

January 16, 2023

VIA RESS

Ms. Nancy Marconi
Registrar
ONTARIO ENERGY BOARD
P.O. Box 2319, 27th Floor
2300 Yonge Street
Toronto, Ontario
M4P 1E4

Ian A. Mondrow
Direct 416-369-4670
ian.mondrow@gowlingwlg.com

Assistant: Cathy Galler
Direct: 416-369-4570
cathy.galler@gowlingwlg.com

Dear Ms. Marconi:

**Re: EB-2022-0200 – Enbridge Gas Inc. (EGI) Application for 2024 Cost of Service Rates.
Industrial Gas Users Association (IGUA) Proposal to File Expert Evidence.**

We write pursuant to Procedural Order No. 1 herein to inform the OEB of IGUA's proposal to file expert evidence and intention to retain expert assistance in support of its intervention in this matter.

Context

This is a big case. EGI is seeking approval for an annual revenue requirement of almost \$6.3 billion in 2024, and escalating revenue requirements over the ensuing 4 years. Incremental delivery revenue requirement sought for 2024 relative to 2023 is more than \$240 million, and over the 5 years covered by this application totals more than \$1.2 billion in incremental costs to customers. As EGI's largest customers, IGUA members have a significant interest in this case, and expect IGUA to actively scrutinize and test the various deficiency drivers and EGI proposals addressed in the application. Against this monetary backdrop, the impact of the energy transition on EGI and its plans and operations will be a pervasive, and in IGUA's view important, topic.

It is in this context that IGUA is proposing to sponsor 3 discrete pieces of expert evidence.

The decision to propose to sponsor 3 discrete pieces of expert evidence was not taken lightly. IGUA has approved a budget forecast for the 3 experts which, at the OEB's cost recovery rate for senior advisors, would total approximately \$300,000 in incremental costs. We have forecast approximately \$100,000 in incremental costs (at the OEB cost recovery rate) for each of the 3 proposed experts, which forecast includes;

- expert time to review and consider the relevant pre-filed evidence;
- expert time to draft written evidence;

- expert time to review relevant written expert evidence sponsored by other parties, as applicable;
- expert time for posing and responding to interrogatories;
- expert time for preparation for and attendance at an oral hearing for presentation of their evidence;
- expert time for supporting development and articulation of final argument on the topics addressed in their evidence; and
- incremental legal fees directly associated with the forgoing activities.

IGUA's actual cost responsibility for sponsoring this evidence would be significantly more than the cost eligible component determined by application of the OEB's prescribed cost award tariff, presenting IGUA and its members with a net (i.e. following cost recovery at the OEB's published cost award tariff) cost associated with this evidence proposal of approximately \$100,000. This net cost to IGUA for presentation of the proposed expert evidence is in addition to the significant net costs to IGUA for the balance of its intervention in this case. Despite this material unrecoverable cost, the decision to proceed with this evidence proposal has been taken on the basis of the importance of this case, the central role that each of the topics in respect of which expert evidence is proposed plays in EGI's forecast revenue deficiency, and the lasting impact that the OEB's determinations in this case will have on EGI's customers, including its largest customers, for years to come.

IGUA is proposing to sponsor evidence related to:

1. EGI's proposed harmonized depreciation policy, the revenue requirement impact of which is almost \$1 billion over the rate plan period.
2. The "business risk" to EGI arising from energy transition considerations, the cost of capital impact of which, EGI asserts, is an incremental \$260 million over the rate plan period.
3. The application of the "fair return standard" to EGI's cost of capital (equity thickness), which EGI asserts underpins the cost of capital impact noted in item 2., above.

Having discussed these topics with IGUA's respective proposed experts on a preliminary basis, we have reason to believe that these experts would challenge EGI's positions on aspects of these proposals and provide alternative, and valuable, perspectives on the appropriateness of such proposals for consideration by the Board.

