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## EMPLOYMENT

**Synapse Energy Economics Inc.**, Cambridge, MA. *Senior Consultant*, 2007 - present.  
Analysis and consulting on energy policy, climate change, renewable energy, energy efficiency, consumer advocacy, environmental compliance and technology and business strategy within the energy industry.

**Independent research, analysis, and consulting**, 2002 – present.  
Energy work includes efficiency studies, rate design, performance-based ratemaking, renewable energy, technology assessment, cost benefit analysis, design and evaluation of demand-side load response and efficiency programs, and policy analysis.

**Tellus Institute for Resource and Environmental Strategies**, *Vice President and Director*, 1977-2002.  
Energy consulting on myriad topics. Led Industrial Eco-Efficiency (E2) Initiative to promote integrated assessment of pollution prevention and energy efficiency. The Initiative created software for financial analysis of projects within firms, and the *E2 Financing Directory*, a U.S. EPA data base of resources for New England businesses seeking financing for E2 projects.

**State University of New York at Albany**, Allen Center and Graduate School of Public Affairs, *Associate Professor*, 1974-1978

**Rensselaer Polytechnic Institute**, Department of History and Political Science, *Assistant Professor*, 1973-1974.

**Department of Environmental Conservation**, Albany, New York, *New York Civil Service Public Administration Intern*, 1973.

## EDUCATION

**Clark University**, (A.B.)

**University of Chicago**

Massachusetts Institute of Technology, (Ph.D.)

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## **EXPERT TESTIMONY\***

### **Rate Design & Cost Allocation**

*Before:*

Nevada Public Service Commission, docket 94-7001 (1995)  
New Jersey Board of Public Utilities, docket ER02080506 (2003)  
New York Public Service Commission, case 91-E-1185 (1991)  
Ontario Energy Board, H.R. 24 submission (1996)  
Rhode Island Public Utilities Commission, docket 2036 (1992)  
Utah Public Service Commission, docket 02-057-02 (2002).

### **Energy Efficiency & Renewable Energy**

*Before:*

Colorado Public Utilities Commission, dockets 99A-377EG (1999), 00A-008E (2000)  
Delaware Public Service Commission, docket 94-83 (1995)  
Maine Public Utilities Commission, docket 91-213 (1992)  
New Jersey Board of Public Utilities, dockets EX04040276 (2004), GR01040280 (2001),  
EX99050347 (2000 and 1999), EE98060402 (1998), EX94120585U (1998), ER97020101 (1997)  
North Carolina Utilities Commission, docket E-100 (1990)  
Ohio Public Utilities Commission, cases 91-700-EL-FOR (1993), 92-708-EL-FOR (1992)  
Ontario Energy Board, EBROs 497 (1998), 495 (1997), 487 (1994)  
Utah Public Service Commission, docket 01-035-01 (2001)  
Vermont Public Service Board, docket 5330 (1990)  
Wisconsin Public Service Commission, dockets 05-CE-117 (2002), AP7 (1995)

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\*Testimony listed here was defended before agencies noted. Testimony that was filed but not heard is listed in the next section. List of testimony prior to 1990 available upon request

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## PUBLICATIONS, PAPERS & REPORTS

- 2007: **Independent Administration of Energy Efficiency Programs: A Model for North Carolina.** A Synapse Energy Economics report to Clean Water for North Carolina. Senior author.
- 2005: **New Jersey's Proposed Renewable Portfolio Standards Rule: Analysis and Recommendations.** Report to: New Jersey Division of the Ratepayer Advocate.
- 2005: **Emerging Technologies for a Second Generation of Gas Demand-Side Management.** Draft report to: Enbridge Gas Distribution Inc. and Union Gas Ltd. Senior author.
- 2004: **Policy & Program Actions: Buildings & Facilities.** For the Stakeholders of the Rhode Island Greenhouse Gas (GHG) Process to develop the RI Climate Change Action Plan.
- 2002: **Final Report on Energy Efficiency and Renewable Energy.** Report of the Air Pollution Prevention Forum to the Western Regional Air Partnership.
- Development Of Options: Scoping Paper.** For the Working Group on Buildings & Facilities of the Rhode Island GHG Process. Senior author.
- Testimony of David Nichols, New Jersey Board of Public Utilities.** Pre-filed testimony on demand-side management cost recovery in a Public Service Electric & Gas Company matter that was settled. Prepared for the Division of the Ratepayer Advocate. Tellus Institute Study 01-109.
- 2001: **"Load Response: New, or Déjà Vu?"** in *Electricity Journal*, vol. 14, no. 4, May. Co-author.
- An Economic Analysis of Achievable New Demand-Side Management Opportunities in Utah.** Prepared for the System Benefits Charge Stakeholder Advisory Group to the Utah Public Service Commission. Tellus Study 00-076. Principal author.
- "The Role of Regulators in Promoting Energy Efficiency and Renewable Technologies,"** in *Pace Environmental Law Review*, vol. 18, no. 2.
- 2000: **Measuring Results from Climate Change Programs: Performance Indicators for GEF.** Global Environmental Facility Monitoring and Evaluation Working Paper 4. Co-author.
- Institutional and Governance Issues V.1: Planning Approaches.** A Thematic Review published by the World Commission on Dams. Principal author.

