

## **CURRICULUM VITAE OF HENRY ANDRE**

### **EDUCATION**

*University of Toronto*, Toronto, Ontario (1987)  
Master of Applied Science

*University of Toronto*, Toronto, Ontario (1985)  
Bachelor of Applied Science

### **PROFESSIONAL REGISTRATION**

*Professional Engineers Ontario*, Toronto, Ontario

### **INDUSTRY EXPERIENCE**

April 1999 – Present	Hydro One Networks Inc. / Ontario Hydro Services Company
1986 – April 1999	Ontario Hydro
2010 – Present	Manager, Transmission & Distribution Pricing, Regulatory Affairs, Corporate & Regulatory Affairs
2008 – 2010	Manager, Rate Applications, Regulatory Affairs, Corporate & Regulatory Affairs
2006 – 2008	Manager, Transmission Rates, Regulatory Affairs, Corporate & Regulatory Affairs
2004 – 2006	Senior Engineer, System Investment, Asset Management
2001 – 2004	Senior Advisor, Business Integration, Asset Management
1998 – 2000	Senior Analyst, Performance Division, Regulatory and Governmental Affairs
1995 - 1998	Engineer, Strategy and Regulatory Affairs, GRID System
1992 - 1995	Project Engineer, Transmission Projects, Engineering & Construction
1988 - 1991	Assistant Project Engineer, Transmission Lines Programs, Engineering & Construction
1986 - 1987	Research Engineer, Research Division

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2006-0501: Hydro One Networks Inc. 2007-2008 Electricity Transmission Revenue Requirement Application

## **CURRICULUM VITAE OF STANLEY BUT**

### **EDUCATION**

*York University*, Toronto, Ontario (1981-1983)  
Completed course requirements for Master of Arts in Economics

*York University*, Toronto, Ontario (1980)  
Master of Business Administration

*York University*, Toronto, Ontario (1979)  
Honours Bachelor of Arts in Economics

### **INDUSTRY EXPERIENCE**

April 1999 – Present	Hydro One Networks Inc. / Ontario Hydro Services Company
1986 – April 1999	Ontario Hydro
1980 – 1986	Ontario Government
2002-Present	Manager, Economics & Load Forecasting
1999-2002	Senior Advisor, Load Forecasts
1993-1999	Team Lead/Senior Economist, Corporate Finance
1989-1993	Senior Economist, Economics & Forecasts Division
1986- 1989	Economist, Economics & Forecasts Division
1985- 1986	Senior Economist, Ontario Manpower Commission, Ontario Ministry of Skills Development
1984- 1985	Senior Economist, Ontario Task Force on Employment and New Technology, Ontario Ministry of Labour
1980-1984	Research Economist, Ontario Manpower Commission, Ontario Ministry of Labour

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD**

EB-2005-0378	Hydro One Networks Inc. Distribution 2006 Rate Application
EB-2006-0501	Hydro One Networks Inc. 2007-2008 Electricity Transmission Revenue Requirement Application
EB-2007-0681	Hydro One Networks Inc. Distribution 2008 Rate Application
EB-2008-0272	Hydro One Networks Inc. 2009-2010 Electricity Transmission Revenue Requirement Application
EB-2009-0096	Hydro One Networks Inc. Distribution 2010-2011 Rate Application

**CURRICULUM VITAE OF  
COLIN FRASER**

**EDUCATION:**

*Institute of Chartered Accountants of Ontario (ICAO)*, Toronto, Ontario (1985)  
Chartered Accountant

*University of Toronto and York University*, Toronto, Ontario (1981 -1984)  
Completed specific ICAO courses required for C.A. designation

*University of Toronto*, Toronto, Ontario (1980)  
Bachelor of Arts (Hons.)

**INDUSTRY EXPERIENCE:**

1999 – Present: Hydro One Networks Inc. / Ontario Hydro Services Company Inc.

2007 – Present: Manager, Financial Reporting and Accounting Policy  
2006 – 2007: Senior Advisor, Financial Policy & Reporting  
1999 – 2006: Financial Advisor, Financial Policy & Reporting

1989 – 1999: Ontario Hydro  
Accounting Policy Analyst/Senior Accounting Policy Analyst

1987 – 1989: Canadian Fusion Fuels Technology Project  
Financial Services Analyst

1983 – 1987: Clarkson Gordon Chartered Accountants (Ernst & Young LLP)  
Staff Accountant/Senior Staff Accountant

**APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2008-0408: Transition to International Financial Reporting Standards  
EB-2009-0096 Hydro One Networks Inc. Distribution 2010-2011 Rate Application

## **CURRICULUM VITAE OF TOM GOLDIE**

### **EDUCATION**

*University of Toronto*, Toronto, Ontario (1983)  
Master of Industrial Relations

*University of Toronto*, Toronto, Ontario (1976)  
Bachelor of Arts (Sociology)

### **PROFESSIONAL DESIGNATIONS**

C.H.R.P.  
S.H.R.P.  
H.R.C.C.C.

### **INDUSTRY EXPERIENCE**

April 1999 – Present	Hydro One Networks Inc. / Ontario Hydro Services Company
1977 – April 1999	Ontario Hydro
2002 – Present	Senior Vice President – Corporate Services
1999 – 2002	Vice President – Human Resources and Labour Relations
1997 - 1999	Director – Human Resources - Corporate Business Development Branch – Ontario Hydro
1995 - 1997	Group Human Resources Manager – Corporate Business Group – Ontario Hydro
1993 – 1995	Corporate Human Resources Manager – Corporate Human Resources Function –Ontario Hydro
1991 – 1993	Branch Human Resources Manager – Environment and Corporate Planning Branch – Ontario Hydro
1989 – 1991	Branch Human Resources Manager - Energy Management Branch – Ontario Hydro
1985 – 1989	Divisional Human Resources Manager – Technical and Training Services Division – Ontario Hydro
1979 – 1985	Human Resources Officer – Central Region – Ontario Hydro
1977 – 1979	Human Resources Trainee – Ontario Hydro
2004 – Present	Chair – Canadian Electricity Association (CEA) Human Resources Committee Chair – Electricity Sector Council

**CURRICULUM VITAE OF  
PETER GREGG**

**EDUCATION:**

*University of Western Ontario*, Richard Ivey School of Business, London Ontario (2004)  
Master of Business Administration

*Carleton University*, Ottawa Ontario (1986)  
Bachelor of Arts

**INDUSTRY EXPERIENCE**

2004 – Present:           Hydro One Networks Inc.  
2006 – Present:       Senior Vice President, Corporate and Regulatory Affairs  
2004 - 2006 :       Vice President, Executive Office

2000 – 2004:           Greater Toronto Airports Authority  
Director, Corporate Affairs

1997 – 2000:           Office of the Minister of Transport (Ottawa)  
Senior Policy Advisor and Director of Communications

1994 – 1997:           Parliament Hill (Ottawa)  
Political Advisor

## **CURRICULUM VITAE OF GEORGE JUHN**

### **EDUCATION:**

*University of Waterloo*, Waterloo, Ontario (1982)  
Bachelor of Science (Civil Engineering)

### **PROFESSIONAL REGISTRATION:**

*Professional Engineers Ontario*, Toronto, Ontario (1990)

### **INDUSTRY EXPERIENCE:**

1999 – Present:	Hydro One Networks Inc.
1990 – 1999:	Ontario Hydro
1989 – 1990:	LeBlanc & Royle Telecom Inc., Oakville, Ontario
1982 – 1989:	SaskPower, Regina, Saskatchewan
2009 – Present	Director, Sustainment Investment Planning, Asset Management
2007 – 2009:	Manager, Distribution Development & Lines Sustainment System Investment Division, Asset Management
2004 – 2006:	Manager, Lines & ROW Programs System Investment Division, Asset Management
2000 – 2004:	Manager, Lines & ROW Sustainment Programs Investment Planning Division, Network Management
1998 – 2000:	Senior Analyst, Transmission Lines Sustainment Asset Sustainment Division Transmission Network Asset Management
1994 – 1998:	Transmission Lines Specialist Northeastern District, Sudbury
1990 – 1993:	Technical Services Engineer Transmission Lines Department HG&TO Division
1989 – 1990:	Design Engineer, LeBlanc & Royle Telecom Inc.
1983 – 1989:	Design Engineer, Transmission Line Design SaskPower
1982 – 1983:	Assistant Engineer, Power Production SaskPower

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD**

EB-2005-0378:	Hydro One Networks Inc. 2006 Distribution Rate Application
EB-2007-0681:	Hydro One Networks Inc. 2008 Distribution Rate Application
EB-2008-0187:	Hydro One Networks Inc. 2009 Distribution Rate Application (3 <sup>rd</sup> Generation Incentive Regulation)

## **CURRICULUM VITAE OF CARMINE MARCELLO**

### **EDUCATION**

*University of Toronto*, Toronto, Ontario (1987)  
Bachelor of Applied Science (Electrical Engineering)

*York University*, Toronto, Ontario (1992)  
Master of Business Administration

### **PROFESSIONAL REGISTRATION**

*Professional Engineers Ontario*, Toronto, Ontario

### **INDUSTRY EXPERIENCE**

1999 - Present	Hydro One Networks Inc.
1987 – 1999	Ontario Hydro
2008 – Present	Senior Vice-President, Asset Management
2007 – 2008	Vice-President, Corporate Projects
2005 - 2007	Director, Ontario Grid Control Centre, Transformation Project
2003 – 2005	Director, System Development, Asset Management
1998 – 2003	Manager, Transmission System Development, Investment Planning, Asset Management
1996 – 1998	Senior Planning Engineer, Sustainment Division, Asset Management
1990 – 1996	Engineer/Officer, Operating Department Hydraulic Generation and Transmission Operations Division
1987 – 1990	Assistant Planning Engineer Officer, Power System Program, Regional Supply Planning

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD**

RP-2000-0068: Leave to Construct to make an Interconnection with Hydro-Québec

### **INDUSTRY REPRESENTATION**

Member of North American Electric Reliability Corporation (NERC) - Transmission Owners and Operators Forum & Member Representatives Committee (MRC)  
Past Chair of the Canadian Electricity Association's (CEA) Transmission Council  
Holds position on the Hydro One Brampton Board of Directors and Finance, Regulatory and Policy Sub-Committee

**CURRICULUM VITAE OF  
KEITH MCDONELL**

**EDUCATION:**

*Queen's University*, Kingston, Ontario (1988-89)  
Master of Industrial Relations

*Queen's University*, Kingston, Ontario (1983-87)  
Bachelor of Commerce ( Hons.)

