

# Ian Goodman

The Goodman Group, Ltd.

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## Professional Profile

Ian Goodman is President and founder of The Goodman Group, Ltd. He has conducted research and consulted in energy regulation and economics for over 30 years. His practice has addressed a broad range of issues, including utility system planning and operations, the evolving North American electric and gas markets, energy intensive industries, and the economic development and environmental impacts of various energy options. Mr. Goodman has a particular expertise in the planning and operations of hydroelectric systems, as well as interjurisdictional electricity exports in North America. He has provided expert evidence in over 45 regulatory, environmental assessment, and legal proceedings in various North American jurisdictions including California, New York, three New England states, Florida, Manitoba, Ontario, Quebec, as well as the Federal Energy Regulatory Commission (FERC) in the US and the National Energy Board (NEB) in Canada. He has also assisted counsel in those and other proceedings. His clients have included the energy sector companies (electric and gas utilities, marketers, project developers, and equipment providers), regulators, government, customer and environmental groups, and North American Native/First Nations organizations. Mr. Goodman is the author or co-author of over 50 publications relating to the energy industry.

## Professional Experience

**1989 – present      President, The Goodman Group, Ltd.,  
Berkeley, California (formerly Boston, Massachusetts)**

Collaborating with a team of associates to provide an array of expert consulting services such as testimony, research, policy assessment and litigation support related to energy regulation and economics.

Specializing in utility system planning and operations, the evolving North American electric and gas markets, energy intensive industries, and the economic development and environmental impacts of various energy options.

### **Major Projects:**

#### **Economic Development and Environmental Impacts of Energy Options**

- Since 1991, has conducted over 15 national, regional, and state/provincial studies on the economic development impacts (notably jobs) and environmental impacts of various energy options in the US and Canada.
- Provided expert testimony on behalf of The Greenlining Institute on economic development impacts (focusing on job creation and stimulus) of capital expenditures and rate increases proposed by the Pacific Gas & Electric Company in its 2011 General Rate Case.
- Co-authored the Avoided Energy Supply Costs in New England: 2009 Report, prepared for Avoided-Energy-Supply-Component (AESC) Study Group, which represents all major electric and gas utilities in New England, as well as efficiency program administrators, state energy offices and regulators. TGG's contribution to this report was an analysis of the economic development impact of Massachusetts electricity and gas energy efficiency programs.
- Co-developed E<sup>3</sup>AS (Energy, Economic, and Environmental Analysis System) software on behalf of the US EPA in 1996 and made it available to assist government agencies in evaluating the economic and environmental impacts of energy supply and efficiency programs, and in considering both the benefits and costs of energy alternatives.
- Has incorporated E<sup>3</sup>AS model analysis in all studies of economic and environmental impacts since 1996.

## **Manitoba Hydroelectric System Planning, Operations, Project Assessment, and US Exports**

### *Wuskatim Generating Station and Transmission Project (1999-2005)*

On behalf of the Pimicikamak Cree Nation (PCN):

- Evaluated Manitoba Hydro system planning, environmental review, and disclosure relating to the Churchill-Nelson hydro project
- Assessed the environmental and other impacts from existing hydro and the proposed 200 MW Wuskwatim hydro project
- Analyzed the need for comprehensive assessment of the entire Churchill-Nelson project (existing, proposed, and future)
- Reviewed precedents regarding comprehensive assessment of existing major hydro projects
- Submitted comments to the Minnesota Public Utilities Commission on Northern States Power's supply requirements in relation to Manitoba energy exports from Wuskatim.

### *Conawapa Generating Station (1990, 1992)*

On behalf of a coalition of citizens', conservation and environmental groups:

- Filed expert evidence in the 1992 Conawapa Project Environmental Assessment concerning:
  - the need for environmental reviews to evaluate the justification of design alternatives to the 1290 MW Conawapa hydro project
  - a description of the changes in the utility industry and new supply source options affecting the design alternatives included in an environmental review
  - a review of the treatment of the project justification in North American environmental assessments.
- Filed expert evidence before the Manitoba Public Utilities Board in the context of the 1990 Manitoba Hydro Submission for the Conawapa generating station, which included:
  - a review of the Manitoba Hydro submission; a review of Manitoba Hydro load forecasting; an estimation of economic and attainable conservation potential; development of principles of conservation program design and delivery; a critique of the utility's proposed demand-side management program, an evaluation of supply-side alternatives and analysis of avoided costs; an assessment of employment and economic development effects of hydroelectric development and conservation; and an analysis of profitability and risks of the proposed power sales contracts.

## **Hydro-Québec System Planning, Operations, Project Assessment, and US Exports**

### *Great Whale Project (1989-1994)*

Submitted evidence and testified before various regulatory and legal bodies in the US and Canada on behalf of the Grand Council of the Crees (of Québec) and/or a coalition of environmental groups to assess the economic and environmental impacts of the proposed 3160 MW Great Whale Project, as well as the long-term US export contracts based on the project.

Mr. Goodman's wide-ranging efforts were instrumental in Hydro-Québec's eventual cancellation of the Great Whale Project. Key interventions included:

- Submitting evidence between 1989 and 1991, before the Vermont Public Service Board, including a review of a proposed thirty year, 450 MW purchase by twenty-four Vermont utilities of Hydro-Québec power derived from the development of the Great Whale Project; and an analysis of planning and operation of Hydro-Québec power supply and modeling of hydro reservoir levels.
- Testifying in 1991 before the State of Vermont Supreme Court regarding the same 450 MW purchase and providing a summary of changes concerning load forecasts and supply-side alternatives and an analysis of the cost effectiveness of the contract.
- Submitting an analysis of the nexus between New York Power Authority purchases and the construction of specific Hydro-Québec facilities (notably Great Whale), as well as the operation of fossil fuel electric generation before the State of New York Supreme Court in 1990.
- Presenting a review of Hydro-Québec's proposed export contracts to Vermont (450 MW) and New York State (1000 MW) before Canada's National Energy Board in 1990.
- Analyzing confidential risk-sharing electric supply contracts between Hydro-Québec and large industrial customers, including an assessment of the resulting implications for Hydro-Québec and its ratepayers in 1991.
- Submitting evidence in 1992 for the Canadian and Québec governments' Environmental Review of the Great Whale Project including a discussion of changes in the utility industry and new supply resource options affecting design alternatives included in an environmental review.