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**Best Practices Guide: Integrated Resource Planning for Electricity.** US Agency for International Development and the Institute of International Education, Washington, D.C. Co-author.

**Paper, “What’s A Policy Maker To Do?”** Western Regional Air Partnership Air Pollution Prevention Forum, Scoping of Energy Efficiency. San Francisco, May.

**Paper, “State Renewable Energy Policies.”** Spring 2000 Conference of the National Pollution Prevention Roundtable.

***Reducing Peak Demands Through Customer-Side Initiatives.*** Report to Citizens Utility Board, Chicago. Tellus Study 00-061. Senior author.

1999: **Regulatory Incentives for Demand-Side Management.** Report to the West Kootenay Power Company Demand-Side Management Committee. Tellus Study 98-211.

**Funding for Energy-Related Public Benefits: Needs and Opportunities With and Without Restructuring.** Report to the Colorado Governor’s Office of Energy Management and Conservation. Senior Author. Tellus Study 98-002.

**Support for Energy-Related Public Benefits: Funding Approaches and Related Options.** Report to the American Council for an Energy-Efficient Economy. Tellus Study 99-017. Senior author.

**Development of Climate Change Program Performance Indicators.** Report to the Global Environmental Facility. Senior author. Tellus Study 98-222.

**Paper, “Environmental Benefits of Low-Income Weatherization,” in Evaluation in Transition: Working in a Competitive Energy Industry Environment.** Proceedings of 1999 International Energy Program Evaluation Conference, pp. 427-434. Co-author.

**Paper, “Auditing Performance in a ‘Standard Offer’ Efficiency Program,” in Evaluation in Transition.** Proceedings of the 1999 International Energy Program Evaluation Conference, pp. 649-656. Co-author.

1998: **Incentive Rate Regulation and Integrated Resource Planning.** Pre-filed testimony on behalf of the Regroupement national des Conseils régionaux de l’environnement du Québec. Co-author.

**Incentives for DSM Performance.** Pre-filed testimony on behalf of Enbridge Consumers Gas; Ontario Energy Board EBRO 497-01, Exhibit C, Appendix D.

**Energy Efficiency in Colorado: Progress and Potential.** Report to the Governor’s Office of Energy Conservation and Management. Tellus Study 98-002/C1.

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**Gas Energy Efficiency Technologies: Cost-Effectiveness Screening.** Report to the Massachusetts Division of Energy Resources. Tellus Study 96-180/C. Senior author.

**Institutional Conservation Program Process Evaluation Report.** Report to the Ohio Department of Development, Office of Energy Efficiency. Tellus Study 95-247. Co-author.

**Home Weatherization Assistance Program Process Evaluation.** Report to the Ohio Office of Energy Efficiency. Tellus Study 95-247/PE. Co-author.

**Home Weatherization Assistance Program Environmental Impact Analysis.** Report to the Ohio Office of Energy Efficiency. Tellus Study 95-247/EN. Co-author.

**Home Weatherization Assistance Program in Ohio: Economic Impact Evaluation.** Report to the Ohio Office of Energy Efficiency. Tellus Study 95-247/EC. Co-author.

**Costs and Benefits of the Consumers Gas Company's Natural Gas Vehicle Program.** Study Tellus 98-001E. Co-author.

**High Efficiency Boilers: Economic and Achievable Potential.** Report to the Consumers Gas Company of Ontario, Ltd. Tellus Study 98-001C/8. Co-author.

1997: **Sustainable Electricity for New England: Regulatory and Other Governmental Tools to Support Environmentally Sustainable Technologies in the Context of Electric Industry Restructuring.** The R/EST Project. Report to the New England Governors' Conference. Tellus Study 95-310. Co-author.

**Paper, "Industrial Eco-Efficiency and Total Cost Assessment."** Association of Energy Services Professionals Conference, Boca Raton, Florida, December.

1996: **Article, "Gas Utility Portfolio of Market-Oriented DSM,"** in *Strategies*, vol. 7, no. 3.

**Market-Oriented Demand-Side Management: An Assessment of Consumers Gas Demand-Side Management After Two Years.** Tellus Study 96-001.