**INDUSTRY EXPERIENCE:**

1991 - Present:	Hydro One Networks Inc. / Ontario Hydro
1991- 1999	Labour Relations Consultant and Team Lead
1999- 2005	Senior Labour Relations Consultant
2005- Present	Manager, Human Resources Operations

**APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2008-0272: Hydro One Networks Inc. Electricity Transmission  
Revenue Requirement Application

EB-2009-0096: Hydro One Networks Distribution Rates 2010-2011 Application



## **CURRICULUM VITAE OF NAIRN MCQUEEN**

### **EDUCATION**

*University of Toronto*, Toronto, Ontario (1975)  
Post graduate courses in Chemical Reactor Design and Environmental Chemistry

*McMaster University*, Hamilton, Ontario (1972)  
Bachelor of Engineering in Chemical Engineering

### **PROFESSIONAL REGISTRATION**

*Professional Engineers Ontario*, Toronto, Ontario

### **INDUSTRY EXPERIENCE**

2000 - Present	Hydro One Networks Inc.
2000 – Present	Senior Vice-President, Engineering and Construction Services
2000 – 2002	Director, Engineering and Construction Services
1990 – 2000	Agra Inc.
1991 – 2000	Vice-President, Engineering and Project Management Services, Agra Monenco, Oakville, Ontario
1990 – 1991	Vice-President, Project Operations, Agra Engineering, Toronto, Ontario
1986 – 1990	Manager, Projects, Cambrian, Toronto, Ontario
1981 – 1986	Manager, Projects, Cambrian, Saskatoon, Saskatchewan
1975 – 1981	Prince Albert Pulp Company Ltd, Saskatoon, Ontario Project Engineer, Plant Manager and Assistant General Manager
1973 – 1975	Canada Packers, Toronto, Ontario Project Engineer
1972 – 1973	Dominion Foundries and Steel Ltd, Hamilton, Ontario Project Engineer

### **INDUSTRY REPRESENTATION**

Director of EPSCA

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2006-0501: Hydro One Networks Transmission Rates 2007-2008 Application

**CURRICULUM VITAE OF  
ANDREW SPENCER**

**EDUCATION**

*Queen's University*, Kingston, Ontario (2002)  
Bachelor of Applied Science, Electrical Engineering

**INDUSTRY EXPERIENCE**

July 2002 – Present	Hydro One Networks Inc.
2009 – Present	Manager, Sustainment Investment Planning, Asset Management
2006 – 2009	Manager, Maintenance Technical Services, Grid Operations
2004-2006	Maintenance Engineer, Maintenance Technical Services, Grid Operations
2002 – 2004	Assistant Maintenance Engineer, Maintenance Technical Services, Grid Operations

**CURRICULUM VITAE OF  
ALEXANDER (Sandy) STRUTHERS**

**EDUCATION:**

*Canadian Institute of Chartered Business Valuators*, Toronto, Ontario (1995)  
Chartered Business Valuator

*Institute of Chartered Accountants of Ontario (ICAO)*, Toronto, Ontario (1985)  
Chartered Accountant

*York University*, Toronto, Ontario (1985)  
Masters of Business Administration

*Queen's University*, Kingston, Ontario (1981)  
Bachelor of Commerce

**INDUSTRY EXPERIENCE:**

2000 – Present:	Hydro One Networks Inc. / Ontario Hydro Services Company
2009 – Present:	Senior Vice President and Chief Financial Officer
2005 – 2009:	Chief Information Officer
2002 – 2004:	Director, Financial Strategy
2000 – 2001:	Director, Mergers & Acquisitions, Finance
1998 – 1999:	Partner, BDO Dunwoody LLP, Chartered Accountants, Corp. Finance Corporate Finance
1989 – 1997:	Price Waterhouse, Chartered Accountants Financial Advisory Services
1983 – 1988:	Cross & Bradbury, Chartered Accountants Accounting Services
1981 – 1982:	Thorne Riddell, Chartered Accountants Accounting Services

**APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

RP-2005-0020/	
EB-2005-0378:	Hydro One Networks Inc. Distribution Rate Application for 2006
EB-2006-0501:	Hydro One Networks Inc. 2007-2008 Electricity Transmission Revenue Requirement Application
EB-2007-0681:	Hydro One Networks Inc. 2008 Electricity Distribution Revenue Requirement Application
EB-2008-0272:	Hydro One Networks Inc. 2009-2010 Electricity Transmission Revenue Requirement Application
EB-2009-0096:	Hydro One Networks Inc. 2010-2011 Electricity Distribution Revenue Requirement Application

## **CURRICULUM VITAE OF PAUL A. TREMBLAY**

### **EDUCATION**

*University of New Brunswick*, Fredericton, New Brunswick (1981)  
B.A.Sc., Electrical Engineering

### **PROFESSIONAL REGISTRATION**

*Professional Registered Engineer*

### **INDUSTRY EXPERIENCE**

April, 1999 – Present	Hydro One Networks Inc. / Ontario Hydro Services Company
1981 – April, 1999	Ontario Hydro
2003 – Present	Director, Network Operating, Grid Operations
2002 – 2003	Manager, Market Evolution & Customer Response, Asset Management
2001 – 2002	Acting Director, Network Operating, Asset Management
2001 – 2001	Manager, Operating Practices & Solutions, Asset Management
2000 – 2001	Manager, Network Operations, Asset Management
1998 – 2000	Manager, Outage Management, Transmission Operations
1995 – 1998	Senior Operations Engineer, Transmission Operations
1991 – 1995	Senior Operations Engineer, Power System Operations
1987 – 1991	Operations Engineer, Power System Operations
1982 – 1987	Reliability Engineer, Power System Operations
1981 – 1982	Engineering Trainee

### **INDUSTRY REPRESENTATION**

Task Force on Coordination of Operations, Northeast Power Coordinating Council (NPCC)  
Reliability Coordinating Committee, Northeast Power Coordinating Council (NPCC)

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2006-0501: Hydro One Networks Transmission Rates 2007-2008 Application

**CURRICULUM VITAE OF  
DEBRA VINES**

**EDUCATION:**

*Queen's University*, Kingston, Ontario (1981)  
Bachelor of Commerce (Hons.)

*Dalhousie University*/International Foundation of Employee Benefit Plans (2002)  
Certified Employee Benefits Specialist

*Humber College*, Toronto, Ontario (2003)  
Pension Plan Administration Certificate

**BUSINESS EXPERIENCE:**

1999 – Present: Hydro One Networks Inc./Ontario Hydro Services Company

2009 – Present Director Corporate Planning and Regulatory Finance

2008 – 2009: Pay/HR Lead, Cornerstone Phase 2  
2003 – 2008: Manager, Compensation and Benefits  
1999 – 2003: Senior Human Resources Consultant

Ontario Hydro  
1993 – 1998: Employee Services Manager  
1990 – 1993: Human Resources Officer

1986 – 1988: Canada Post  
Labour Relations Officer

Calgary District Hospital Group  
1985 – 1986: Manager, Labour Relations and Training

Saskatchewan Power Corporation  
1984 – 1985: Human Resources Officer

Alberta Labour Relations Association.  
1981 – 1983: Labour Relations Officer

**APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2005-0378: Hydro One Networks Inc. 2006 Electricity Distribution Revenue  
Requirement Application

## **CURRICULUM VITAE OF MICHAEL WINTERS**

### **EDUCATION:**

*Queen's University*, Kingston, Ontario (1995)  
Bachelor of Applied Science, Mechanical Engineering

### **INDUSTRY EXPERIENCE:**

2006 – Present:	Hydro One Networks Inc.
2009 – Present:	Chief Information Officer
2006 – 2009:	Director, IT Operations / Power System IT
2005 - 2006:	Fortegra, Inc. – Director, Business Solutions and Utility Consulting
2004 - 2005:	Canadian Managed Networks Inc. – Vice President, Business Integration
1995 – 2004:	Andersen Consulting / Accenture, Inc.
2002 – 2004:	(Senior Manager) Ontario Hydro Energy / Union Energy / EPCOR – Open Market Preparation and Operations
2001 – 2002:	(Manager) Ontario Hydro Services Company – Open Market Systems Implementation
2000 – 2001:	(Consultant) Entergy – Metering Strategy and Transition to Competition
1996 – 2000:	(Analyst) Southern Company / Ontario Hydro - Customer Information System Implementation

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2009-0096:	Hydro One Networks Inc. 2010-2011 Electricity Distribution Revenue Requirement Application
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## **CURRICULUM VITAE OF BING YOUNG**