OEB Staff has advised that it is still considering filing evidence regarding one or both of; i) EGI's proposed harmonized depreciation policy; and ii) EGI's proposed change to its equity thickness. IGUA is prepared to work with Board Staff to minimize duplication in the event that OEB Staff proceeds with such filing. Despite the residual potential for some overlap, we respectfully submit that it is important from a customer perspective, and to the integrity of the OEB's process, to obtain an appropriately broad range of views on these two main drivers of EGI's proposed rate increases. In each case IGUA has identified experts that, while ultimately guided by their primary obligations to the tribunal of candour, balance and integrity, have experience and expertise engaging on these issues from the customer perspective, as further described below.

In addition to three experts proposed to provide evidence, IGUA intends to retain an expert advisor to review EGI's cost allocation study and advise on any issues that IGUA, on behalf of its members, should pay particular attention to. IGUA is not proposing evidence on this topic at this time. It will only be possible to determine whether there are cost allocation issues that require particular attention by IGUA once the commissioned analysis, which is underway, has been concluded. IGUA forecasts up to an additional \$66,000 in cost eligible expert fees for this advisory retainer (plus an additional unrecoverable contribution by IGUA for this retainer). Recovery of the cost eligible portion of these costs will be sought in accord with the OEB's *Practice Direction on Cost Awards* in the normal course.

Proposed Evidence

Potential Impacts of the Energy Transition (“Business Risk”)

The analysis presented by EGI and its experts, Concentric Energy Advisors, regarding equity thickness proceeds in two basic steps. The first of these steps is to seek to establish that EGI's business risk has changed, largely as a result of the energy transition, such that the OEB should re-examine EGI's equity thickness.

IGUA proposes to sponsor evidence from Dr. Asa Hopkins of Synapse Energy Economics Inc. discussing how regulated utilities and their regulators in other jurisdictions have considered and addressed the implications of the energy transition on the regulated natural gas delivery business, and emerging best practices for evaluating utility business risk in this context. Dr. Hopkins would then address how such best practices can be applied in conjunction with other potential changes in regulatory structure (such as rate design) as part of an overall weighing of business risk in establishing EGI's capital structure and assessing EGI's proposal to increase its equity thickness.

Dr. Hopkins recently presented evidence on these topics before the Régie de l'énergie in Quebec on behalf of customer intervenors (including IGUA) in the review by the Régie of the cost of capital (in that instance return on equity) of the gas utilities which the Régie regulates. In its determinations on recovery of costs incurred in presenting intervenor evidence in that case, the Régie indicated that the intervenor experts on this topic, including Dr. Hopkins, played an important role and was very useful to the commission's deliberations.¹

Attached to this letter is a copy of Dr. Hopkins's curriculum vitae. Dr. Hopkins leads Synapse's work in the area of the future of gas utilities, assisting clients and energy regulators in understanding the future of gas utilities in the context of deep building decarbonization objectives. In addition to his recent appearance before the Régie, Dr. Hopkins's work has included:

- Assisting the Conservation Law Foundation in Massachusetts Department of Public Utilities Docket 20-80 (an investigation into the role of gas local distribution companies as the Commonwealth achieves its target 2050 climate goals).

¹ Régie de l'énergie, D-2022-127, R-4156-2021 Phase 2, November 16th Decision, paragraphs 33 and 34.

- Assisting the Natural Resources Defense Council in New York and Nevada's regulatory proceedings regarding the future of gas.
- Assisting the Colorado Energy Office regarding approaches to decision making in the face of uncertainty, in the context of Colorado's regulatory proceedings regarding gas utility Clean Heat plans and building decarbonization.
- Assisting the County of San Diego (with the University of California San Diego) in developing the buildings and utilities portion of its Regional Decarbonization Framework.
- Assisting the Maryland Office of People's Counsel in modeling the impact of the state's decarbonization objectives on utility sales and finances.
- Assisting the District of Columbia Department of Energy and Environment in assessing Washington Gas Light's Climate Business Plan.
- Providing testimony on behalf of the District of Columbia Government in the proceeding in which Altgas purchased Washington Gas Light regarding the implications of the District's decarbonization plans on the future of the utility's regulated gas business.

Through discussions among intervenors in this case we understand that Environmental Defence (ED) and Green Energy Coalition (GEC) are proposing to sponsor evidence from Chris Neme of the Energy Futures Group, which we understand will delve into the details of the various energy transition pathways studies advanced, or referred to, by EGI in support of various aspects of its application. Dr. Hopkins will not be asked to present such a detailed review and critique of the various energy transition pathways presented. We have, and will continue to, work with counsel for ED and GEC to preclude unnecessary duplication of efforts as between Dr. Hopkins and Mr. Neme.