- Assessing an 800 MW seasonal diversity contract in the context of the 1994 energy market before the State of New York Assembly Standing Committees on Energy and Conservation.

**1986 – 1989            Consulting Associate, PLC, Inc., Boston, Massachusetts**

Research and consulting in various aspects of utility regulation and economics. Advised utilities and regulatory commissions on electric and gas least-cost planning. Assessed potential for conservation, non-utility generation, and other supply alternatives. Reviewed prudence of power supply investment decisions. Analyzed rate design and allocation issues. Developed end-use demand estimates. Evaluated district heating system management. Analyzed markets and rates of regulated transportation services.

**1981 – 1986            Consulting Associate, Analysis and Inference, Inc., Boston, Massachusetts**

Research and consulting in various aspects of utility regulation and statistical applications. Reviewed prudence of utility power plant construction programs with emphasis on cost and schedule of nuclear plants. Researched utility rate design and allocation issues. Reviewed demand forecasts. Analyzed taconite industry economics and electricity supply. Analyzed causal factors for statistical theft estimation of fuel oil overbilling and diversion of parking meter and transit revenue.

**1978 – 1987            Consultant, Salgo & Lee, Boston, Massachusetts**

Research and consulting in electric utility regulation and civil damage litigation. Reviewed nuclear construction programs and alternatives, demand forecasts, transmission line proposals, and state rate-making policies. Analyzed effects of regional power pool rules on independent power producers. Evaluated damage claims arising from power plant equipment outages.

## Education

1977                      S.B., Civil Engineering, Massachusetts Institute of Technology

## Advisory Assignments to Regulatory and Investigatory Commissions and Staff

1996                      Commission of Inquiry on Hydro-Québec's Purchase Policy for Electricity from Independent Power Producers (*Commission d'enquête sur la politique d'achat par Hydro-Québec d'électricité auprès de producteurs privés*), Commission Staff.

1993 – 2000              Maine Public Utilities Commission Staff, Docket Nos. 92-331, 95-598, 98-791, 2000-441, and 2000-47; Special Industrial Rate Contracts

1993                      Maine Public Utilities Commission Staff, Docket No. 93-147; Certificate of Public Convenience to Erect a Transmission Line

1987 – 1988              District of Columbia Public Service Commission, Docket No. 834 Phase II; Least-cost Planning Procedures and Goals.

## Appointments

1991 – 1995              Committee to Review the Glen Canyon Environmental Studies, National Research Council Water Science and Technology Board

1978                      New England Energy Congress, Regulatory and Institutional Process Committee.

## Publications and Major Reports

The Economics of Supplier Diversity Examining Areas of Potential Interest for GLI with respect to GRC 2011 and Potential Amendments to GO 156, prepared for The Greenlining Institute, *August 6, 2010* (co-author with B. Rowan).

Avoided Energy Supply Costs in New England: 2009 Report, prepared for Avoided-Energy-Supply-Component (AESC) Study Group, *August 21, 2009* (co-author with R. Hornby, P. Chernick, et al.; *revised October 23, 2009*).

Reallocation of Funds from National Grid's Current Energy Efficiency Programs to Other Uses, prepared for National Grid USA, *October 24, 2006*.

National Grid's Energy Efficiency Programs: Benefits for Rhode Island's Economic Development and Environment, prepared for National Grid USA, *July 28, 2006*.

Comment of Pimicikamak Cree Nation (PCN) on Minnesota Draft State Energy Planning Report, sponsored by Minnesotans for an Energy-Efficient Economy (ME3), *November 21, 2001*.

Proposal for PV and Energy Efficiency at State Facilities: Benefits for California's Economic Development and Environment, prepared for PowerLight Corporation, *November 15, 2001*.

Narragansett Electric's Energy Efficiency Programs: Benefits for Rhode Island's Economic Development and Environment, prepared for Narragansett Electric Company, *August 14, 2001*.

Comment Submitted By Pimicikamak Cree Nation on An Investigation Into Environmental And Socio-Economic Costs Under Minnesota Statute §216B.2422, Subd. 3, submitted in Minnesota Public Utilities Commission Docket No. E999/CI-00-1636, *January 16, 2001* (co-author with P. Chernick and A. Orkin).

Comment Submitted By Pimicikamak Cree Nation on Northern States Power's 1999 Request for Proposals for Supply Resources Needed Starting 2001-2005, submitted in Minnesota Public Utilities Commission Docket No. E002/M-99-888, *March 1, 2000*, Supplemental Comment *August 18, 2000* (co-author with R. McCullough, A. Orkin, A. Stewart, et al.).

Analysis of Special Industrial Rate Contracts: Maine Public Service Company with McCain Foods (Docket 2000-441) and J.M. Huber (Docket 2000-47), prepared for Maine Public Utilities Commission Staff, *July 2000*.

Energy, Economic, and Environmental Analysis System (E3AS) User's Guide: Version 2, prepared for the US Environmental Protection Agency, *July 1998* (co-author with R. Carlson and B. Krier).

Employment, Earnings, and Environmental Impacts of Regional Improvements in Energy Efficiency, the Southern States Energy Board, *December 23, 1996* (co-author with B. Krier and P. Kelly-Detwiler).

North Carolina State Energy Supply Plan for Use with E3AS, prepared for North Carolina Department of Commerce Energy Division, *November 27, 1996* (co-author with R. Carlson).

Energy, Economic, and Environmental Analysis System (E3AS) User's Guide, prepared for the Southern States Energy Board, *May 1996* (co-author with R. Carlson and B. Krier).

Preliminary Results of Mohave Competitiveness Analysis, prepared for the Hopi Tribe, *March 11, 1996*.