### **EDUCATION**

*University of Toronto*, Toronto, Ontario (1993)  
Master of Engineering

*University of Toronto*, Toronto, Ontario (1986)  
Bachelor of Applied Science

### **PROFESSIONAL REGISTRATION**

*Professional Engineers Ontario*

### **INDUSTRY EXPERIENCE**

2009 – Present	Hydro One Networks Inc. Director, Transmission System Development
2006 – 2009	Ontario Power Authority Director, Transmission Integration
1986 – 2006	Hydro One Networks Inc./ Ontario Hydro Services Company / Ontario Hydro
2004 - 2006	Manager, Transmission System Development
1998 - 2004	Senior Network Management Engineer, Investment Planning
1998 – 2000	Senior Engineer, System Development
1994 - 1998	Systems Engineer, Grid System Strategies and Plans
1991 - 1994	Engineer, Power System Operations Division
1988 - 1991	Assistant Engineer, Power System Operations Division
1986 - 1987	Engineering trainee

### **INDUSTRY REPRESENTATION**

North American Electric Reliability Corporation (NERC) Planning Committee

### **APPEARANCE(S) BEFORE THE ONTARIO ENERGY BOARD:**

EB-2007-0707:	Ontario Power Authority Integrated Power System Plan
EB-2002-0001:	Site Energies Canadian Development s92 Application

Filed: September 10, 2010  
EB-2010-0002  
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**CURRICULUM VITAE OF  
CONSULTANTS AND IESO WITNESS**

- Attachment 1 – Mitchell Rothman
- Attachment 2 – Robert Yardley Jr.
- Attachment 3 – John Dalton
- Attachment 4 – Barclay Gibbs
- Attachment 5 – Darren Finkbeiner - IESO



# Mitchell Rothman

**Mitchell Rothman**  
Managing Consultant

**Power Advisory**  
12 Burnside Drive  
Toronto, Ontario M6G 2M8  
Tel 416 534-4152

[mrothman@poweradvisoryllc.com](mailto:mrothman@poweradvisoryllc.com)

## **Education and professional**

B.A. (cum laude) Economics, 1965 –  
Harvard University

MS Economics, 1970 – Carnegie-  
Mellon University

Ph.D. Program, Economics, 1971 –  
Carnegie-Mellon University

## **Employment**

- Power Advisory
- Navigant Consulting
- PA Consulting, Inc/Hagler Bailly
- Canadian Energy Environmental Economics
- Acres International, Ltd.
- Ontario Hydro
- Canadian Imperial Bank of Commerce
- MPR Associates
- Faculty of Administrative Studies, York University

## **Professional associations**

International Association for Energy Economics  
Canadian Association for Business Economics  
Association of Power Producers of Ontario

## **Current Position**

Mitchell Rothman is a Managing Consultant in Power Advisory's Toronto office.

## **Professional Experience**

An experienced economist and analyst for business decisions and government policy. Mr. Rothman's 25 years of energy experience include electricity market restructuring, analysis of electricity markets and functions, load and price forecasting, econometrics, environmental economics, energy efficiency, and policy analysis. Mr. Rothman has advised the Governments of New Brunswick, Nova Scotia, Newfoundland and Labrador, Alberta, Western Australia, and Ontario, the Ontario IESO, the Ontario Energy Board and the Ontario Power Authority on issues related to electricity restructuring and electricity market functions. Among these assignments, Mr. Rothman has helped to design the roles for market institutions like system operators, drawing on practices in competitive jurisdictions in North America, Europe and Asia. He has also led or helped to lead several multi-stakeholder consultation processes.

### Electricity Industry Organization and Restructuring

- Ontario market structure. For a private generator client, assisted with analysis of potential changes to Ontario market structure including DAM and LMP. Represented client at meetings of Market Pricing Working Group and Stakeholders Advisory Committee.
- New Brunswick Market Rules. Led project to draft market rules to implement the restructured market in New Brunswick, in consultation with Department of Natural Resources and Energy and with NB Power, and helped to lead a stakeholdering process for their review. Rules are in place for electricity market, which is now open. Team also included legal and technical expertise.
- Potential market rule change in Ontario. For a generator in Ontario, analyzed possible alternatives to the IESO's use of an artificial assumption that all generators can ramp up or down 12 times as fast as they actually are able to. Produced a report with analysis of various proposals, including offering a new proposal.
- Agency Review Panel. For the Ontario Ministry of Energy, advised the panel in its review of the Ontario institutional market structure. Attended meetings with each of the agencies under review (OPA, OEB, IESO, OPG, Hydro One), summarized and analyzed information provided by the agencies and commented on the formulation of recommendations.
- Alberta market rules. For the Alberta Electricity System Operator, reviewed the market rules inherited from the two predecessor organizations, produced a recommended structure for an integrated set of market rules, and indicated the place of the existing rules in the new structure. Also drafted sample of the revised rules.

## Resume of Mitchell Rothman

- New Brunswick Market Design Committee. Project manager and lead consultant for provision of advice to the New Brunswick Market Design Committee. As the lead consultant, Navigant Consulting provided the Committee a broad range of advice, including assistance with the terms of reference and agendas, information on restructuring in other markets, preparation of issues papers and strawmen, and professional advice on the feasibility and desirability of market models, market rules, structure of new market institutions, and all other aspects of market design. Advice included dealing with issues of market power.
- Nova Scotia Electricity Marketplace Governance Committee. Project manager and lead consultant for advice to the Nova Scotia committee making recommendations to the government on the implementation of its *Energy Strategy*. Assistance included identifying issues and setting agendas, helping the Committee understand the issues, providing information on restructuring experience in other markets, producing issues papers and strawmen, and helping the Committee to agree on recommendations by advising on feasibility and desirability of market models.
- Nova Scotia market rules. For Nova Scotia market participants, assisted with the analysis of the proposed market rules, including impacts on market participants and consistency with the recommendations of the Nova Scotia Electricity Marketplace Governance Committee.
- Market monitoring. For a private client, provided regular monitoring reports on events in the Midwest ISO. Reports monitored market functions and proposed rule changes, with analysis of rule change impacts.
- Ontario Energy Board Regulated Price Plan. Led working group consultations for the design of the RPP. Devised methodology for the RPP to meet the requirements of legislation, regulation, and Ontario government policy, and wrote manual on implementation. Assisted in supervision of quantitative analysis of price implications and setting of first prices and wrote report setting out resulting prices.
- Nova Scotia legislation. Assisted the Government of Nova Scotia with drafting legislation to enact the recommendations of the Electricity Marketplace Governance Committee.
- IESO Environmental Update. Assisted the Ontario Independent Electricity System Operator to identify possible roles for itself with respect to helping the province to achieve environmental goals. For this project, surveyed the role other North American ISOs play in this area and identified potential roles for the IESO in the Ontario market context.
- Western Australia Electricity Reform Task Force. Provided advice to the ERTF on market design to implement government policy. Helped Task Force to integrate submissions and its draft design, and modify design to be simpler and more workable in the Western Australian context. Provided briefings, strawmen, draft recommendations to Task Force.
- For the Government of New Brunswick, analysis of options for future structure and ownership of New Brunswick Power, a Crown-owned monopoly electricity generator, transmitter and distributor. Analysed experience in other jurisdictions and recommended approaches to avoid problems or achieve gains in New Brunswick.
- For the federal government, worked with a multi-stakeholder group on achieving climate change objectives in the transportation sector. Study included an analysis of price changes necessary to reduce demand through price-elastic effects. Consulted with experts in price elasticity estimates and selected values for long- and short-run own-price elasticities of demand for transportation fuels, including automotive gasoline, diesel for trucks, rail transportation and shipping, and aviation fuel.

## **Resume of Mitchell Rothman**

- Wrote the Foundation Paper for the Electricity Sector Issues Table, as part of the National Climate Change Process. Foundation Paper assessed the current state of the Canadian electricity industry and current trends and expectations of future directions, and set out critical issues for the Table to address in recommending ways to meet Canada's commitment under the Kyoto Protocol.
- Analysis of the future of the wires business in North America, with focus on Ontario. Project responsibility included assessing the future regulation and structure of wires businesses, given the widespread restructuring of electricity markets. Project considered the impact on industry participants of the evolution towards RTOs, and the debate over the ownership and profit/non-profit status of transmission owners and operators.
- Advice to the Government of Nova Scotia on energy strategy. Project manager and lead consultant for advice to the electricity market component of the Government of Nova Scotia's energy strategy development. Advice includes analysis of submissions to the Energy Strategy group, information on and analysis of possible directions for the Nova Scotia electricity industry, analysis of experience in other jurisdictions, identification of the lessons learned, and applications of lessons to Nova Scotia.
- Co-author of study by Canadian Energy Research Institute on international experience of electricity restructuring. Study includes UK, Norway, Sweden, New Zealand, Argentina, and parts of Australia. The report started with the factors leading to restructuring in each jurisdiction. It also characterized the factors in the restructuring process in terms of their expected and actual influence on price in the restructured market.
- Project manager for future structure, pricing and regulation of the electricity industry in the province of Newfoundland and Labrador. Produced analysis of industry and report with options for its future structure and regulation. Project considered the structure and size of the existing industry in the province, and the relative costs and benefits of potential electricity market structures.
- Member of Market Design Committee for Province of Ontario Electricity Restructuring. Committee was charged with making recommendations to the Minister for the complete design of a competitive electricity market in Ontario. The Committee considered all aspects of the design of a competitive market, including the nature of the wholesale power market, the nature and governance of the market makers, the development of the market rules, and the mitigation of market power created by generator dominance.
- Study on promotion of competition in electricity in Ontario, for the Advisory Committee on Competition in Ontario's Electricity System (Macdonald Committee.)
- Study, report and recommendations to Ontario Ministry of Finance on structural and regulatory options for electricity distribution system in Ontario.