Application of a Fair Return Standard Analysis to EGI's Equity Thickness

Once the extent of increased business risk as a result of the energy transition is addressed, the second stage of Concentric's analysis in support of EGI's proposal to increase its equity thickness is to apply a "fair return standard" analysis to determine a recommended updated equity thickness for EGI. IGUA proposes to sponsor evidence from Dr. Sean Cleary addressing application of the fair return standard to EGI's capital structure.

Dr. Cleary is a Professor of Finance at Smith School of Business, Queen's University. He is the Chair of the [Institute for Sustainable Finance](#) based at Smith, and is a member of Canada's [2023 Clean50](#). Dr. Cleary is the founding Academic Director of the Master of Finance program, holds a Ph.D. in finance from the University of Toronto and is a CFA charter holder. He is a current member of the CFA Society Toronto Advisory Council, and is a former member of the Board of Directors for the Toronto CFA Society and the Atlantic Canada CFA Society (where he served as President). Dr. Cleary has authored 14 finance textbooks and has published more than 30 research articles,

including several in top tier finance journals. His publications have been cited over 5,000 times² and he has received several major research grants. He is an Associate Editor for two finance journals and frequently serves as a reviewer for many of the top finance journals.

Dr. Cleary regularly serves as an expert witness on cost of capital and capital markets. He has on several occasions provided evidence on cost of capital matters before the Alberta Utilities Commission and the Newfoundland Public Utilities Board sponsored by the consumer advocates in those provinces. Dr. Cleary is familiar with the cost of capital work of Mr. Coyne of Concentric Energy Advisors and has provided his counter-perspective on such work in these previous regulatory proceedings, as warranted. IGUA submits that Dr. Cleary's participation would ensure a robust and balanced evidentiary record on this important topic in support of the Hearing Panel's deliberations and decision.

Dr. Cleary's curriculum vitae is attached to this letter.

Depreciation Policy (including Site Restoration Costs)

IGUA proposes to sponsor evidence from Mr. Dustin Madsen on depreciation policy, including site restoration costs. Mr. Madsen's curriculum vitae is attached to this letter. In addition to his Canadian and U.S. accounting qualifications, Mr. Madsen has extensive energy regulatory accounting experience and has been certified as a Rate of Return Analyst by the Society of Utility and Regulatory Financial Analysts and as a Certified Depreciation Professional by the Society of Depreciation Professionals.

Mr. Madsen has reviewed EGI's evidence, including Concentric's supporting report on these topics, and has preliminarily identified the following issues for more extensive consideration:

- i. EGI's proposal to adopt the Equal Life Group depreciation procedure and the implications of using the alternative Average Life Group approach (or other possible approaches), including a consequent reduction in up-front depreciation costs and the extent to which a resulting theoretical decrease in mathematical precision should be of concern in considering which approach to adopt.
- ii. The Constant Dollar Net Salvage (CDNS) discount rate proposed to be adopted, and alternative potential discount rates and the pros and cons of such alternatives relative to EGI's proposal.
- iii. The potential for establishing a segregated fund for salvage costs recovered, and the pros and cons of such an approach from a customer perspective (including with respect to cost and revenue requirement impacts).

² <https://scholar.google.ca/citations?user=bf2eyl8AAAAJ&hl=en>

- iv. The applied for depreciation parameters included in the Concentric report, including the reasonableness of the proposed lives having regard for the underlying actuarial data, life curves selected, and other relevant information such as peer analysis and information provided by the EGI management team.

There may be other topics related to EGI's proposed depreciation policy and/or Concentric's supporting report that Mr. Madsen identifies during the course of his further review and inquiries that would be addressed in his report.

Mr. Madsen is familiar with the work of Mr. Kennedy of Concentric Energy Advisors, the author of the Concentric depreciation report supporting EGI's depreciation policy proposals, and is positioned to provide an informed review of that work and discuss the merits, from a customer perspective, of Mr. Kennedy's approach and alternatives thereto.