River Resource Management in the Grand Canyon, Committee to Review the Glen Canyon Environmental Studies, National Research Council Water Science and Technology Board (Washington: National Academy Press, 1996) (co-author with W. Lewis, et al.).

Submission of the Grand Council of the Crees (of Québec) and the Cree Regional Authority, Addressed to the Consultation of the Public Debate on Energy: Complement, prepared for Grand Council of the Crees (of Québec), *August 1995* (co-author with P. Raphals, et al.).

"Energy Efficiency and Employment: Recent Findings and Directions for Future Research," Third International Energy Efficiency & DSM Conference: Charting the Future, (Bala Cynwyd: SRC International, 1994) (co-author with B. Krier).

"A Win/Win Approach to Commercial/Industrial DSM: Making DSM Work for All Utility Customers," *The Electricity Journal*, Vol. 7, No. 9, *November 1994* (co-author with H. Lachman, P. Cillo, and P. Kelly-Detwiler).

Conformity Analysis of Hydro-Quebec's Great Whale Project Feasibility Study, prepared by the Great Whale Environmental Assessment Office of the Grand

Council of the Crees (of Québec)/Cree Regional Authority in consultation with Environmental Economics Intl., et al., *July 1994* (co-author with R. Torrie, et al.).

"DSM as Economic Development Strategy," *The Electricity Journal*, Vol. 7, No. 4, *May 1994* (co-author with S. Laitner and B. Krier).

Review of the Draft Environmental Impact Statement on Operation of Glen Canyon Dam, Committee to Review the Glen Canyon Environmental Studies, National Research Council Water Science and Technology Board (Washington: National Academy Press, *April 1994*) (co-author with W. Lewis, et al.).

Review of the Draft Federal Long-Term Monitoring Plan for the Colorado River Below Grand Canyon Dam, Committee to Review the Glen Canyon Environmental Studies, National Research Council Water Science and Technology Board (Washington: National Academy Press, *1994*) (co-author with W. Lewis, et al.).

A Comparison of New York State Employment Impacts from Expanded Demand-Side Management and Hydro-Québec Imports, prepared for Greenpeace USA, *February 16, 1994* (co-author with B. Krier and P. Kelly-Detwiler; *revised March 1, 1994*).

Employment Impacts of Electricity Efficiency in Florida, prepared for the Florida Energy Office, *November 18, 1993* (co-author with B. Krier and P. Kelly-Detwiler).

Economic Analysis of Mohave Generating Station Gas Conversion, prepared for the Alternative Coal Transport Study, Economic Analysis for the Hopi Tribe, *September 13, 1993*.

The Impact of Increased Coal Transportation Costs Upon Mohave Generating Station Customers, prepared for the Alternative Coal Transport Study, Economic Analysis for the Hopi Tribe, *July 27, 1993*.

Track II Position Paper on Behalf of the Grand Council of the Crees (of Québec) and PROTECT, submitted in New York Public Service Commission Case 92-E-1187 (Concerning Incorporation of Environmental Costs into Long-run Avoided Costs), *June 25, 1993* (co-author with J. Dumont and P. Kelly-Detwiler).

Review of the 1993 Hydro-Québec Development Plan, submitted to Québec Parliamentary Commission on the Economy and Employment, prepared for Grand Council of the Crees (of Québec), *March 11, 1993* (co-author with P. Kelly-Detwiler and E. Titus; also available in French as *Analyse Critique du Plan de Développement 1993 d'Hydro-Québec*).

Assessment of the Requirement and Rationale for Transmission Facilities Associated with the 1000 MW Electricity Purchase from Manitoba Hydro, submitted in Ontario Environmental Assessment Board Ontario Hydro Demand/Supply Plan Hearing, on behalf of Nishnawbe-Aski Nation/Grand Council Treaty #3/Teme-Augama Anishnabai, *December 1992*.

Economic Evaluation of Ontario Hydro's Proposed Moose River Basin Hydroelectric Projects, submitted in Ontario Environmental Assessment Board Ontario Hydro Demand/Supply Plan Hearing, on behalf of the Moose River/James Bay Coalition, *December 1992* (co-author with R. Carlson, R. McCullough, and W. Huddleston).

Energy Efficiency: Opportunities for Employment, prepared for Greenpeace U.K./International, *November 11, 1992* (co-author with B. Krier).

"Electricity Generation and Greenhouse Gases," Planning Our Electric Future Now, Conference Proceedings of Canadian Electric Association, *November 1992*.

Comments of Pace Energy Project; Natural Resources Defense Council, National Audubon Society; Vladeck, Waldman, Elias and Englehard; Environmental Defense Fund; Environmental Planning Lobby on the 1993-1994 Annual and Long Range Demand-Side Management and Integrated Resource Plans of the New York Utilities, submitted in New York Public Service Commission Case No. 28223, *September 14, 1992* (co-author with A. Gupta, J. Tripp, J. Vladeck, D. Wooley, et al.).

Employment Effects of Electricity Provision in Québec: The Great Whale Hydroelectric Project and Electricity Efficiency Alternative, prepared for Grand Council of the Crees (of Québec), *June 16, 1992* (co-author with B. Krier and M. Clark; *revised November 5, 1992*; abbreviated James Bay Publication Series version November 1994; full version and abbreviated versions also available in French as Effets de la fourniture d'électricité sur l'emploi au Québec: le projet d'aménagement hydroélectrique Grande Baleine et la solution de rechange axée sur l'efficacité énergétique).

A Comparison of the Employment Creation Effects of the AES-Harriman Cove Coal-Fired Generating Station and Maine Demand-Side Management, prepared for Conservation Law Foundation and National Resources Council of Maine, *May 15, 1992* (co-author with M. Clark, P. Kelly-Detwiler, and M. Anthony).

A Review of the Report on Gas Integrated Resource Planning for Submission to the Ontario Energy Board, on behalf of Ontario Metis and Aboriginal Association, *February 28, 1992* (co-author with B. Morse, M. Watkins, J. Stevenson, P. Kelly-Detwiler, and M. Clark).

