidence on behalf of Powerco, 2003. Evaluation of total factor productivity and benchmarking evidence in studies undertaken for the Commission.
31. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Boston Gas, 2003. Subject: rebuttal testimony on performance based regulation, total factor productivity measurement and benchmarking
32. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Boston Gas, 2003. Subject: performance based regulation, total factor productivity measurement and benchmarking
33. Before the US District Court for the Western District of Wisconsin, Trombetta, LLC vs. Dana Corporation and AEC, 2003. Subject: estimate damages in solenoid patent infringement case.
34. Before the Rhode Island Public Utilities Commission: evidence on behalf of New England Gas, 2003. Subject: direct testimony on alternative service quality regulation proposals.
35. Before the Kansas Corporation Commission; evidence on behalf of Western Resources, 2001. Subject: reply to surrebuttal testimony in support of service quality incentive plan.
36. Before the Kansas Corporation Commission; evidence on behalf of Western Resources, 2000. Subject: rebuttal testimony in support of service quality incentive plan.
37. Before the Supreme Court of Victoria, Australia; evidence on behalf of TXU Australia, 2000. Subject: Whether the regulator's price determination complied with legal mandates to use price-based incentive regulation.
38. Before the Kansas Corporation Commission; evidence on behalf of Western Resources, 2000. Subject: Support of a service quality incentive plan, including valuation of quality and other intangible aspects of customer welfare.

39. Before the Massachusetts Department of Telecommunications and Energy; evidence on behalf of Massachusetts gas and electric distribution companies, 2000. Subject: Service quality benchmarking.
40. Before the Hawaii Public Service Commission; evidence on behalf of Hawaiian Electric, 1999. Subject: Support of a service quality incentive plan, including valuation of quality and other intangible aspects of customer welfare.
41. Before the Oklahoma Corporation Commission; evidence on behalf of Oklahoma Gas and Electric, 1999. Subject: Support of a service quality incentive plan, including valuation of quality and other intangible aspects of customer welfare.
42. Before the Kentucky Public Service Commission; evidence on behalf of Louisville Gas and Electric and Kentucky Utilities, 1998. Subject: Rebuttal testimony in support of service quality incentive plan and benefits of companies' regulatory proposal to low-income customers.
43. Before the Kentucky Public Service Commission; evidence on behalf of Louisville Gas and Electric and Kentucky Utilities, 1998. Subject: Support of a service quality incentive plan, including valuation of quality and other intangible aspects of customer welfare.
44. Before the Maine Public Utilities Commission, evidence on behalf of the Edison Electric Institute, 1998. Subject: Merits of allowing utility companies to use their brand names in competitive retail energy markets.
45. Before the California Public Utilities Commission, evidence on behalf of the Edison Electric Institute, 1997. Subject: Merits of allowing utility companies to use their brand names in competitive retail energy markets.

Publications:

1. *The Price Cap Designers Handbook* (with M. N. Lowry), Edison Electric Institute, 1995.
2. "The Treatment of Z Factors in Price Cap Plans" (with Mark Newton Lowry), *Applied Economics Letters*, 2: 1995.
3. "Forecasting Productivity Trends of Natural Gas Distributors" (with Mark Newton Lowry), *AGA Forecasting Review*, March 1996.
4. *Performance-Based Regulation for Electric Utilities: The State of the Art and Directions for Further Research* (with Mark Newton Lowry), Palo Alto: Electric Power Research Institute, 1996.
5. *Developing Unbundled Electric Power Service Offerings: Case Studies of Methods and Issues* (with Laurence Kirsch), Washington: Edison Electric Institute, 1996.
6. "A Theoretical Model of Spillovers Through Labor Recruitment", *International Economic Journal*, Autumn 1997.
7. *Branding Electric Utility Products: Analysis and Experience in Related Industries* (with Mark Newton Lowry and David Hovde), Washington: Edison Electric Institute, 1997.
8. "The Branding Benefit", *Electric Perspectives*, November 1997.
9. *Price Cap Regulation for Power Distribution* (with Mark Newton Lowry), Washington: Edison Electric Institute, 1998.

10. *Controlling for Cross-Subsidization in Electric Utility Regulation* (with Mark Meitzen and Mark Newton Lowry), Washington: Edison Electric Institute, 1998.
11. “Price Caps for Distribution Service: Do They Make Sense?”, *Edison Times*, December 1998 (with Eric Ackerman and Mark Newton Lowry).
12. *Economies of Scale and Scope in Power Distribution* (with Mark Newton Lowry), Washington: Edison Electric Institute, 1999.
13. *Competition for Metering, Billing and Information Services: The Experience in California So Far*, Edison Electric Institute, 1999.
14. *Third Party Metering, Billing and Information Services: Further Evidence from California*, Edison Electric Institute, 2000.
15. “Performance Based Regulation of Energy Utilities” (with Mark Newton Lowry), *Energy Law Journal*, 2002
16. “Performance Based Regulation and Business Strategy” (with Mark Newton Lowry), *Natural Gas*, 2003.
17. “Performance Based Regulation and Energy Utility Business Strategy” (with Mark Newton Lowry), *Natural Gas and Electric Power Industries Analysis 2003*, Financial Communications, Houston, 2003
18. “Price Control Regulation in North America: Role of Indexing and Benchmarking,” (with M.N. Lowry and L. Getachew), *Proceedings of Market Design Conference*, Stockholm, Sweden, 2003.
19. ”Performance Based Regulation Developments for Natural Gas Utilities” (with Mark Newton Lowry), *Natural Gas and Electricity*, 2004.
20. “Incentive Power and the Design of Regulatory Regimes,” *Network*, December 2005.
21. “Alternative Regulation for Electric Utilities” (with Mark Newton Lowry), *Electricity Journal*, June 2006.
22. ”Performance Indicators and Price Monitoring: Assessing Market Power,” *Network*, March 2007.
23. “Incentive Regulation in North American Energy Markets” *Energy Law and Policy*, Carswell Publishing, Toronto, Canada, 2009.
24. “Regulatory Reform in Ontario: Successes, Shortcomings and Unfinished Business” *Public Utilities Fortnightly*, November 2009
25. “An Update to Keystone XL Development,” *CERI Crude Oil Report*, September 2015
26. “Mexico Natural Gas Reform,” *Geopolitics of Energy*, January-February 2016