Additional Expert Assistance

In addition to the proposal to sponsor the foregoing expert evidence, IGUA has retained Mr. Robert Knecht to provide support in evaluating EGI's proposed cost allocation model. Mr. Knecht has been previously engaged in Ontario natural gas cost allocation and rate design matters; for the Vulnerable Energy Consumers Coalition (VECC) in 2004 (EGD, RP-2003-0203) and for Tribute Resources in 2005 (Union, EB-2004-0542).

IGUA is not proposing to sponsor evidence on the topic of cost allocation at this time.

Provision for Interim Cost Recovery

IGUA has forecast a significant expense for retaining qualified external expertise in connection with the issues raised by EGI in its application. Such retainers, together with its engagement of counsel, presents IGUA with a significant cash flow requirement, in particular given the scope of the instant case and its relative complexity. IGUA therefore respectfully requests that the OEB make provision for an interim award of costs for cost eligible intervenors at an appropriate point in the process.

The appropriate point may be following the settlement conference now scheduled to conclude by May 17th. By that point interrogatories will have been asked and answered and intervenor evidence will have been filed and considered. The Hearing Panel should be in a position to make a preliminary assessment of the extent to which activity by intervenors and their experts has produced a balanced and comprehensive record to support the OEB's deliberations herein, which would be an appropriate basis upon which to consider interim cost awards for eligible intervenors.

Conclusion

IGUA appreciates the OEB's consideration of the foregoing and awaits further direction.

Yours truly,



Ian A. Mondrow

c: S. Rahbar (IGUA)
V. Innis (EGI)
D. Stevens (Aird & Berlis LLP)
D. O'Leary (Aird & Berlis LLP)
K. Viraney (OEB Staff)
Intervenors of Record

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Asa S. Hopkins, Ph.D., Vice President

Synapse Energy Economics | 485 Massachusetts Avenue, Suite 3 | Cambridge, MA 02139 | 617-661-3248
ahopkins@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics Inc., Cambridge, MA. *Vice President*, April 2019 – present, *Principal Associate*, January 2017 – March 2019.

Conducts research and writes expert testimony and reports related to state energy policy and planning, energy efficiency, strategic electrification, deep decarbonization, and the present and future of electric and gas utility regulatory and business models.

Vermont Public Service Department, Montpelier, VT. *Director of Energy Policy and Planning*, October 2011 – December 2016

State energy planning and utility regulation

- Directed the year-long development of the 2016 Vermont Comprehensive Energy Plan, including stakeholder meetings, public forums, and coordination of contributions from other departments and the Governor's office. Primary author of the executive summary and five chapters.
- Led the Department's approach to establishing budgets and performance targets for energy efficiency utilities. Oversaw staff conducting program evaluation and savings verification.
- Submitted testimony and conducted analysis in support of public advocacy and negotiation in prominent litigated regulatory proceedings.

Policy development, analysis, and advocacy

- Developed the structure of Vermont's 2015 Renewable Energy Standard, including its novel "energy transformation" requirement. Worked with stakeholders to develop support for the policy and with the legislature to shepherd it to passage. This policy will result in more reduction of Vermont's GHG emissions than any others passed in the last 15 years.
- Led execution of Vermont's Total Energy Study, which examined technology and policy pathways for Vermont to meet GHG emission and renewable energy goals.
- Led cost-benefit analysis of Vermont's existing net metering structure and led the development of departmental proposals for a new structure.
- Prepared and delivered public, stakeholder, and interagency presentations, including to agency and business leaders, legislative committees, and the governor.
- Oversaw programs providing financing, technical, and process assistance to clean energy projects.

During tenure, Vermont rose in the rankings on national clean energy state scorecards: ACEEE State Energy Efficiency Scorecard from 5th to 3rd and U.S. Clean Tech Leadership Index from 10th to 3rd.

U.S. Department of Energy, Washington, DC. *Special Advisor to the Under Secretary for Science / AAAS Science and Technology Policy Fellow*, September 2010 – August 2011

Dr. Hopkins served as the assistant project director for the Department of Energy's first Quadrennial Technology Review. In this role, he coordinated a team that solicited input from Department of Energy and National Laboratory staff and scientists, ran a series of public workshops, facilitated coordination with the White House, developed a set of technology assessments, and ultimately drafted the Report on the First QTR, published Sept. 27, 2011.