"Electricity Imports from Quebec: The Current and Historical Context," *Northeast Indian Quarterly, Winter 1991*.

The Role of Non-utility Generation in Vermont, *December 12, 1991* (co-author with P. Messerschmidt).

Economic and Employment Impacts of Vermont State Energy Options, prepared for Northeast Alliance to Protect James Bay, *November 7, 1991* (co-author with P. Kelly-Detwiler and M. Anthony).

Comments on the Draft New York State Energy Plan 1991 Biennial Update, on behalf of PROTECT, Hudson Sloop Clearwater, and Grand Council of the Crees (of Québec), *October 7, 1991*.

"Energy Conservation vs. the James Bay Hydroelectric Project," *Canadian Water Watch, Vol. 4, No. 5, June 1991*.

Employment Impacts of New York State Energy Options, prepared for Grand Council of the Crees (of Québec), *June 2, 1991* (co-author with M. Tennis and M. Clark).

Comments on the Determination of the Supply Resources and Environmental Effects Affiliated with Ontario Hydro Proposed Export Sales, submitted in Canadian National Energy Board Order No. EW-3-90, on behalf of Moose River James Bay Coalition / Nishnawbe-Aski Nation / Grand Council Treaty No. 3, *January 28, 1991* (co-author with P. Kelly-Detwiler).

Comments of Sierra Club, Inc.; Atlantic States Legal Foundation, Inc.; PROTECT; and Grand Council of the Crees (of Québec) on Issues to be Addressed in the New York State Energy Planning Report 1991, *January 2, 1991* (co-author with P. Messerschmidt).

"Analysis of Residential Fuel-Switching as an Electric Conservation Option," *Gas Energy Review, Vol. 18, No. 12, December 1990* (co-author with P. Chernick and E. Espenhorst).

Comments of Center for Environmental Legal Studies; Natural Resources Defense Council, National Audubon Society; Vladeck, Waldman, Elias and Englehard; Environmental Defense Fund on the 1991-1992 Annual and Long Range Demand-Side Management Plans of the Major Electric Utilities, submitted in New York Public Service Commission Case No. 28223, *September 28, 1990* (co-author with J. Plunkett, et al.).

"Hydro-Québec's Long-Term Export Policy," *Canadian Water Watch*, Vol. 3, No. 7-8, *July-August 1990*.

Conservation and Capacity Optimization Alternatives to the PGT/PG&E Gas Pipeline Project, Tellus Institute Study No. 90-03, prepared for California Public Utilities Commission, *May 1990* (co-author with R. Hornby, S. Bernow, D. Marron, D. Nichols, D. Singh, and M. Tennis).

Complément Technique au Mémoire du Grand Conseil des Cris (du Québec) à la Commission de l'Économie et du Travail de l'Assemblée Nationale du Québec, prepared for Grand Council of the Crees (of Québec), *April 1990* (co-author with R. Mainville, et al.).

Analysis of Fuel Substitution as an Electric Conservation Option, PLC, Incorporated, prepared for Boston Gas Company, *December 22, 1989* (co-author with P. Chernick and E. Espenhorst).

Conservation Potential in the State of Minnesota, Volumes I and II, PLC, Incorporated, prepared for Minnesota Department of Public Service, *June 27, 1988* (co-author with P. Chernick).

The Excess Capacity Situation of Minnesota Power: Magnitude, Duration, and Origin, PLC, Incorporated, prepared for Minnesota Department of Public Service, *July 20, 1987* (co-author with P. Chernick; *revised August 12, 1987*).

Final Report, Phase I, Module IV, Rate Design/Analysis, Pacific Northwest Electric Power and Conservation Planning Council, *December 1981* (co-author with P. Chernick, S. Finger, and M. Meyer).

Regional and Commodity Price-Indices for the Trucking Industry, M.I.T. Center for Transportation Studies, CTS Report 77-13, *July 1977* (co-author with A. Friedlander)

## Expert Testimony and Formal Submissions

Information is presented in the following order: jurisdiction and docket number; title of case; client; date testimony filed; and subject matter covered.

- 1. California Public Utilities Commission Application No. 09-12-020; Pacific Gas & Electric Company General Rate Case 2011; The Greenlining Institute; May 19, 2010; Rebuttal Testimony June 4, 2010.**

Analysis of economic development impacts (focusing on job creation and stimulus) of PG&E's proposed capital expenditures and associated rate increases. Consideration of the impacts of these expenditures and rate increases on customers and communities. Recommendation that PG&E increase its supplier diversity activities in order to offset adverse impacts on customers and communities while addressing equity concerns. Analysis of PG&E's Customer Retention and Economic Development (Load Attraction and Retention) activities. Analysis of the direct testimony of other intervenors with respect to economic development impacts of the proposed capital expenditures and quantification of these impacts in the Rebuttal Testimony.
- 2. Manitoba Clean Environment Commission Public Registry Files 4724/4725; Wuskwatim Generating Station and Transmission Project; Pimicikamak Cree Nation (PCN); August 8, 2003 (joint affidavit with R. McCullough).**

Evaluation of Manitoba Hydro system planning, environmental review, and disclosure relating to the Churchill-Nelson hydro project. Consideration of environmental harm and other impacts from existing hydro and proposed 200 MW Wuskwatim project. Analysis of need for comprehensive assessment of the entire Churchill-Nelson project (existing, proposed, and other future). Discussion of precedents regarding comprehensive assessment of existing major hydro projects.
- 3. United States District Court, Northern District of New York Case 01-CV-0951; Pogliani, et al. v. Army Corps of Engineers; Stand Together Oppose Power Plant (STOPP); June 29, 2001.**

Analysis of need for proposed 1080 MW gas combined cycle power plant in Athens, New York. Consideration of locational requirements for supply. Evaluation of potential for other in-state sources and imports.
- 4. Vermont Public Service Board Docket 6300; Proposed Sale of Vermont Yankee Nuclear Power Station; New England Coalition on Nuclear Pollution and Vermont Public Interest Research Group; April 14, 2000.**