Presentations at Seminars and Professional Meetings:

1. Department of Energy/NARUC, Orlando, FL, 1995.
2. Illinois Commerce Commission and the Center for Regulatory Studies, St. Charles, IL, 1995.
3. Regulatory Studies Program, NARUC/Michigan State University, East Lansing, MI, 1995.

4. Marketing Conference, Edison Electric Institute, Chicago, IL, 1997.
5. Advanced Rate School, Edison Electric Institute, Indianapolis, IN, 1997.
6. Code of Conduct Conference, Denver, CO, 1997.
7. Code of Conduct Conference, Denver, CO, 1998.
8. Forum on Price Cap Regulation for Power Distribution. Melbourne, Australia, 1998.
9. Conference on Competition and Regulatory Reform in Hawaii. Honolulu, HI, 1998
10. Alternative Approaches Towards Price Cap Regulation. Melbourne, Australia, 1998.
11. Economics Meetings, Edison Electric Institute. Charlotte, NC, 1998.
12. Metering, Billing and Information Services Policy Convention, EEI, Chicago, IL, 1999.
13. Electricity Deregulation Conference. Vail, CO, 1999.
14. PURC Regulatory Training Seminar for Natural Gas Policy, Buenos Aires, Argentina, 1999.
15. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2000.
16. Seminar on Theory and Practice of Economic Regulation, Sydney, Australia, 2000.
17. Power Delivery Reliability Conference. Denver, CO, 2000.
18. Performance-Based Regulation Conference. Chicago, IL, 2000.
19. Regulatory Studies Program, NARUC/Michigan State University, East Lansing, MI, 2000.
20. Performance-Based Ratemaking Conference, Denver, CO 2000.
21. Energy Forum, Institute of Public Affairs, Melbourne, Australia, 2000.
22. Chamber of Commerce and Industry, Perth, Australia, 2001.
23. Energy Regulation Conference, Melbourne, Australia, 2001.
24. Advanced Rate School, Edison Electric Institute, Indianapolis, IN, 2001.
25. PURC Regulatory Training Seminar, La Paz, Bolivia, 2001.
26. Performance-Based Regulation Conference, Denver, CO, 2001.
27. Cost Structure of Energy Networks, Sydney, Australia, 2002.
28. Advanced Rate School, Edison Electric Institute, Indianapolis, IN, 2002.
29. Performance-Based Ratemaking Conference, Denver, CO 2002.
30. How to Regulate Electricity Lines Companies?, New Zealand Institute for the Study of Competition and Regulation, Wellington, New Zealand, 2003
31. Public Utility Regulation Seminar: Tariff Design and Incentives, Acapulco, Mexico, 2003
32. Rates and Regulation Meeting: Southeastern Electric Exchange, Williamsburg, VA, 2003.
33. Workshop on Service Quality Regulation in Ontario, Toronto, ON 2003.
34. Joint Canadian Electricity Association Distribution Council and Customer Council Meeting, Halifax, Nova Scotia, 2004.
35. Asia-Pacific Productivity Conference, Brisbane, Australia, 2004. [invitation, paper submitted]
36. Workshop on Productivity Measurement, Melbourne Australia, 2005.
37. Utility Regulators Forum, Canberra Australia, 2005.
38. CAMPUT Energy Regulation Course, Kingston Canada, 2006.
39. Performance Based Regulation Seminar, Toronto Canada, 2006.
40. Performance Benchmarking for Energy Utilities, Arlington, Virginia, 2006.
41. Performance Benchmarking for Energy Utilities, Seattle, Washington, 2007.
42. Alternative Regulation Seminar, Boston, Massachusetts, 2007.
43. CAMPUT Energy Regulation Course, Kingston Canada, 2007.
44. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2008.
45. Performance Benchmarking for Energy Utilities, Denver, Colorado, 2008.
46. Alternative Regulation Seminar, Toronto, Canada, 2008.
47. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2008.
48. CAMPUT Energy Regulation Course, Kingston Canada, 2008.

49. Performance Benchmarking for Energy Utilities, Chicago, IL, 2008.
50. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2009.
51. Alternative Regulation Seminar, Boston, MA, 2009.
52. CAMPUT Energy Regulation Course, Kingston Canada, 2009.
53. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2010.
54. Alternative Regulation Seminar, Boston, MA, 2010.
55. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2010.
56. CAMPUT Energy Regulation Course, Kingston Canada, 2010.
57. Alternative Regulation Seminar, Toronto Canada 2010.
58. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2011.
59. Alternative Regulation Seminar, Philadelphia PA, 2011.
60. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2012.
61. Alternative Regulation Seminar, Chicago, IL, 2012.
62. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2013.
63. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2013.
64. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2014.
65. Alternative Regulation Seminar, Chicago, 2014.
66. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2014.
67. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2015.
68. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2015.
69. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2016.
70. Latin American Natural Gas Conference, Naturgas, Cartagena, Colombia, 2016.
71. World Bank International Training Program on Utility Regulation, Gainesville, FL, 2016 (pending).