### Electricity Market Analyses

- For the Canadian Wind Energy Association, performed a study of the potential for export of windpower from the Canadian Maritime provinces to New England. Study assessed demand in the United States, barriers to US market entry, the windpower potential in the Maritimes and the cost and availability of transmission to New England.
- For Lehman Brothers, produced a study of the potential for windpower development in Canada. Study performed province by province analysis, including institutional issues, resource issues, likely buyers for windpower, and estimates of the total amounts likely to be developed.

## **Resume of Mitchell Rothman**

- Assistance to the Independent Electricity System Operator in the review of its prudential support system. Review included extensive consultation with stakeholders and formulation of recommendations for IESO management to present to IESO Board. Quantitative methods for assessing risk consequences were developed for the project.
- For PowerStream, an Ontario distribution utility, contributed to report on the regulatory and economic implications and possibilities for regulatory treatment of the cost of relocation of distribution facilities due to a rapid transit project. Responsibilities included assessment of regulatory treatment in Ontario and other jurisdictions and modelling of the financial implications for the utility and others of various potential modes of cost recovery.
- For Natural Resources Canada, participated in projects to report on proposed interjurisdictional transmission projects in Canada and the barriers to their implementation. Participated in both original study and update study.
- Project manager and main author for report on the potential for cogeneration of electricity and heat in Ontario. The report included information from industry participants, from public sources, and from internal company resources. Report analyzed data on energy end use to produce an estimate of technical potential for cogeneration in Ontario, and estimates of cogeneration costs to estimate economic potential, for cogeneration in the industrial and commercial sectors in Ontario up to 2010.
- Analyses of electricity markets in Canada for several private clients. Analyses include present and likely future path of structure and regulation, characteristics of current market participants, implications for industrial electricity customers, and implications for current and potential market participants.
- Analysis of impact on Ontario electricity market of increased interconnection to the Province of Quebec. Analysis included impacts on market price, on Ontario generators, and on Ontario consumers. Testified at Ontario Energy Board hearing into Hydro One application for leave to construct new transmission line.
- Analysis of impact on Ontario electricity market and on environmental performance of alternative treatments of Nanticoke generating station. Project used a large-scale model of the Eastern Interconnect to analyze options for Nanticoke. Analysis included determining optimal operation of Nanticoke, including decisions on emissions control investment, given expected environmental regulations in Ontario.
- Analysis of impact on Ontario electricity market of premature closure of present coal-fired generating capacity. The analysis used a large-scale model of the Ontario market. Results included electricity market prices, price volatility, and changes in value of existing plants.

### Energy Economics and Policy

- Assistance to the Ontario Power Authority in the design of its Standard Offer Program for small renewable generators. Assistance included research on standard offers in other jurisdictions, writing discussion paper and participation in and analysis of stakeholder submissions, formulation of possible pricing regimes, and analysis of the impacts of the pricing regimes on the Ontario electricity system and on potential standard offer program participants.
- Project manager for study of fuel price elasticities in Canada and design of a fuel tax regime that will reduce greenhouse gas emissions from transportation in Canada to meet the requirements of the Kyoto Protocol. This study included designing and implementing multi-stakeholder processes for development both of opinions on factual elements and of policy options.

## **Resume of Mitchell Rothman**

- For a confidential client, analysis of the likely regulatory environment in Ontario with respect to applications to forbear from price regulation. The report included advice on the criteria the regulator would be likely to use and assessment of the relevant market against those criteria.
- Responsible for studies on demand management (DSM) potential in industrial, residential and commercial electricity markets. Studies included consideration of appropriateness of program design, including screening criteria. Provided Ontario Hydro management with estimates of program effectiveness.
- Advice to the Government of Newfoundland and Labrador on the establishment of a profit-sensitive royalty regime for the Gull Island hydroelectric development. Included advice on dealing with potential Hydro Quebec partners.
- Wrote World Bank monograph on determination and sharing of benefits of hydroelectric development on international waterways. The study reviewed practice on rent sharing in water and hydroelectric development, and developed principles for sharing in certain international developments.

### Forecasting and Quantitative Analysis

- Econometric modelling of cost for a US distribution utility, to file with regulator for use in cost of service analysis in rate-setting.
- Econometric modelling for analysis of Ontario retail markets, to assist in the development of the Ontario Energy Board's Regulated Price Plan.
- Project manager for data gathering project on load forecasts and transmission costs for all utilities in Canada. Gathered and synthesized data from Canadian provinces to produce report on and forecast of future loads and on transmission costs for better electrical interconnections in Canada as well as costs of integration of potential new generation. Included obtaining information on current and forecast load profiles.
- Responsible for all economic and price forecasts for Ontario Hydro. Included forecasts of economic activity, inflation, interest rates, and other financial and economic variables. Forecast price indices for Ontario Hydro inputs and electricity prices for Ontario Hydro customers.
- Responsible for all load forecasts for Ontario Hydro. Included aggregate short- and long-term forecasts, using a variety of methodologies as appropriate. Also included forecasts of impact of demand side management programs on electricity demand. For planning, transmission hearings and other purposes, produced forecasts of sub-provincial areas in Ontario.
- Analysis and oversight of modelling for Navigant Consulting's semi-annual Ontario Market Assessment Reports, since summer 2001. Report includes forward price forecasts for Ontario and adjacent jurisdictions, as well as thorough analysis of Ontario electricity market and electricity demand.
- Review of forward price forecasts prepared for potential entrant into Ontario electricity market. Review included assessment of assumptions and results. Included review of assumptions on interconnections with US and with other Canadian provinces.
- Responsible for development and maintenance of load forecast and long-term macroeconomic forecast models at Ontario Hydro. Supervised construction and revision of multi-equation econometric models.
- Study on future of Ontario distribution system for the Ontario Government. Study included quantitative and econometric analysis of distribution costs in the Ontario industry.

## **Resume of Mitchell Rothman**

- Provided Ontario Hydro with regular economic forecasts for use in planning throughout the corporation. Long-term forecasts produced annually; medium-term forecasts produced three times a year. Forecasts included analysis of future of Ontario economy and its relation to electricity demand.
- Advice to the Ontario IMO on carrying out its load forecasting responsibilities. Advice included suggestions for amendments to the Ontario Market Rules, load forecast methodology development, data requirements from market participants, and forecast techniques and resourcing.
- Led a load forecast team in Ghana of three Canadian economists and up to eight Ghanaian engineers and economists. Produced new load forecast for Ghana, using methodologies new to Ghana including multi variate regressions.
- Responsible for long- and short-term Ontario Hydro forecasts of energy prices, including electricity, oil and natural gas.
- Project manager for numerous consulting projects, many involving several team members. Responsibilities include identifying appropriate personnel for specific tasks, assigning tasks, and monitoring results. Project responsibilities also include building project team when collaborative efforts are required.

### Economic Analysis

- Hydro Québec Distribution rate application. Prepared report and testified at Régie de l'énergie on issues relating to the disposition of excess power contracted by Hydro Québec Distribution. Report included analysis of the value of the surplus energy as sold to neighboring markets.
- Testified at National Energy Board hearing on application by New Brunswick on gas export licensing. Testimony included analysis of natural gas markets in Atlantic Canada and New England.
- Expert witness in Ontario Hydro rate hearings. Testified on economic matters including economic and load forecasts, forecasts of demand management effectiveness, and other matters.
- Studies on economic impact of Ontario Hydro demand-side management programs in industrial, residential and commercial markets. Impacts assessed included employment and economic activity in affected industries.
- Economic impact study on the effect of the Free Trade Agreement in Ontario. Study looked at effects on particular industries, including identification of industries likely to benefit and those likely to suffer relative reductions due to the FTA.
- Studies on economic impact of Ontario Hydro investment activities, including generation and transmission investments. Impacts assessed included employment, economic activity, and price level.

## **Resume of Mitchell Rothman**

### Environmental Economics

- Environmental costing for Ontario avoided cost study to determine the avoided environmental cost to be used as part of the value of savings from energy efficiency initiatives.
- Report for federal government on green power marketing in Canada, including evaluation of existing federal programs to support green power, assessment of state of green power market in Canada, recommendations to improve green power marketing in Canada and recommendations for specific changes to existing federal programs
- Report for federal government on purchase of green power for federal buildings: environmental costing analysis, green power marketing information, analysis of green power industry in Canada.
- Report and recommendations on environmental practices related to electric power procurement and operation in Asia Pacific region, presented to APEC Energy Ministers.
- Responsible for environmental economics at Ontario Hydro. Promoted environmental costing activity by raising issue with Executive Committee. Chair, Ontario Hydro Environmental Cost Steering Committee.
- Responsible for monetized environmental costing of Ontario Hydro coal-fired generation for use in export license application to the National Energy Board.
- Structured economic assessment, including full environmental costing, of next phase of water transfer and hydroelectric generation scheme in Lesotho.





## **ROBERT C. YARDLEY, JR.**

### **EXECUTIVE ADVISOR**

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#### **SUMMARY**

Mr. Yardley has been an advisor to private and public organizations in the energy industry on regulatory, public policy, and strategic issues for over 25 years. During that time, he has served as Chairman of the Massachusetts Department of Public Utilities for two years and has been active in public policy matters as a speaker, facilitator, and expert witness. He has substantial executive leadership and project management experience in the energy consulting industry. Trained as an economist with strong analytical skills, Mr. Yardley has an in-depth understanding of the competitive challenges facing regulated and unregulated energy firms as well as the policy challenges facing government agencies responsible for overseeing the restructuring of the energy and telecommunications industries.