Lawrence Berkeley National Laboratory, Berkeley, CA. *Environmental Energy Policy Postdoctoral Fellow*, January 2009 – August 2010

Conducted technical and economic analysis to support the Department of Energy in setting the energy efficiency standards that appliances must meet in order to be sold in the United States.

California Institute of Technology, Pasadena, CA. *Graduate Research Fellow*, 2002 – 2008

Los Alamos National Laboratory, Los Alamos, NM. *Post-Baccalaureate Researcher, Theoretical Division*, June 2001 – June 2002

EDUCATION

California Institute of Technology, Pasadena, CA

Doctor of Philosophy in Physics, 2008

Master of Science in Physics, 2007

Haverford College, Haverford, PA

Bachelor of Science *summa cum laude*, in Physics with minors in Computer Science and Growth and Structure of Cities, 2001

SELECTED PROJECTS

The Future of Gas Utilities – Dr. Hopkins leads Synapse's work in the area of the future of gas utilities. He and his team are assisting a number of clients to understand the future of gas utilities in the context of deep building decarbonization objectives. This work includes assisting Conservation Law Foundation in Massachusetts Department of Public Utilities Docket 20-80 (an investigation into "the role of gas local distribution companies as the Commonwealth achieves its target 2050 climate goals"); Natural Resources Defense Council in New York and Nevada's regulatory proceedings regarding the future of gas; the Colorado Energy Office regarding approaches to decision-making in the face of uncertainty, in the context of Colorado's regulatory proceedings regarding gas utility Clean Heat plans and building decarbonization; the County of San Diego (with the University of California San Diego) in developing the buildings and utilities portion of its Regional Decarbonization Framework; the Maryland Office of People's Counsel in modeling the impact of the state's decarbonization objectives on utility sales and

finances; and the District of Columbia Department of Energy and Environment in assessing Washington Gas Light's Climate Business Plan.

Puerto Rico Energy Bureau – Synapse has provided extensive support to Puerto Rico's electricity regulator since 2015. Dr. Hopkins has coordinated the engagement since 2018. Dr. Hopkins has led or substantially contributed to the development of Puerto Rico's first energy efficiency and demand response regulations; emergency microgrid regulations; and the review of the island's second Integrated Resource Plan and subsequent processes to optimize resilience using both transmission and distributed generation resources.

Massachusetts Comprehensive Energy Plan – On behalf of the Massachusetts Department of Energy Resources (the state energy office), Synapse and Sustainable Energy Advantage assisted DOER and its sister agencies in the development of Massachusetts's first Comprehensive Energy Plan. Dr. Hopkins assisted DOER leadership in defining the scope and approach for the CEP, to distinguish it from other state planning processes. He worked with Pat Knight to develop an approach to modeling energy transformations toward low-carbon alternatives in electricity, buildings, and transportation that are consistent with state policy and approaches while being grounded in stock turnover rates and feasible policies and programs.

Northeastern Regional Assessment of Strategic Electrification – On behalf of the Northeast Energy Efficiency Partnerships, Synapse and Meister Consultants Group identified the opportunity, costs, and benefits available if strategic electrification is adopted as a key strategy for decarbonization in New York and New England. Dr. Hopkins, Kenji Takahashi, and Pat Knight are primary authors of the resulting report, published in July 2017, which characterizes the current markets for efficiency electrification technologies (such as heat pumps and electric vehicles), identifies policies to overcome market barriers, assesses the state of electrification technologies, and models the extent of electrification both possible given market dynamics and required to meet regional greenhouse gas emission goals.

2016 Vermont Comprehensive Energy Plan – Directed the year-long development of the 2016 plan, including setting its strategic approach to current Vermont energy planning challenges and grounding it in quantitative analysis. Developed the public engagement process, then hosted expert stakeholder meetings and public forums. Adapted the results of the 2014 Total Energy Study to produce scenarios that illustrate the proposed pathways identified in the plan. Coordinated contributions from staff and leaders in other departments, and from the Governor's office. Wrote the executive summary and 5 of the 14 chapters.