Consideration of power supply planning in the context of risk and

- uncertainly. Evaluation of whether the proposed plant sale is consistent with sound utility planning, regulatory oversight, and electricity restructuring.
- 5. Maine Public Utilities Commission Docket 98-791; Bangor Hydro-Electric Company; Maine Public Utilities Commission Staff; May 4 1999 (Bench Analysis joint with A. Monroe and M. Force).**  
Assessment of request for extension and amendment of special industrial rate. Analysis of the economic and physical viability of paper mill self-generation options. Evaluation of whether the contract extension would be beneficial for other utility ratepayers. Development of recommendations for amended contract termination provisions.
  - 6. California Public Utilities Commission A. 96-03-031; Southern California Gas Company; The Utility Reform Network (TURN); December 30, 1998; Rebuttal Testimony February 26, 1999.**  
Review of claims by gas utility and other parties that economic development would be promoted by allocating transition costs away from large industrial and other noncore gas customers. Evaluation of how economic development will be impacted by the period selected for amortization of these transition costs. Provision of recommendations regarding consideration of economic development issues by the Commission.
  - 7. California Public Utilities Commission A. 97-12-048; Southern California Gas Company; The Utility Reform Network (TURN); April 17, 1998; Rebuttal Testimony May 4, 1998.**  
Review of claims by gas utility and other parties that economic development would be promoted by allocating transition costs away from large industrial and other noncore gas customers. Provision of recommendations regarding consideration of economic development issues by the Commission.
  - 8. Ontario Energy Board E.B.O. 177-17; Union Gas Ltd./Centra Gas Ontario, Inc. Application to Transfer Appliance Businesses to Union Energy; Pollution Probe; January 19, 1998.**  
Review of gas utilities' proposal to transfer their appliance sales, financing, renting and servicing businesses to an unregulated subsidiary. Evaluation of costs and benefits for gas consumers. Assessment of impacts upon competition, DSM, and the environment. Discussion of precedents regarding large-scale divestiture of utility assets, tender processes, and market-based valuation. Provision of recommendations regarding the future of the appliance businesses and development of competitive markets.

**9. United States Federal Energy Regulatory Commission Dockets ER97-1079-000 and OA97-237-000; New England Power Pool; Grand Council of the Crees (of Québec) and New England Coalition for Energy Efficiency and the Environment; July 1, 1997 (joint affidavit with R. Carlson).**

Review of the market power analysis and market power mitigation principles submitted by New England Power Pool. Development of applicable standard for market power analysis. Evaluation of the potential for exercise of horizontal and vertical market power by Hydro-Québec. Assessment of possible market power mitigation measures.

**10. State of Vermont House Commerce Committee and House Judiciary Committee; April 30, 1997.**

Review of a contract for purchases of Hydro-Québec power by Vermont utilities. Analysis of how changes in load forecasts, supply-side alternatives, and the wholesale power markets affect contract cost-effectiveness. Evaluation of decisions by Vermont utilities and state agencies to approve the contract. Discussion of implications for utility restructuring.

**11. United States Federal Energy Regulatory Commission Docket ER97-851-000; Petition of H.Q. Energy Services (U.S.) Inc. for Order Accepting Initial Rate Schedule, Authorizing Market-Based Rates, and Granting Certain Waivers and Blanket Approvals; Grand Council of the Crees (of Québec) and New England Coalition for Energy Efficiency and the Environment; March 27, 1997; Affidavit August 19, 1997 (joint affidavit with R. Carlson); Supplemental Affidavit September 25, 1997 (joint affidavit with R. Carlson).**

Review of Hydro-Québec subsidiary's request for power marketer status. Assessment of Hydro-Québec transmission tariff and conformity with FERC Transmission Pricing Principles and Order 888. Development of applicable standard for market power analysis and critique of applicant's analysis under traditional Hub-and-Spoke and Merger Policy Statement frameworks. Identification of potential affiliate abuse, anti-competitive behavior, and environmental impacts. Assessment of possible market power mitigation measures. Discussion of reciprocal access to Québec markets.

**12. Massachusetts Department of Public Utilities 96-25; Massachusetts Electric Restructuring Proposal; Wheeled Electric Power Company; November 21, 1996.**

Review of Massachusetts Electric's proposed Restructuring Settlement. Analysis of effects upon the utility's financial position and retail competition. Evaluation of the financial and rate reduction implications of

an alternative proposal for Standard Offer retail prices to be market-based, rather than pre-specified.

**13. Commission d'enquête sur la politique d'achat par Hydro-Québec d'électricité auprès de producteurs privés; Commission Staff; September 16, 1996.**

Analysis of Hydro-Québec's cycle of electricity surpluses and sales promotion in domestic and export markets. Evaluation of the relationship between sales promotion and the utility's independent power program. Review of mechanisms used elsewhere to acquire independent power. Discussion of transfer of utility small hydro projects to independent producers.

**14. Ontario Energy Board E.B.R.O. 493/494; Union Gas Ltd./Centra Gas Ontario, Inc. 1997 Rates Hearing; Pollution Probe; September 6, 1996 (joint testimony with R. Carlson).**

Evaluation of the utilities' gas avoided cost methodology, and avoided cost estimates used in their 1997 DSM Plan. Review and verification of the utilities avoided cost analysis. Development of recommendations for future avoided cost submissions.

**15. Ontario Energy Board HR 24; Ontario Hydro 1997 Rate Proceeding; Green Energy Coalition; June 11, 1996 (joint testimony with R. Carlson).**

Examination of social and economic consequences affiliated with Ontario Hydro's existing and proposed industrial, residential, and commercial optional rates. Specific analysis of load retention/expansion, surplus power, real time, and aggregation rates, with reference to the Board's stated concerns regarding transparency, consideration of environmental impacts, and due diligence to prevent free ridership.