#### **EXPERT TESTIMONY**

FERC and State Regulatory Commission Testimony on the following issues:

- Utility Earnings Attrition
- Performance Based Regulation
- Cost of Service and Rate Design
- Regulatory Policy, Including M&A Acquisition Premium Treatment
- Distribution System Planning

#### **CONSULTING EXPERIENCE**

**A. *Regulatory Advisory Services:*** general advisory, client team leadership/case management, and expert testimony in generic policy setting cases and litigation of proposals initiated by company filings. Frequently called upon to provide advisory services to assist clients in presenting an effective case before a regulatory agency and in improving their relations with regulators and other outside stakeholders. Developed program for facilitated stakeholder discussions on emerging issues in the natural gas industry for a southeastern LDC designed to improve regulatory relations. Provided witness training to a large southeastern electric utility.

**Merger & Acquisition** – Mr. Yardley has been engaged since April 1, 2008 as the outside advisor to Unitil Corporation for its acquisition of Northern Utilities, a gas distribution company currently owned by NiSource. Mr. Yardley's role has been to work with an executive leadership team to plan for the integration of approximately 50 functional areas and the execution of these plans by functional teams. The integration affects almost every area of a utility business including customer service, accounting and finance, corporate communications, distribution field operations, gas supply and control, engineering and operations, corporate functions and infrastructure. Other experience includes preparation of expert report on merger synergies for a large multi-state LDC. Expert opinion on the treatment of merger-related savings in a large commercial litigation matter. Advisor and leader of due diligence teams on two potential utility acquisitions in 2001 and 2002. Led US Market and Regulatory Intelligence effort on behalf of a European Utility. Expert witness in commercial litigation involving a failed merger. Advisor to NiSource on regulatory matters related to its offer to

acquire Columbia Energy. Regulatory on due diligence team developing the bid for of a large Northeastern LDC. Directed the development of a detailed assessment of the regulatory and market environment in New England on behalf of a potential utility buyer. As a member of the regulatory approval advisory team, drafted the testimony of Bay State Gas Company's policy witness in three state jurisdictions for approval of its merger with NiSource. Regulatory advisor to the team supporting the regulatory approval efforts of Southern Union Gas Company for their northeastern LDC acquisitions. Prepared an expert report and testimony on synergies realized by Columbia Gas of Virginia as a result of its acquisition by NiSource.

Ratemaking and Tariff Design - Expert testimony on cost-of-service, rate design, and the role of competition before the FERC and several state regulatory commissions. Provided expert testimony on behalf of Until Electric and Connecticut Light and Power on earnings attrition.

Resource Planning – Preparation of Integrated Resource Plans for electric and natural gas distribution companies as well as advisory services related to specific contracting decisions, including oversight of portfolio optimization modeling efforts. Preparation of RFPs for demand-side and supply-side resources. Preparation of an assessment of the costs and benefits of an aggressive DSM commitment for an eastern state. Currently serving as an advisor to the OEB on development of a standard methodology for measuring the system benefits of distributed generation.

Performance Based Ratemaking – Expert testimony on behalf of Southern Connecticut Gas Company and Energy East in a rate proceeding. Expert testimony provided for Wisconsin Gas in support of a "GNPD-X" proposal; advisor to Bay State Gas Company, which negotiated and filed a settlement implementing a PBR rate proposal with service quality measures. Preparation of Initial and Reply Comments on behalf of Bay State Gas Company in a Massachusetts generic policy proceeding on Incentive Regulation. Advisory services provided to two LDCs, which were considering filing a Gas Cost Incentive Mechanism proposal.

Affiliate Relations – Advisor to Bay State Gas Company on affiliate issues including the interpretation and organizational response to new regulatory policies, and the application of these policies to potential transactions between affiliates; advisory services provided to Connecticut Energy Corporation related to the formation of an energy marketing affiliate, the regulatory oversight of affiliate transactions, and transactions among CEC affiliates. Advising Bay State Gas Company in its efforts to continue to offer appliance and repair services as part of the regulated business.

Utility Performance Assessment: Principal author and expert witness with respect to a "self-assessment" of Until's response to a 2008 Ice Storm.

Consolidated Tax Treatment - Preparation of regulatory policy testimony on the treatment of consolidated tax losses for a Midwestern electric utility.

International and Other – Advisor to the Zambia Energy Regulation Board.

**B. Retail Energy Market Services:** litigation support, pilot program design, collaborative leadership, and implementation team project management services.

Policy Development – Organized and led collaborative efforts to design one of the most aggressive residential pilot programs in the country on behalf of Bay State Gas in 1996 and 1997. Organized and led the facilitation of a collaborative effort to offer choice to all of Bay State's customers in 1998. Led the Bay State litigation team and served as a witness in the Massachusetts generic natural gas unbundling policy proceeding.

Competitive Market Services - Completed a business plan for the formation of a retail energy marketing affiliate, including the identification and assistance in the negotiation of partnership relationships. Provided market intelligence services to firms that are considering competing in the northeast energy market.

Retail Choice Implementation – Provided project management services to an internal Bay State team responsible for implementing systems and processes to provide customer choice to pilot customers. Developed a comprehensive Integrated Unbundling Plan to address all implementation and policy advocacy issues related to the introduction of customer choice and then worked closely with a client director to oversee the effort for the first year.

**C. Wholesale Energy Market Services:** advisory services related to emerging competitive wholesale markets and the valuation of formerly regulated assets in these markets.

Natural Gas Wholesale Markets – expert witness in several FERC regulatory proceedings on behalf of LDC shippers. Preparation of market power study for storage developer.

Electric Generation Asset Valuation - Asset valuation services provided on behalf of both sellers and buyers for property tax valuation, asset bids, and asset sale purposes. These analyses employ the fair market value approach, which produces an estimate of asset value based on the use of the facilities to generate electricity for sale in the regional market and include an assessment of operating revenue risk factors. Member of an advisory team that evaluated the investment merit of the generation assets divested by Boston Edison. Advisor to Bay State Gas Company on the sale of a cogeneration and small power production facility.

Electric Asset Competitive Solicitations – Advisor to Oklahoma Gas & Electric for its winning bid into a neighboring utility's RFP for base load capacity. The EPC contract was a major component of the bid.

Electric Transmission Markets – Represented the Massachusetts Division of Energy Resources in discussions with NEPOOL and the New England state regulatory commissions to develop the Independent System Operator proposal filed by NEPOOL with the FERC on December 31, 1996.

**D. Collaborative Leadership:** design, leadership and facilitation of collaborative efforts sponsored by utilities and government agencies.

Co-led the 2004/05 Massachusetts Distributed Generation Collaborative, to satisfy directives set by the Massachusetts Department of Telecommunications and Energy. Facilitated approximately fifteen meetings among policy makers and representatives of various segments of the electricity industry. The primary issues addressed by the collaborative included improvements to the interconnection process, meter ownership, network interconnection and the role of DG in distribution planning.

Facilitated multi-party discussions on the restructuring of the electric utility industry in New Hampshire on behalf of the New Hampshire Public Utilities Commission.

Facilitated off-site discussions among leaders of organizations as part of long-term strategic planning initiatives.

Led three Bay State Gas collaborative efforts over a two-year period to develop pilot and comprehensive programs to introduce customer choice.

Participated as an advisor to a Wisconsin Public Service Commission collaborative addressing low-income issues related to customer choice

**E. Strategic Planning:** Working closely with senior executives, leadership of internal teams to perform long-term or next-year strategic planning exercises.

Co-leadership of an internal team at Brooklyn Union charged with developing long-term (10 years) visions of the energy industry, the characteristics of firms likely to succeed in a radically restructured service delivery environment, and the development of a specific strategic and tactical response.

Leadership of an internal team at Commonwealth Electric Company to develop a long-term strategic plan.

Organized and facilitated the annual off-site strategy meetings of two LDCs.

Participated on a consulting team that developed a capital investment allocation model for a southeastern LDC.

Facilitated discussions between and LDC and an electric distribution company to identify opportunities to work jointly and realize synergies.

**F. Management Consulting:** Participated as a member of Unital's leadership team assigned responsibility to integrate the acquisition of Northern Utilities into Unital.

### **Public Service**

As Chairman of the Massachusetts Department of Public Utilities, Mr. Yardley managed a staff of 150 individuals responsible for regulating all investor-owned electric, natural gas, telecommunications and water utilities. Represented the Department's relationships with the Governor's office, state legislature, press, regulatory and industrial organizations and other stakeholder groups. Served on the National Association of Regulatory Commissioners (NARUC) Committee on Electricity; served as President of the New England Conference of Public Utility Commissioners; and served as Co-Chair of the New England Governors' Conference Power Planning Committee. In addition to these duties, Mr. Yardley was responsible for the following initiatives:

*Electric:* Implemented Integrated Resource Planning Regulations to correspond with the emerging competitiveness of the generation sector of the industry, including rationalizing the evaluation and implementation of conservation and load management programs. Approved several economic development rate proposals, with conditions to protect the interests of all customers. Active in the region and in discussions with the FERC Commissioners on the role of regional transmission arrangements in a competitive industry, the need to provide access on fair terms to all users, and the shared jurisdiction on this and other electric industry restructuring matters.

*Natural Gas:* Led stakeholder discussions on the impact of Order 636 on the Department's regulation of local distribution utilities. Established and applied new standards of review for gas supply contracts consistent with the restructuring of the industry. Approved alternative firms service contract

arrangements and changed cost allocation precedents to remove subsidies inherent in existing rate designs to set the stage for competitive environment.