Total Energy Study – Scoped and led a legislatively-mandated report on policy and technology pathways to meet Vermont's renewable energy and greenhouse gas emission goals. Designed and facilitated a focus-group-based stakeholder engagement process to identify technology and policy visions for analysis. Retained outside modeling consultant, then worked closely with them to build credible business-as-usual and policy case models of Vermont's energy economy to the year 2050 using the TIMES/FACETS integrated assessment model. Translated those model results to make REMI PI+

calculations of impact on Vermont GDP and jobs. Synthesized qualitative and quantitative results into intermediate and final reports identifying key outcomes for policy design.

Demand Resources Plan Proceedings – In each of three, three-year cycles, led the development of the Department of Public Service’s positions regarding appropriate budgets, rate and bill impacts, and performance targets for Vermont’s energy efficiency utilities. Analyzed current efficiency utility performance to calibrate expected future performance. Negotiated performance metrics that reflect policy priorities. Developed new regulatory and budget treatment of research and development for behavioral energy efficiency programs.

Quadrennial Technology Review – As Assistant Project Director, managed the project activities of the eight-person core team for the U.S. Department of Energy’s first Quadrennial Technology Review. This review of DOE’s energy technology activities established a robust framework and codified principles used to build DOE’s energy technology portfolio (including identifying the appropriate and highest-leverage activities for DOE relative to the private sector and other government actors). Extensive collaboration and discussions within DOE, as well the public through a series of workshops with industry, government, national laboratory, and academic participation, culminated in the publication of the first DOE-QTR report in September 2011. Coordinated successful stakeholder workshops; facilitated focus groups. Drafted discussion papers that served as the basis for extensive intra- and inter-agency and White House coordination and negotiation. Primary author of the final report’s section on building and industrial energy efficiency. Project was completed on schedule and on budget, and met its critical milestones.

REPORTS

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Takahashi, K., E. Sinclair, A. Napoleon, A. S. Hopkins, D. Goldberg. 2021. *Evaluation of EnergyWise Low-Income Energy Efficiency Program in Mississippi – Program Performance, Design, and Implications for Low-Income Efficiency Programs*. Synapse Energy Economics for Sierra Club and Gulf Coast Community Foundation.

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Vermont Public Service Department. 2014. *Evaluation of Net Metering in Vermont Conducted Pursuant to Act 99 of 2014*.

Vermont Public Service Department. 2013. *Total Energy Study: Report to the Vermont General Assembly on Progress Toward a Total Energy Approach to Meeting the State's Greenhouse Gas and Renewable Energy Goals*.

Vermont Public Service Department. 2013. *Evaluation of Net Metering in Vermont Conducted Pursuant to Act 125 of 2012*.

U.S. Department of Energy. 2011. *Report on the First Quadrennial Technology Review*. DOE/S-0001.

ARTICLES

Hopkins, A. S., K. Takahashi, S. Nadel. 2020. "Keep warm and carry on: Electrification and efficiency meet the 'polar vortex'." Proceedings of the 2020 ACEEE Summer Study of Energy Efficiency in Buildings.

Hopkins, A. S., K. Takahashi, L. David. 2018. "Challenges and Opportunities for Deep Decarbonization through Strategic Electrification under the Utility Regulatory Structures of the Northeast". Proceedings of the 2018 ACEEE Summer Study on Energy Efficiency in Buildings, August 2018.

Hopkins, A. S. Review of *Burn Out*, by Dieter Helm, *Science* 356, Issue 6339 (May 2017): 709, <https://doi.org/10.1126/science.aam8696>

Dunsky, P., A. S. Hopkins, K. Vaillancourt, M. Fabbri. 2016. "Achieving an Ultra-Low Carbon Future: Technology and Policy Pathways to Meet Vermont's GHG Goals," *ACEEE Summer Study on Energy Efficiency in Buildings*.

Greenblatt, J., A. S. Hopkins, V. Letchert, M. Blasnik. 2012. "Energy Use of U.S. Residential Refrigerators and Freezers: Function Derivation Based on Household and Climate Characteristics," *Energy Efficiency*. 10.1007/s12053-012-9158-6.