**Action Plan.** Report to the Technology Group, Massachusetts Industrial Services Program. Tellus Study 95-222. Project Manager.

**Gasco Proposed Demand-Side Management Plan.** Report to The Gas Company of Hawaii. Tellus Study 93-271. Co-author.

1995: **Testimony of David Nichols, N.J. Board of Public Utilities.** Pre-filed testimony on

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demand-side management issues in a Public Service Electric & Gas Co. matter that was settled. Prepared for the Division of the Ratepayer Advocate. Tellus Study 95-101.

**Industrial Demand-Side Management in a Transitional Era.** Report to Wisconsin's Environmental Decade. Tellus Study 94-146. Principal investigator.

**Testimony of David Nichols, Nevada Public Service Commission.** Pre-filed testimony on DSM issues in a Nevada Power Company matter that was settled. Prepared for the Office of Consumer Advocate. Tellus Study 94-193C/T-2.

**Paper, "Bidding for Interruptibility,"** in *Fourth International Energy Efficiency and DSM Conference*. Bala Cynwyd, PA: SRC International, pp. 539-544.

**Paper, "Industrial Demand-Side Management in Transition,"** in *Partnerships, Productivity, and the Environment*, Proceedings of the ACEEE 1995 Summer Study on Energy Efficiency in Industry, Volume II, pp. 197-208.

1994: **Evaluation of Pacific Gas & Electric Company's Interruptible Bidding Program.** Report to the Advisory and Compliance Division, California Public Utilities Commission. Tellus Study 93-136. Project Manager.

**Report to the Staff of the Arkansas Public Service Commission Concerning SWEPCO's Proposed Promotional Practices.** Tellus Study 92-153C. Co-author.

**Reviews of Metropolitan Edison Co., Pennsylvania Power & Light Co. and Pennsylvania Electric Company 1995 Demand Side Management Filing.** Prepared for the Pennsylvania Office of Consumer Advocate. Tellus Study 94-071. Co-author.

**Review of Union Electric Company's Electric Utility Resource Planning Compliance Filings.** Prepared for the Missouri Office of Public Counsel. Tellus Study 93-254. Co-author.

1993: **Advertising Costs in Demand-Side Management Programs.** Report to Corporation Commission Staff, Phoenix, Arizona. Tellus Study 93-103. Principal investigator.

**Economic Opportunities Through Energy Efficiency and the Energy Policy Act of 1992.** Jefferson City: Environmental Improvement and Energy Resources Authority. Report to the Missouri legislature pursuant to House Concurrent Resolution 16. Co-author.

**Integrated Resource Planning Concepts and Approaches.** Report to Hydro-Québec and the Public Interest Groups and Associations. Tellus Study 92-155. Co-author.

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**Proposed Rules Governing Integrated Resource Planning for Electric and Natural Gas Utilities Regulated by the State of Kansas.** Tellus Study 92-105. Co-author.

**Gasco Integrated Resource Plan Report.** Before the Public Utilities Commission of Hawaii, docket No. 7261. Prepared for The Gas Company of Hawaii. Tellus Study 92-181. Co-author.

1992: **Evaluation of Public Service Electric & Gas Demand-Side Management Resource Plans,** docket no. EX-90040304. Report to the New Jersey Rate Counsel Division, Department of Public Advocate. Tellus Study 92-055. Principal investigator.

**Evaluation of Atlantic Electric DSM Resource Plan,** docket no. EX90040304. Report to the N.J. Rate Counsel. Tellus Study 92-055B. Principal investigator.

**Paper, “Bidding for Performance: The Large Commercial Gas Conservation Program at Wisconsin Gas Company,”** in *Implementation of Demand-Side Management*, Proceedings of the National DSM Implementation Conference, pp. 84-90. Bala Cynwyd, PA: Synergic Resources Corporation, 1992. Principal author.

1991: **Paper, “Gas Substitution in Electric Utility DSM,”** in *Proceedings: 5th National Demand-Side Management Conference*. Palo Alto, CA: Electric Power Research Institute, Report EPRI CU-7394, pp. 231-234.

**Comments of Pennsylvania Office of Consumer Advocate on the Pennsylvania Power and Light Company Demand-Side Management 1991 Plan.** Tellus Study 90-201D. Principal investigator.

**Improved Energy Efficiency Through Building Standards: An Opportunity for Long Island.** Report to Long Island Power Authority. Tellus Study 90-028/BC. Co-author.

**Long Island Power Authority Comments on the LILCO 1991-92 and 1990 Long Range Electric Conservation & Load Management Plan.** Tellus Study 90-028. Principal investigator.

1990: **Conservation and Capacity Optimization Alternatives to the PGT/PG&E Gas Pipeline Project.** Report to the California Public Utilities Commission. Tellus Study 90-003. Co-author.