*Environment:* Active participant in an inter-agency Clean Air Act Compliance task force and in regional discussions to advocate the development of a supra-regional NOx emissions credit reduction trading market.

*Telecommunications:* Issued several landmark decisions including orders directing NYNEX to provide competitors with access to its central offices (collocation) and to its street conduits. Approved an alternative form of regulation for AT&T, and established the lowest rates in the country for ISDN service.

*Water:* Regulator during the period when distribution companies were doubling and tripling their asset base in order to comply with stringent federally-mandated safe drinking water requirements.

## **PROFESSIONAL EXPERIENCE**

<b>2005-</b>	<b>Independent Consultant</b> Affiliations with Concentric Energy Advisors, Levitan & Associates, Inc. and Power Advisory LLC as an Executive Advisor
<b>2000 - 2004</b>	<b>Navigant Consulting, Inc.</b> Senior Managing Director Executive Managing Director and leader of the firm's Energy Practice
<b>1996 - 1999</b>	<b>Waterstone Group</b> Founder
<b>1991 - 1992</b>	<b>Massachusetts Department of Public Utilities</b> Chairman
<b>1988 - 1990</b> <b>1993 - 1995</b>	<b>Reed Consulting Group</b> Co-Founder Executive Vice President (1993-1995)
<b>1984 - 1988</b>	<b>R. J. Rudden Associates</b>
<b>1980 - 1984</b>	<b>Stone &amp; Webster Management Consultants</b>

## **EDUCATION**

BA, Georgetown University, Economics, 1976

Boston College, Economics: All course work completed in Ph.D. program in Economics with comprehensive written exams in Econometrics, Monetary Theory and International Trade. Did not complete dissertation.

## **CONTACT INFORMATION**

Robert C. Yardley, Jr.  
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Chestnut Hill MA 02467  
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rcyardleyjr@yahoo.com

## **PUBLICATIONS & PRESENTATIONS**

- 2004. "Competition in Electric Markets – Lessons Learned and Future Challenges", presented at CAMPUT, Halifax, Nova Scotia.
- 2003. "Impact of Regulatory Uncertainty in the Stability & Growth of the Power Industry", Panel Participant at Power Industry Forum.
- 2003. "Current Regulatory Issues", presented to the New England Gas Association, November.
- 2002. "Retail Competition Update", presented to the American Public Gas Association.
- 2000. "Transformation of Northeast Energy Markets", April 4, 2000
- 2001. "Examining the Effects of National Energy Policy on Electric Markets", presented at Power 2001.
- 1999. "Energy Industry Drivers, Implications and Strategic Responses", presented at the Connecticut Energy Corporation 1999 Senior Officers Planning Session.
- 1998. "The Challenge and Potential of Information Management in a Deregulated Market", presented jointly with Cambridge Technology Partners to the 1998 Energy Conference of the New England Gas Association.
- 1997. "Energy Industry Restructuring: The Role of Pilot Programs", presented to The 27th Annual Wichita Program, Appraisal for Ad Valorem Taxation.
- 1996. "Unbundling: Supplier Choice for Residential Customers", presented to the American Gas Association Rate Committee Meeting.
- 1996. "Electric Industry Restructuring: Lessons from the Gas Industry", presented to the National HydroPower Association Annual Conference.
- 1996. "Unbundling – Facts and Figures", presented to the NARUC Gas Committee Meetings.
- 1995. "The Effect of Gas Restructuring on LDC Resource Planning: Lessons for the Electric Industry", presented to the New England Conference of Public Utility Commissioners.
- 1994. "Unbundling Services, Unbundling Rates", presented to the New England Gas Association Rates School.
- 1993. "Alternatives to Traditional Ratemaking Proceedings", presented at a Public Utility Regulation Conference sponsored by the New Hampshire Bar Association.

- 1993. “Utility Kickers for NUG Purchases”, presented to The 3rd Annual Northeast Power Market Conference”.
- 1992. “Environmental Externalities: A Utility Regulator’s Perspective”, presented to the 104th Annual Convention and Regulatory Symposium, National Association of Regulatory Utility Commissioners.
- 1992. “The Role of Regional Planning”, presented at the Forum on New England’s Energy Future.
- 1992. Speech on electricity transmission policy in New England, before a conference in Crystal City.
- 1992. “The Clean Air Act and Utility Regulation: The Challenge of the 1990s”, presented to The Clean Air Marketplace Conference.

## John Dalton

**John Dalton**  
President

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### Professional History

- Navigant Consulting
- Reed Consulting Group
- R.J. Rudden Associates Inc., 1987-1988
- Massachusetts Energy Facilities Siting Council, 1984-1987
- Massachusetts Department of Environmental Protection, 1981-1984

### Education

- Boston University, MBA, 1987
- Brown University, AB, Economics, 1980

A senior electricity market analyst and electricity policy consultant with over twenty-years of experience in energy market analysis, power procurement, project valuation, and strategy development. Experienced in the evaluation and analysis of electricity markets and the competitive position of generation technologies and projects within these markets including the assessment of the competitiveness of the underlying market, the development of power market price forecasts, the implementation of power procurement processes, and the development and evaluation of renewable energy policies. Frequent speaker on these subjects at energy industry conferences.

### Professional Experience

#### Market Assessment

- » Developed and supported numerous market price forecasts for wholesale power markets across North America. Price forecasts were used to support generation project development efforts, project financings and acquisitions, regulatory policy development, and power procurement efforts.
- » Demonstrated the need for electric generation projects in filings submitted to various state and provincial regulatory agencies. Evaluated the cost of a wide range of different generation technologies for a number of clients. Defended analyses in prepared and oral testimony before these state agencies.
- » Conducted wholesale power market analyses across North America for a wide range of market participants. Analysis included identifying likely competitors and pricing, security provisions, and general terms and conditions of various power supply options. Evaluated pricing required to compete in the market.
- » Advised the Ontario Electricity Financial Corporation with the management of its non-utility generation contracts. Advice included addressing the policy issues associated with balancing concerns with the sanctity of existing contracts and the desire to minimize stranded debt as well as to use the contracts as a source of competitive discipline for the incumbent provincial electric utility.



## **Resume of John Dalton**

- » Managed a team that was retained by a large power generation company to develop a market assessment and wholesale power market price forecast for the Alberta market. Our assessment focused on issues affecting the fundamentals of the Alberta power market, including the future demand supply balance, growth in demand, market interconnections, and potential new generation capacity additions.
- » Retained by the financial advisors for the developer of a proposed new combined cycle gas turbine project in Alberta to establish the toll between the Corporate entity participating in the income fund and the parent. Defended forecast assumptions and the modelling approach before investors as part of a public offering.
- » Directed the use of ProSym in a proceeding before the Alberta Energy and Utilities Board (AEUB) to estimate the costs of transmission congestion and the benefits of increasing the transfer capability of the North South transmission interface. Modeling assumptions and methodology were successfully defended before the AEUB.
- » Advised numerous generation project developers across North America on opportunities offered by participating in the relevant wholesale power market and various power supply procurement RFPs. Evaluated market risks and outlined strategies for managing these risks most efficiently.
- » Analyzed and critiqued the supply planning methodologies of electric and gas utilities, focusing on the appropriateness of the supply planning models and methods. Provided recommendations for improving supply planning methods which were designed to assist the utilities in addressing the uncertainties associated with long-range planning. Prepared recommendations for the refinement of demand forecasting methods for electric and natural gas utilities. Analyzed and evaluated the statistical and quantitative projection methods used, including end-use and econometric forecasting techniques.
- » Evaluated electric generating technologies on the basis of the capital and operating costs, technological risk, and environmental impact, identifying a preferred alternative in light of these considerations. Defended the selection process before a regulatory agency.
- » Prepared strategic plan for a number of electric and natural gas market participants which evaluated the state/provincial and federal regulatory climate for cogeneration and generation projects, market prices and risks and recommended a competitive strategy.

## **Market Structure Development and Evaluation**

- » Advised the governments of Ontario, New Brunswick, Nova Scotia, Western Australia, and Manitoba regarding the restructuring of their wholesale power markets and possible market structures to achieve a workably competitive wholesale market.
- » Responsible officer for market design project for the Province of New Brunswick. Navigant Consulting assisted the Market Design Committee and its subcommittees in providing the Minister of Natural Resources and Energy with recommendations on the implementation of electricity restructuring. Issues addressed included developing a market design that addresses concerns with the potential for the exercise of market power and enables New Brunswick to integrate with its interconnected markets. The Market Design Committee addressed development of the electricity market including its design, structure and rules. Navigant Consulting provided advice on the issues to be addressed, prepared issue papers and presentations, created strawmen for resolution of issues, and developed guidelines and direction for the creation of market design rules and protocols.