**16. Vermont Public Service Board Docket 5870; Tariff filing of Green Mountain Power requesting authority to implement its Customer Pilot Pricing Program; Grand Council of the Crees (of Québec), New England Coalition for Energy Efficiency and the Environment, and Vermont Public Interest Research Group; March 19, 1996.**

Review of a proposed rate discount for incremental sales to residential and small commercial customers. Analysis of impacts upon sales, energy efficiency, and net revenues. Evaluation of program design, evaluation plan, equity considerations, environmental impacts, and potential for free ridership.

**17. Maine Public Utilities Commission Docket 95-598; Central Maine Power Company's Annual Demand-Side Management Targets; Maine Public Utilities Commission Staff; June 26, 1995 (joint testimony with J. Raab).**

Discussion of the rationale for Central Maine Power Company's continued acquisition of demand-side management resources and the need for utility efficiency programs. Review of Central Maine Power Company's 1996 DSM targets and presentation of alternative efficiency targets and associated budgets. Evaluation of CMP's DSM proposal in the context of basic program design principles.

**18. Ontario Energy Board HR 23; Ontario Hydro 1996 Rate Proceeding; Green Energy Coalition; June 16, 1995 (joint testimony with R. Carlson).**

Examination of social and economic consequences affiliated with Ontario Hydro's existing and proposed industrial discount rates. Specific analysis of load retention and risk-sharing rates, with reference to the Board's stated concerns regarding transparency, consideration of environmental impacts, and due diligence to prevent free ridership.

**19. Ontario Energy Board E.B.L.O. 251; 1995/96 Trafalgar Facilities Expansion Program of Union Gas Limited; Pollution Probe; May 5, 1995; Supplemental Testimony February 8, 1996 (joint testimony with R. Carlson).**

Evaluation of Union Gas Ltd.'s application for a natural gas pipeline expansion. Verification of its discounted cash flow analysis. Critique of Union's expected energy cost savings to participants from displacement of alternative fuels, and development of alternative energy cost savings estimates. Verification and validation of its long-term transmission facilities expansion model and its total resource cost savings analysis.

**20. Ontario Energy Board E.B.R.O. 486; Union Gas Ltd. 1995 Rate Hearing; Pollution Probe; December 5, 1994 (joint testimony with R. Carlson).**

Evaluation of Union Gas Ltd.'s gas avoided cost methodology and avoided cost estimates used in its 1995 DSM Plan. Review of Union's avoided cost analysis. Verification of Union's results. Discussion of the limitations inherent in the utility's avoided cost modeling approach, and provision of an alternative perspective to that approach. Development of recommendations for future avoided cost submissions.

**21. New York Public Service Commission Case 94-E-0334; Consolidated Edison Company of New York Rate Proceeding; Enersave, Inc., Natural Resources Defense Council, Pace Energy Project, and New York Energy Efficiency Council; September 23, 1994; Revised Testimony October 11, 1994 (joint testimony with J. Peters).**

Assessment of proposed changes to Consolidated Edison's demand-side management programs, focusing on the Commercial & Industrial Lighting Program. Analysis of the impacts on rates, revenue requirements, and societal costs associated with demand- and supply-side resources. Discussion of the interaction between electricity rates and economic competitiveness. Provision of recommendations concerning changes to the utility's proposed DSM program.

**22. Maine Public Utilities Commission Docket 92-345, Phase II; Central Maine Power Company's Proposed Increase in Rates; Office of the Maine Public Advocate; June 15, 1994 (joint testimony with R. Carlson).**

Discussion of Central Maine Power Company's load-building programs, including fuel-switching, within the context of Maine's economic and regulatory environment. Assessment of short-run and long-run risks associated with Central Maine Power Company's flexible pricing proposal. Review of pricing flexibility impacts from surplus energy auctions. Provision of recommendations concerning appropriate cost-effectiveness tests for load-building activities, limitations to auction of surplus electricity, and the insulation of residential rates from the impact of commercial/industrial sector promotional activities.

**23. Ontario Energy Board HR 22; Ontario Hydro 1995 Rate Proceeding; Grand Council Treaty #3; June 2, 1994.**

Summary of First Nation concerns relating to the proposed corporate restructuring of Ontario Hydro and potential impacts on price of electricity and quality of service. Discussion of the potential impact of restructuring on the settlement of outstanding grievances.

**24. Ontario Energy Board HR 22; Ontario Hydro 1995 Rate Proceeding; Nishnawbe Aski Nation and Grand Council Treaty #3; June 2, 1994 (joint testimony with R. Carlson).**

Review of First Nation concerns related to Ontario Hydro's ratesetting policies and orientations, including proposed discount rates and market-based pricing. Assessment of the potential impacts of rate restructuring on rural rates and equity. Critique of Ontario Hydro's cost allocation process and its potential impacts on rural customers.

**25. Ontario Energy Board HR 22; Ontario Hydro 1995 Rate Proceeding; Green Energy Coalition; June 2, 1994 (joint testimony with R. Carlson).**

Summary of general considerations relating to discounted industrial rates. Outline of the problems inherent in Ontario Hydro's proposed strategy of offering discount rates to industrial customers. Description of the applicable standard for granting special discount rates. Recapitulation of Hydro-Québec's experiences and financial difficulties associated with a strategy promoting discount rates.

**26. Florida Public Service Commission Case Nos. 930548-EG to 930551-EG; Adoption of Numeric Conservation Goals and Consideration of National Energy Policy Act Standards by Florida's Investor-Owned Utilities; Florida Department of Community Affairs; April 29, 1994 (joint testimony with B. Krier).**

Discussion of precedents for utility commission consideration of employment and economic development issues. Summary of the role of energy efficiency programs in Florida's economic development. Interpretation of the qualitative findings contained in a companion Goodman Group report entitled The Employment Impacts of Electricity Efficiency in Florida. Comparison of this analysis with standards and practices utilized in similar studies in other jurisdictions.

**27. Ontario Energy Board E.B.L.O. 246 Amended; 1994/95 Trafalgar Facilities Expansion Program of Union Gas Limited; Pollution Probe; April 4, 1994; Supplemental Oral Direct Testimony April 22, 1994 (joint testimony with R. Carlson).**

Assessment of utility's demand-supply framework. Review of gas use projections and potential impacts of DSM and greenhouse gas restrictions. Critique of utility's application of cost-benefit test. Evaluation of fuel-switching analysis. Critique of fuel price forecasts utilized. Analysis of economic risk associated with proposed facility expansion.