Hopkins, A. S., L. Gu, A. Lekov, J. Lutz, G. Rosenquist. 2011. "Simulating a Nationally Representative Housing Sample Using EnergyPlus," Lawrence Berkeley National Laboratory Report, LBNL-4420E.

Lutz, J.D., A. S. Hopkins, V. Letschert, V.H. Franco, A. Sturges. 2011. "Using National Survey Data to Estimate Lifetimes of Residential Appliances," *HVAC&R Research*.

Alvarez, R.M., A. S. Hopkins, B. Sinclair. 2010. "Mobilizing Pasadena Democrats: Measuring the Effects of Partisan Campaign Contacts," *The Journal of Politics* 72, 31.

Nielsen, A.E.B., A. S. Hopkins, H. Mabuchi. 2009. "Quantum Filter Reduction for Measurement-Feedback Control Via Unsupervised Manifold Learning," *New Journal of Physics* 11, 105043.

Hopkins, A. S., B. Lev, H. Mabuchi. 2004. "Proposed Magneto-electrostatic Ring Trap for Neutral Atoms," *Physical Review A* 70, 053616.

Hopkins, A. S., K. Jacobs, S. Habib, K. Schwab. 2003. "Feedback Cooling of a Nanomechanical Resonator," *Physical Review B* 68, 235328.

TESTIMONY

New York Public Utilities Commission (Case No. 22-E-0064 and 22-G-0065): Direct and Rebuttal Testimony of Alice Napoleon and Asa Hopkins regarding Con Edison's proposed gas-side investments as greenhouse gas mitigation strategies and gas extension allowance rule changes and the need for long-term planning for the gas system and adequacy of the company's non-pipe alternatives framework. On behalf of Natural Resources Defense Council, May 2022.

Régie de l'énergie du Québec (R-4156-2021): Testified as an expert on the business risk facing Quebec's natural gas utilities related to the energy transition, as part of a proceeding to set the utilities' cost of capital and capital structure. On behalf of the Industrial Gas Users Association.

Vermont Public Utility Commission (Case No. 21-1107-PET and 21-1109-PET): Addressed the impact of GlobalFoundries proposed "self-managed utility" on the general good of the state and Vermont's energy policy, with particular focus on the impact on environmental soundness and greenhouse gas emissions mitigation. On behalf of Conservation Law Foundation, June 2021.

Public Service Commission of Wisconsin (Docket No. 5-CG-106): Addressed the need for a pair of liquified natural gas facilities in light of the fossil fuel use reductions required to meet state and federal goals for mitigating climate change and the potential for cost-effective demand-side alternatives. On behalf of the Sierra Club, June 2021.

Vermont Senate Finance Committee: Provided expert testimony in the form of a presentation entitled "Updating Vermont's Renewable Energy Standard" to the Vermont Senate Finance Committee in January of 2020. Dr. Hopkins presented on the history of the standard, what has changed since 2015, and future potential.

Vermont Public Utility Commission (Case No. 17-1247-NMP): Addressed the consistency of a proposed solar generation facility with the Vermont Comprehensive Energy Plan. On behalf of Derby GLC Solar LLC, January 2018.

Washington DC Public Service Commission (FC 1142): Provided expert testimony regarding the merits of the proposed merger of Washington Gas and AltaGas, Ltd. with respect to the impact on environmental quality, with particular emphasis on the impact of utility management and its approach to climate change on the ability of the District to achieve its climate change mitigation goals. On behalf of the District of Columbia Government.

Régie de l'énergie du Québec (R-3986-2016): Provided an expert report and testimony regarding best practices in utility demand response programs, in the context of Hydro Québec Distribution's ten-year Supply Plan. On behalf of the Regroupement national des conseils régionaux de l'environnement du Québec (RNCREQ).

Vermont Public Service Board (Dockets No. 8586 and 8685): Addressed the need for a proposed solar PV generator and its associated contract under PURPA rates, its economic impact on the state, and its consistency with the Vermont Electric Plan. On behalf of the Vermont Department of Public Service, July 2016.