## **Resume of John Dalton**

- » Project manager for an assignment with the Province of New Brunswick to assist with the development of its ten-year energy policy. The cornerstone of this energy policy was the framework for restructuring its wholesale and retail electric markets. Advised regarding developments in other wholesale and retail markets and the prospects for meaningful competition in New Brunswick's wholesale and retail markets. Navigant Consulting advised regarding benefits offered by wholesale and retail competition; strategies for protecting New Brunswick consumers from market dislocations and higher prices; appropriate regulatory frameworks for the wires businesses and the prospects for achieving a workably competitive wholesale market in New Brunswick and the resulting market design requirements; and policies for addressing stranded costs raised by market restructuring.
- » Markets and economics expert for a project with Western Power, the state-owned fully integrated utility that serves the vast majority of Western Australia. Advised regarding potential changes to the wholesale and retail electric power markets to enhance the competitiveness of these markets. Alternative market structures were evaluated and assessed in an effort to determine the market structure that offers the greatest societal net benefits. Offered proposed market structure changes that would accommodate government policy objectives of allowing greater levels of retail contestability and new entrants to satisfy the market's need for additional capacity. Evaluated restructuring reforms that had been implemented in a range of different markets that were of a similar size as Western Australia.
- » Advised the Energy Strategy Working Group regarding the development of an electricity restructuring policy for the Province of Nova Scotia. Reviewed the experience with respect to the wholesale and retail market restructuring in California, New England, PJM, and Alberta and based on this experience outlined lessons learned and potential implications for electric restructuring Nova Scotia. Outlined the arguments for considering the restructuring of Nova Scotia's electricity market, reviewed contrasting market models, and discussed the critical constraints on wholesale and retail market restructuring in Nova Scotia.
- » .Provided numerous presentations regarding the experiences with the restructuring of wholesale power markets and the lessons learned. Markets evaluated have included California, Alberta, New York, New England, PJM, Victoria, and England and Wales.

### **Project Valuation**

- » Served as Project Manager for assignments requiring the development of valuation estimates for numerous energy projects. Projects typically entailed modeling revenues and costs to predict cash flows and calculate the cumulative present worth of after-tax cash flows. The overall viability of projects were assessed by reviewing the status of project permitting efforts and financial commitments, the major provisions of power purchase agreements and steam purchase agreements.
- » Managed a project to provide an independent valuation of a multi-unit generating portfolio as part of a refinancing for the portfolio. Oversaw and managed the development of an electricity market price forecast and estimate of the fair market value of the proposed portfolio. Defended analyses before credit rating agencies and lenders.
- » Completed a comprehensive valuation of an oil-sands cogeneration project. As part of this effort, the team examined various market scenarios and potential spot market volatility and the subsequent impact on the client's electricity commodity costs.
- » Performed detailed analyses of numerous generation projects' financial feasibility. Analyses considered alternative financing schemes and identified strategies for enhancing project values.
- » Evaluated the economic and financial feasibility of a number of different generation projects for project developers, project hosts, and a gas utility. Assisted in the development of a cogeneration feasibility assessment model.

## **Resume of John Dalton**

- » Developed an estimate of the capital and operating costs of a wide range of generating technologies as part of a comprehensive assessment of the costs of new entry. Also estimated the appropriate cost of equity using the capital asset pricing model and debt and capital structure based on market information for merchant generators.
- » Oversaw the development of numerous electricity distribution company valuation models. Used models to derive an estimate of the fair market value of the LDCs. Defended analysis before utility boards and management.
- » Developed quantitative and qualitative analyses of generating assets in support of numerous generation asset acquisitions. Assisted in the management and coordination of multiple facets of the due diligence process, including technical engineering assessments, environmental, fuel supply, etc. Experience includes a broad range of fuels / technologies, including wind and other renewables.

### **Power Procurement Support**

- » Advised on the development of over 20 RFPs for power supplies and demand-side resources for electric utilities across North America, serving as project manager for well over half of these RFPs. Support covered the full range of RFP support services including advising regarding the appropriate form of the RFP and evaluation process to secure resources that best satisfy the client's objectives, drafting the RFP, developing the evaluation framework, marketing the RFP process to prospective bidders and negotiating with bidders.
- » Advised on commercial issues for power purchase agreements.
- » Offered testimony before the Massachusetts Department of Public Utilities on a utility RFP process. Authored reports on the evaluation of proposals.
- » Managed numerous competitive solicitations for renewable energy resources and energy efficiency projects. Projects involved the development of frameworks for evaluating these energy alternatives and for comparing them on a consistent basis with conventional electricity supplies. Analyses considered the relative environmental impacts, reliability benefits, and cost-effectiveness of alternatives.
- » Acted as Project Manager for several assignments to serve as the independent evaluator of conventional generation, renewable resource and demand-side RFPs. Responsible for determining whether proposals satisfy the threshold requirements in the RFP and for scoring all proposals. Also responsible for identifying the short-list of proposals, conducting bid clarification meetings with shortlisted bidders, and recommending to the selection of winning bidders.

### **Transmission Facility Review and Pricing Proceeding Support**

- » Advised the staff of the Ontario Energy Board on the evaluation of the proposal for a 1,250 MW HVDC line between Quebec and Ontario and served as a participating staff member for the Massachusetts Energy Facilities Siting Board's evaluation of the 2,000 MW HVDC interconnection between Massachusetts and Quebec.
- » Advised OEB staff on the review of evidence presented by Hydro One in its application for two 240 kV transmission lines to alleviate the Queenston Flow West constraint.
- » Advised clients in Saskatchewan, Newfoundland and Labrador, and Alberta on transmission pricing issues. Testified in the Alberta Transmission Congestion Pricing Principles proceeding.
- » Led a consulting team that assisted with the preparation of the East-West Electrical Transmission Grid Study. Authored subsequent updates to this study for Natural Resources Canada.

## **Resume of John Dalton**

- » Advised a client regarding the elements of a comprehensive electricity export policy framework. Advice focussed on economic and social issues arising from the development of export oriented transmission infrastructure to support the development generation for export.
- » Provided testimony on Northeast power markets and transmission issues and consequential damages in a civil case in New York. Evaluated the implications of the loss of a transmission facilities on the power system adequacy.
- » Advised a number of clients on the issues associated with the development of merchant transmission facilities. Projects included reviewing the status of merchant project development efforts, merchant project structures, key success factors for merchant plant development and a review of merchant plant development opportunities worldwide.

### **Renewable Energy Policy Development and Evaluation**

- » Advised governments of Ontario, New Brunswick, Nova Scotia, and Manitoba on policies for the promotion of renewable energy technologies.
- » Advised the Ontario Select Committee on Alternative Fuels on the most promising renewable technologies, identified barriers to their development and adoption and proposed policies for overcoming these barriers.
- » Directed a project for a group of municipalities in Manitoba that evaluated the economic opportunity offered by wind projects in Manitoba and identified policies to promote the development of Manitoba's wind resources.
- » Advised the Ontario Power Authority on the development of a standard offer for renewable energy technologies.
- » Delivered a presentation on Canadian policies to promote the development of wind energy projects. Presentation reviewed federal and all relevant provincial programs and policies to promote the development of wind energy projects.
- » Developed recommendations for the Manitoba Sustainable Energy Association on policies to promote the adoption of renewable energy technologies in Manitoba. Reviewed the relative advantages and disadvantages of standard offers versus RFPs and made recommendations regarding the appropriate applications of each.
- » Advised numerous electricity generation development companies on the implications and opportunities presented by renewable energy policies. Developed strategic plans for a wide range of renewable energy technologies including large scale wind, landfill gas, biomass, anaerobic digestion, and small hydro.
- » Evaluated electricity wholesale market and REC prices that would apply to landfill gas projects and reviewed US federal policies that benefited these projects including the production tax credit.
- » Reviewed the general market for the development of renewable energy projects in Canada and contrasted market conditions with those in other countries.
- » Led the development of a multi-client study that evaluated the opportunities for wind project development in Ontario under existing federal and provincial programs.
- » Contrasted state RPS programs by identifying eligible technologies, eligibility requirements for projects in different jurisdictions, strategies for assessing compliance, RPS targets, and penalty provisions for failure to achieve the target.

## **Resume of John Dalton**

### **Speaking Engagements**

- » “Strategies for Enhancing the Value of Your Asset”, IBC Conference, (November, 1999)
- » “Electricity Restructuring Lessons Learned: Implications for Ontario”, Ontario Energy Marketers Association (April, 2001)
- » “Electricity Power Prices in the Deregulated Ontario Market, 2001 CERI Conference, (October, 2001)
- » “Electricity Restructuring in the US and Eastern Canada”, World Bank/CREG/CERI Conference, (November, 2001)
- » “Prices and Price Volatility in the Ontario Wholesale Power Market” PowerFair 2002, (May, 2002)
- » “Pricing Fundamentals in the Ontario Wholesale Power Market” PowerFair 2003, (August, 2003)
- » “The Economics of Power Generation in Atlantic Canada”, 2003 Atlantic Power Summit (October, 2003)
- » “Future Opportunities in the Maritimes”, 2003 Ontario Energy Contracts Conference, (November, 2003)
- » “A Perspective on Ontario’s Evolving Wholesale and Retail Power Market Structures”, PowerFair 2004, (May, 2004)
- » “Canadian Policies to Promote Wind Project Development” EUCI’s 4<sup>th</sup> Wind Energy and Power Markets Conference (September, 2004)
- » “Effectively Navigating Ontario’s RFP Processes” Power ON Conference, (October, 2004)
- » “Enhancing the Performance of the Maritimes Market”, 2004 Atlantic Power Summit, (November, 2004)
- » “What Will the Ontario Landscape Look Like?”, 2005 Ontario Energy Contracts Conference, (January, 2005)
- » “Policies to Promote the Adoption of Renewable Energy Technologies in Manitoba”, Manitoba Sustainable Energy Association, (April, 2005)
- » “Outlook for Ontario Electricity Supply & Pricing”, PowerFair 2005, (May, 2005)
- » “Key Risks Affecting Ontario Electricity Consumers”, AMPCO General Member Seminar (November, 2005)
- » “What Kind of Market Structure Would Spark New Investment?” Canadian Institute’s Generation Adequacy in Ontario Conference (April 19, 2006)
- » “Where are Electricity Pricing Going” Insight Information, Ontario Power Forum (June 15, 2006)
- » “Transmission Planning and Policy Development: An Update”, APPrO Conference (November 15, 2006)
- » “Recent Developments in Transmission Access and Pricing” Insight Information’s Grid Reliability and Competition in the Power Sector ( December 12, 2006)
- » “Renewables in Ontario” Insight Info Conference (June 14, 2007)