**28. State of New York Assembly Standing Committee on Energy and Assembly Standing Committee on Environmental Conservation; March 2, 1994.**

Assessment of 800 MW Hydro-Quebec/New York Power Authority seasonal diversity contract in the context of reduced load forecasts, increased projections for independent power production and demand-side management, and the changing wholesale power markets. Analysis of the contract's cost-effectiveness. Analysis of risk, reliability, and economic development considerations.

- 29. Maine Public Utilities Commission Docket No. 93-147; Central Maine Power Company Petition for a Certificate of Public Convenience and Necessity to Erect a Transmission Line Carrying 100 Kilovolts or More in York County; Maine Public Utilities Commission Staff; September 21, 1993 (joint testimony with R. Carlson and W. Scott).**  
Assessment of peak load forecasts through 2008 for York County. Economic analysis of the need for a transmission line. Cost-effectiveness analysis of alternative line routes.
- 30. Maine Public Utilities Commission Docket No. 92-331; Airco Industrial Gases Request for Interruptible Load Retention Service Rate with Central Maine Power Company; Maine Public Utilities Commission Staff; July 9, 1993; Supplemental Testimony August 10, 1993 (joint testimony with R. Carlson and R. McCullough).**  
Assessment of request for a special industrial rate. Review of supply and demand trends in the industrial gases industry. Analysis of production scheduling and transportation cost models. Calculation of internal rates of return based on alternative assumptions. Development of recommendations for the framework, evidentiary standards, and evaluation criteria to be used in consideration of special industrial tariffs.
- 31. Ontario Energy Board 169-III; Integrated Resource Planning for Ontario's Local Gas Distribution Companies; Ontario Metis and Aboriginal Association; November 20, 1992.**  
Identification of importance of considering environmental and social externalities in energy planning generally and in Ontario natural gas industry specifically. Formulation of recommendations for incorporating externalities into the planning process. Consideration of externalities from the standpoint of the Aboriginal population.
- 32. Government of Canada and Government of Manitoba; Conawapa Project Environmental Assessment; Concerned Citizens of Manitoba, Sierra Club of Western Canada (Manitoba Branch), Manitoba Naturalists Society, Inc., Manitoba Branch of the Canadian Parks and Wilderness Society, and Time to Respect Earths' Ecosystems (TREE) Inc.; June 4, 1992 (joint testimony with C. Goodwin and W. Marcus).**  
Discussion of the need for environmental reviews to evaluate justification of design alternatives to the proposed 1290 MW Conawapa Project. Description of changes in the utility industry and new supply resource options that will affect the design alternatives included in an environmental review. Review of the treatment of project justification in North American environmental assessments.

**33. Government of Canada and Government of Québec; Great Whale River Project Environmental Review; Grand Council of the Crees (of Québec); March 18, 1992 (joint testimony with R. McCullough).**

Discussion of the need for environmental reviews to evaluate justification of design alternatives to the 3160 MW Great Whale River Project. Description of changes in the utility industry and new supply resource options that will affect the design alternatives included in an environmental review. Review of the treatment of project justification in North American environmental assessments.

**34. New York Public Service Commission Case 90-E-0775; Petition to Reopen Proceeding and Determine the Prudence of the Contracts for Delivery of Hydro-Quebec Power; Environmental Defense Fund, Center for Environmental Legal Studies of the Pace University School of Law, Natural Resources Defense Council, National Audubon Society, Sierra Club, (Atlantic Chapter), Greenpeace U.S.A., Environmental Planning Lobby, and Hudson River Sloop Clearwater; November 25, 1991.**

Review of the need for a contract for purchases of Hydro-Québec power by New York utilities. Summary of declining load forecasts and changes in the supply outlook. Analysis of the cost-effectiveness of the proposed purchase. Discussion of risk, reliability, and other considerations.

**35. State of Vermont Supreme Court and Public Service Board; In re: Application of Twenty-Four Electric Utilities for a Certificate of Public Good Authorizing Execution and Performance of a Firm Power and Energy Contract with Hydro-Québec and a Hydro-Québec Participation Agreement, and Specifically Concerning Motions for a Remand to the Board for a New Trial; October 15, 1991; Reply Affidavit October 28, 1991.**

Review of a contract for purchases of Hydro-Québec power by Vermont utilities. Summary of changes concerning load forecasts and supply-side alternatives. Analysis of how these changes affect the cost-effectiveness of the contract.

**36. State of New York Assembly Energy Committee Senate Environmental Conservation Committee; September 30, 1991 (updated October 7, 1991).**

Assessment of Hydro-Quebec contract in the context of reduced load forecasts, increased projections for independent power production, and the changing wholesale power markets. Analysis of the contract's cost-effectiveness. Estimation of risk, reliability, and economic development considerations.

**37. New York Public Service Commission Case 91-E-0462; Consolidated Edison Company of New York Rate Proceeding; City of New York; September 6, 1991.**

Review of Consolidated Edison's demand-side management programs. Analysis of program delivery mechanisms and incentive levels. Identification of additional cost-effective efficiency measures. Discussion of opportunities for increased cooperation between Consolidated Edison and the City of New York to achieve greater efficiency.

**38. New York Public Service Commission Case 91-E-0462; Consolidated Edison Company of New York Rate Proceeding; Environmental Defense Fund, National Audubon Society, Greenpeace, and Center for Environmental Legal Studies; September 6, 1991.**

Analysis of Consolidated Edison's resource planning process with respect to demand-side management programs and the 482 MW Hydro-Québec purchase. Evaluation of demand-side management and the Hydro-Québec purchase in context of long run avoided cost estimates. Determination of cost-effectiveness of Hydro-Québec contract. Discussion of risk, reliability, environmental and economic development considerations relating to the Hydro-Québec purchase.