**Savings from the Smart Money Program: An Audit of the 125 MegaWatt Demand Reduction.** Report to Wisconsin Electric Power Company and the Wisconsin Public Service Commission. Tellus Study 89-127. Principal investigator.

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**Paper, “Tracking Results in Demand-Side Management Programs,”** in *Demand-Side Management Conference*. Toronto: Canadian Electrical Association, pp. 344-356.

**Paper, “Tracking Activity and Results in DSM Programs,”** in *Proceedings, ACEEE 1990 Summer Study on Energy Efficiency in Buildings*, pp. 6.109-6.118. Principal author.

**Article, “The Conservation Utility: A New Institutional Approach,”** in UNEP’s *Industry and Environment Review*, Vol. 13, No. 2. Co-author.

List of publications & papers prior to 1990 available upon request.

## **OTHER PROFESSIONAL ACTIVITY**

- 2007            Consultant to Nova Scotia Utility and Review Board for Nova Scotia Power’s electric integrated resource planning process.
- 2001-2007     Technical consultant to the Rhode Island Department of Environmental Management for the state’s greenhouse gas process and *Climate Change Action Plan*.
- 1996-2007     Consultant to the New Jersey Division of Rate Counsel for:
- New Jersey Clean Energy Council;
  - New Jersey Energy Master Plan;
  - Governor’s Renewable Energy Task Force;
  - comments on draft electricity & gas restructuring legislation;
  - advice to Consumer Protection Task Force (restructuring issues);
  - evaluation of off-tariff rate agreements; and
  - evaluation of gas and electric utilities’ DSM cost recovery.
- 1994-99;  
2004-5         Consultant to Enbridge Gas Distribution Inc. (Ontario) for development and implementation of natural gas demand-side energy efficiency plans and programs.
- 2004-5         Consultant to Enbridge Gas - New Brunswick for development of an electric demand-side energy efficiency system for New Brunswick.
- 2002-3         Consultant to the Western Regional Air Partnership for the Air Pollution Prevention Forum’s *Final Report on Energy Efficiency and Renewable Energy* and supporting technical analyses.
- 2002            Presentation to National Association of Energy Service Companies, Mid-Year Conference, Chicago.
- 2002            Lead instructor, U.S. Agency for International Development (USAID) training

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- courses in Electric Resource Planning and Demand-Side Management. Bangalore and Jaipur, India.
- 2002 Instructor, USAID training course in Integrated Resource Planning. Jakarta, Indonesia.
- 1999 Lead instructor, USAID training course in Electric Resource Planning at Tellus Institute, Boston.
- 1998 Presentation to the Advisory Committee on Resource Planning of the Québec Energy Board, Montreal.
- 1998 Panelist, Pollution Prevention & Energy Efficiency Training Session, Pollution Prevention Roundtable Conference, Cincinnati.
- 1996 Consultant to the Kentucky Attorney General—technical assistance on utility cost recovery for demand side management programs.
- 1995-1998 Consultant to Massachusetts Division of Energy Resources for development of policy, program and cost-effectiveness frameworks for gas utility demand-side management.
- 1995 Consultant to Nevada Office of Advocate for Customers of Public Utilities for assessment of Sierra Pacific Power integrated resource plan, docket 95-5001.
- 1994-98 Consultant to The Gas Company of Hawaii for development of DSM programs.
- 1992-95 Technical agent to the commissioners, District of Columbia Public Service Commission, Formal Case No. 917, phases I and II.
- 1993-4 Consultant to the Staff of the Arkansas Public Service Commission for review of the integrated resource plans of three electric utilities.
- 1993 Technical agent to the commissioners, D.C. Public Service Commission, Formal Case No. 929.
- 1992-93 Consultant to Ohio Office of Consumers' Counsel for training of staff and assessment of utility integrated resource plans.
- 1990-93 Consultant to Long Island Power Authority for implementation of conservation programs and participation in New York PSC cases 28223, 91-E-0382, and 92-E-0291.
- 1992 Consultant to Minnesota Office of Attorney General for assessment of Northern States Power integrated resource plan, docket E-002/RP-91-682.

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- 1990-91      Consultant to Connecticut Municipal Electric Energy Co-operative. Commercial customer surveys, end-use data base development, and DSM option screening.
- 1990          Presenter, “Evaluating Residential Conservation Programs,” at “Affordable Comfort IV” Conference, Philadelphia.
- 1990          Consultant to Wisconsin Gas Company: preparation and implementation of gas DSM bid.
- 1988-90      Independent representative on three-party panel administering Madison (Wisconsin) Gas & Electric Company conservation competition pilot program.

Other professional activity prior to 1990 available upon request.