## **Resume of John Dalton**

- » “Report Card on Ontario’s Electricity Market” Ontario Energy Association Annual Conference (September 6, 2007)
- » “Opportunities for Selling Renewable Power into the New England Market” Insight Info’s 5<sup>th</sup> Annual Atlantic Power Summit (September 26, 2007)
- » “New England Market Opportunities and the Prospects for Increased Inter-Regional Trade” Canadian Institute’s Atlantic Energy Conference (May 28, 2008)
- » “Cost Recovery and Return on Equity for Transmission Investment in the U.S.”, Canadian Electricity Association Transmission Council (February 25, 2009)
- » “Ontario’s Feed In Tariff in the Context of North American Renewable Energy Policies”, 2009 OEA Industry Leaders’ Roundtable (April 30, 2009)
- » “Transmission as Barrier to Wind Power Exports from the Maritime Provinces to the US Northeast”, Canadian Wind Energy Association Wind Matters Conference (May 20, 2009)
- » “Electricity Transmission Enhancements to Capitalize on Opportunities for Renewable Resource Development”, Renewable Energy Conference 2009 (May 28, 2009)
- » “Lessons Learned in the Design of Standard Offer and Feed-in Tariff Programs” Vermont Public Service Board Standard Offer Workshop (July 10, 2009)
- » “Impact of the Current Economic Climate on North American Renewable Energy Investment”, Rothesay Energy Dialogue 2009 (July 14, 2009)
- » “Evaluation of Opportunities and Barriers to Wind Power Exports from the Maritime Provinces to the US Northeast”, CanWEA 2009: Infinite Possibilities (September 21, 2009)
- » “Stakeholder Conference Presentation on the Cost of Capital”, Ontario Energy Board (September 22, 2009)
- » “Opportunities Offered by the New England Power Market”, Insight Info’s 7<sup>th</sup> Annual Atlantic Canada Power Summit (October 5, 2009)
- » “Assessment of Ontario’s Green Energy Act and its Implications for Ontario”, PowerLogic ION Users Conference 2009 (October 23, 2009)
- » “Securing Regulatory Support for Smart Grid Investments”, Canadian Electricity Association Customer Council (November 24, 2009)

## BARCLAY GIBBS

Principal

M.S. Technology & Policy,  
Massachusetts Institute of Technology

M.A. Applied Economics,  
Johns Hopkins University

M.S. Environmental Systems Engineering,  
Clemson University

B.S. Chemical Engineering,  
Bucknell University

Mr. Gibbs consults to electric utilities, large industrial users of electricity, and power project investors. Using CRA's proprietary North American Electricity & Environment Model (NEEM), Mr. Gibbs has evaluated the impact of various Federal and state policies on generation technology expansion plans, electricity prices, and generation asset value. He has used NEEM to forecast prices for Renewable Energy Credits (RECs), to assess the costs and benefits of expanding transmission to access remote windpower, to evaluate the producer and consumer impacts of proposed export tariff changes in a North American electricity market, and to forecast the fuel cost pass-through from a utility to a large industrial user of electricity. Prior to joining CRA International, Mr. Gibbs was a managing consultant in the Technology Strategy and Management Group at Navigant Consulting where he consulted on energy efficiency policy and bioenergy.

## PROFESSIONAL HISTORY

2007–Present	<i>Principal</i> , CRA International, Washington, DC
2003–2007	<i>Managing Consultant</i> , Navigant Consulting, Washington, DC
2001–2003	<i>Project Manager/Senior Analyst</i> , Antares Group Inc., Power Division, Landover, MD
1999–2001	<i>Research Assistant</i> , Massachusetts Institute of Technology, Cambridge, MA
1999	<i>Research Assistant</i> , Harvard University, Belfer Center for Science & International Affairs, Cambridge, MA
1998	<i>Consultant Intern</i> , ICF Consulting, Washington, DC
1997	<i>Research Fellow</i> , Brookhaven National Laboratory, Long Island, NY

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## EXPERIENCE

### Energy

- Assessed benefits of transmission expansion project to access remote windpower resources under policies of greenhouse gas cap-and-trade and renewable electricity standard (RES).
- Modeled merchant power plant and regulated utility portfolios under various carbon price and gas price scenarios.
- Forecasted electricity prices under various carbon policy proposals, gas price trajectories, and technology assumptions (e.g., costs, timing, and performance of carbon capture and sequestration technology).
- Modeled impact of Plug-In Hybrid Electric Vehicle (PHEV) penetration on load growth, load shape, and power prices.
- Forecasted Renewable Energy Certificate (REC) prices in Northeast states to support wind-power investment decision.
- Forecasted contractual fuel cost adjustment paid to a utility by a large industrial electricity consumer (scenario variables include load, hydro output, gas prices, coal prices).
- Advised major oil company on energy efficiency policy positions.
- Conducted cost-benefit analysis of proposed changes to electricity tariffs in and out of Ontario.
- Drafted key sections of several federal register notices and technical support documents for federal energy efficiency rulemakings.
- Contributed significantly to a report to Congress, on behalf of the Department of Energy (DOE), about the history and future of the DOE Appliance Standards Program (energy efficiency).
- Advised international energy company about the global market for biomass power technologies.
- Advised international energy company on the selection of a gasification technology for biofuels production.
- Informed utilities and state agency about the technology status and economics of biomass power technologies.
- Developed process and production cost models for alternative fuel synthesis.
- Assessed future of biopower in NY State and submitted comments on the development of the NY Renewable Portfolio Standard (RPS).



- Conducted conjoint analysis of consumer tradeoffs in purchasing distributed generation technologies.

## Environmental

- Completed regulatory steps and associated data analysis for air pollution permitting of bio-power/coal co-firing project.
- Conducted health risk assessments for bulk liquid storage terminal facilities in California and Texas.
- Prepared Title V permit application materials for bulk liquid storage terminals.
- Wrote EPA whitepaper about greenhouse gas mitigation opportunities in the former Soviet Union's natural gas industry.
- Co-authored paper about the risks and benefits of Belarussian biomass power plants (research fellow – Brookhaven National Laboratory).
- Co-authored paper about groundwater transport of plutonium and the influence of groundwater chemistry on plutonium's mobility (research assistant – Clemson University).
- Contributed to EPA report about the influence of local and global environmental policy on fuel choices facing Midwest US power plants (research assistant - Harvard Belfer Center).
- Conducted evaluation of technology and taxation-based policy options for mitigating NOx emissions in Mexico City (research assistant - MIT Mexico City Project).

## Financial

- Assessed the financial impact of proposed federal energy efficiency standards on the distribution transformer industry (discounted cash flow analysis, financial statement analysis, cost of capital estimation, stranded assets estimation).
- Advised state energy agency about synthetic natural gas project investment decision.
- Advised Fortune 500 Companies about biopower, solar, and distributed power technology markets.

## Selected Publications

Fjeld, R.A., S.M. Serkiz, B.W. Gibbs, P.L. McGinnis, J.T. Coates. "Evaluation of a Conceptual Model for the Subsurface Transport of Plutonium Involving Surface Mediated Reduction of Pu(V) to Pu(IV)." Paper presented at the 8<sup>th</sup> International Conference on Chemistry and Migration Behaviour of Actinides and Fission Products in the Geosphere, Bregenz, Austria (2001). Results of laboratory analysis originally presented at the 1998 Health Physics Society's annual conference in Minneapolis.

lis, MN.

Rymkevich, V, K.G. Andersson, J. Roed, D. Brekke, B. Gibbs, and T. Sullivan, "Safety aspects related to the radioactively contaminated forest areas in Belarus," *Waste Management '98*, Tucson, AZ, March, 1998.

Sullivan, T.M., B.Gibbs, G. Senum, M. Schwartz, T. Hopkins, and J.Heiser, "Verification of Subsurface Barrier Integrity Using Perfluorocarbon Gas Tracers," *Waste Management '98*, Tucson, AZ, March, 1998.

USDOE, 2007. Technical Support Document: Energy Efficiency Program for Commercial and Industrial Equipment, Electrical Distribution Transformers – Chapter 12, Manufacturer Impact Analysis.



**Darren Finkbeiner**  
**Manager – Market Development**  
**Independent Electricity System Operator**

Darren Finkbeiner is the Manager of Market Development and is responsible for the Market Evolution department at the Ontario Independent Electricity System Operator (IESO). He joined Ontario Hydro/ the IESO in 1987. Mr. Finkbeiner has held positions as a NERC certified Power System Operator as well as managing roles in change management, market and system analysis, operational readiness and market entry. He has been closely involved with the restructuring and evolution of the Ontario electricity market. In his current role Mr. Finkbeiner is responsible for the IESO Market Evolution program and the development of the Market Rules that govern the IESO administered markets.

Leading to market commencement, Mr. Finkbeiner was a lead in the development of rules, processes, procedures and policy for market and system operations. Among his other prior responsibilities Mr. Finkbeiner has served as Ontario's committee representative in various industry forums dealing with congestion management, intertie seams issues and inter-jurisdictional power purchase agreements. He is currently the IESO's representative on the IESO technical panel the body which recommends rule changes for the evolution of the IESO Administered markets.

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