**39. New York Public Service Commission Case 90-E-1185; Long Island Lighting Company Rate Proceeding; Vladeck, Waldman, Elias and Englehard, Natural Resources Defense Council, and Center for Environmental Legal Studies; June 3, 1991 (joint testimony with C. Komanoff).**

Evaluation of Long Island Lighting Company's proposed 20 year, 218 MW purchase of electricity from Hydro-Québec. Comparison of Long-Run Avoided Cost and the Hydro-Québec purchase. Review of supply and demand options as alternatives to the purchase. evaluation of risk, reliability, environmental, and economic development considerations.

**40. Québec Access to Information Commission No. 90-04-07; Risk-Sharing Contracts; Grand Council of the Crees (of Québec); May 3, 1991.**

Analysis of confidential risk-sharing electricity supply contracts between Hydro-Québec and thirteen large industrial customers. Description of participants by company ownership, location, principal activities, and business relationships. Estimation of energy and capacity required to service contracts. Assessment of resulting implications for Hydro-Québec and its ratepayers. Review of treatment of electricity contracts for aluminum smelters and other large industrial customers in North American jurisdictions.

**41. Massachusetts Department of Public Utilities 90-261-A; Massachusetts Electric Fuel Switching; Massachusetts Division of Energy Resources; April 17, 1991.**

Evaluation of fuel switching as a demand-side management option. Review of current status of fuel-switching technologies. Formulation of cost and benefit allocation algorithms to optimize program participation and maximize societal benefits by incorporating fuel choice options, including renewables and active and passive solar, as part of utility least-cost planning.

**42. State of Vermont, Chittenden County Superior Court, Docket S518-91 CnC; March 5, 1991 Burlington Municipal Election Question 8; Grand Council of the Crees (of Québec); March 28, 1991.**

Analysis of Burlington Electric Department Assessment provided as "voter information" in referendum concerning power purchase contract with Hydro-Québec. Evaluation of accuracy and impartiality of information concerning cost estimates, alternative sources of supply, environmental effects, and economic benefits.

**43. Manitoba Public Utilities Board; Manitoba Hydro Submission in Respect to Major Capital Projects; Concerned Citizens of Manitoba, Sierra Club of Western Canada (Manitoba Branch), and Conservation Strategy Association of Manitoba; July 23, 1990; Surrebuttal Testimony August 30, 1990 (joint testimony with W. Marcus).**

Review of Manitoba Hydro's submission and the proposed: construction of 1290 MW Conawapa generating station and other northern hydro projects; 100 MW demand-side management program; twenty-two year, 1000 MW power sale to Ontario Hydro; and two 150 MW seasonal diversity exchanges. Review of Manitoba Hydro load forecasting. Estimation of economic and attainable conservation potential. Development of principles of conservation program design and delivery. Critique of utility's proposed demand-side management program. Evaluation of alternative supply-side resources. Analysis of avoided costs. Assessment of employment and economic development effects of hydroelectric development and conservation. Analysis of profitability and risks of proposed power sales contracts.

**44. State of New York Supreme Court; Application of Sierra Club, Inc. et al. For Judgment Under Article 78 Against the Power Authority of the State of New York, et al.; April 18, 1990; Reply Affidavit August 6, 1990; Supplemental Reply Affidavit September 13, 1990.**

Analysis of nexus between New York Power Authority purchases and construction of specific Québec hydro facilities and operation of fossil fuel electric generation. Evaluation of power imports in New York State

Energy Plan. Assessment of energy conservation as a potential substitute for hydro and fossil generation. Comparison of employment and economic development impacts of power purchase and conservation options.

**45. Canadian National Energy Board Hearing Orders No. EH-3-89 and AO-1-EH-3-89; Application of Hydro-Québec for Export License for Firm Power and Energy Contracts with Vermont Joint Owners and New York Power Authority; Grand Council of the Crees (of Québec); February 14, 1990 (joint testimony with W. Marcus).**

Review of a proposed thirty year, 450 MW sale of Hydro-Québec power to twenty-four Vermont utilities and review of a proposed twenty year, 1000 MW sale of Hydro-Québec power to the New York Power Authority. Analysis of planning and operation of Hydro-Québec power supply. Modeling of hydro reservoir levels. Determination of marginal supply resources associated with sales to Vermont and New York. Estimation of acid rain and greenhouse gases emissions from fossil and hydro generation. Analysis of reliability including adequacy of energy, capacity, and transmission supply. Estimation of achievable conservation potential in Québec. Analysis of the profitability of the proposed power sales on both a private cost and social cost basis.

**46. Vermont Public Service Board Docket 5330; Application of Vermont Utilities for Approval of a Firm Power and Energy Contract with Hydro-Québec; Grand Council of the Crees (of Québec) and New England Coalition for Energy Efficiency and the Environment; December 19, 1989; Supplemental Testimony January 18, 1990 (joint testimony with W. Marcus). Docket 5330-A; Testimony April 30, 1991.**

Review of a proposed thirty year, 450 MW purchase of Hydro-Québec power by twenty-four Vermont utilities. Analysis of planning and operation of Hydro-Québec power supply. Modeling of hydro reservoir levels. Determination of marginal supply resources associated with sales to Vermont. Estimation of acid rain and greenhouse gases emissions from fossil and hydro generation. Analysis of risk and reliability including supply diversity, and adequacy and security of energy and transmission supply. Estimation of achievable conservation potential in Québec. Development of proposal for exports to Vermont based on conservation and alternative supply resources in Québec. Evaluation of costs and benefits of Vermont Joint Owners' proposed Waiver and Release to extend the date for cancellation of export contracts without penalty.

**47. Massachusetts Department of Public Utilities 89-72; Statewide Towing Association, Police-Ordered Towing Rates; Massachusetts Automobile Rating and Accident Prevention Bureau; September 13, 1989 (joint testimony with P. Chernick).**

Review of study supporting proposed increase in towing rates. Critique of study sample and methodology. Comparison with competitive rates. Supply of towing services. Effects of joint products and joint sales on profitability of police-ordered towing.