Vermont Public Service Board (Docket No. 8684): Proposed avoided energy and capacity cost rates for use in Rule 4.100, Vermont's implementation of PURPA. On behalf of the Vermont Department of Public Service, October 2015 and May 2016.

Vermont Public Service Board (Docket No. 8600): Addressed the need for a proposed solar PV generator, its economic impact on the state, and its consistency with the Vermont Electric Plan. On behalf of the Vermont Department of Public Service, March 2016.

Vermont Public Service Board (Docket No. 8525): Introduced a memorandum of understanding between the DPS and Green Mountain Power regarding a proposed rate design, with particular focus on new critical peak price rates to be available and marketed. On behalf of the Vermont Department of Public Service, November 2015.

Vermont Public Service Board (Docket No. 7970): Addressed whether increases in the expected cost of a gas pipeline expansion project were sufficient to warrant reopening the underlying proceeding, particularly with respect to the need for the project, the economic impact on the state, and consistency with the general good of the state and the Vermont Comprehensive Energy Plan. On behalf of the Vermont Department of Public Service, May 2015.

Vermont Public Service Board (Docket No. 8311): Addressed how statutory criteria for the use of electric energy efficiency funds for electrification measures (such as heat pumps) might be met. On behalf of the Vermont Department of Public Service, January 2015.

Vermont Public Service Board (Docket No. 7862): Presented the Department's positions regarding whether Entergy Vermont Yankee should be granted a continued certificate of public good, with particular focus on the need for the plant, the economic benefit of continued operation, consistency with the Vermont Electric Plan, and whether continued operation by Entergy was in the general good of the state. On behalf of the Vermont Department of Public Service, October 2012 and April 2013.

Vermont Public Service Board (Docket No. 7833): Addressed the need for a proposed biomass electric generator and its consistency with the Vermont Electric Plan. On behalf of the Vermont Department of Public Service, October and November 2012; February and September 2013.

Vermont Public Service Board (Docket No. 7770): Addressed a number of topics related to the merger of Green Mountain Power and Central Vermont Public Service, most particularly the disposition of a windfall repayment due to ratepayers. On behalf of the Vermont Department of Public Service, January and March 2012.

Vermont Public Service Board (Docket No. 7815): Addressed consistency of a proposed long-term PPA with the Vermont Electric Plan and the utility's integrated resource plan. On behalf of the Vermont Department of Public Service, January 2012.

SELECTED PRESENTATIONS

Hopkins, A. S. "IIJA, IRA, and the Growing Federal Role in Transmission—and Why States Should Care," presented at the National Association of State Energy Officials Annual Meeting, October 2022.

Hopkins, A. S., J. Litynski, A. Takasugi. "Policy approaches to increasing electricity affordability in California," presented to various California stakeholders on behalf of Natural Resources Defense Council, February 2022.

Shiple, J., Hopkins, A. S., Takahashi, K., & Farnsworth, D. "Renovating regulation to electrify buildings: A guide for the handy regulator," presented with Regulatory Assistance Project, January 2021.

Hopkins, A. S. 2019. "Efficiency, Electrification, and Renewables in New England and Puerto Rico" at 2019 ACEEE Energy Efficiency as a Resource Conference, October 2019.

Hopkins, A. S. 2019. "Strategic electrification and winter cold snaps: A resource and a challenge" at 2019 ACEEE Energy Efficiency as a Resource Conference, October 2019.

Panelist on "Deep Dive Session on State and Local Electrification Roadmaps" at Electric Power Research Institute (EPRI)/Northeast Energy Efficiency Partnerships (NEEP) Electrification Summit, August 2019.

Hopkins, A. S., K. Takahashi, D. Lis. 2018. "Decarbonization through Strategic Electrification Meets Utilities and Regulation in the Northeast" at the 2018 ACEEE Summer Study on Energy Efficiency in Buildings, August 2018.

Hopkins, A. S. 2019. "Strategic Electrification: Impacts and approaches to meeting decarbonization goals in the northeastern states (and elsewhere)" at Lawrence Berkeley National Laboratory, Energy Technologies Area, August 2018.

Hopkins, A. S. 2017. "Utility Performance Regulation" at the Western States Regional Meeting of the National Association of State Energy Officials, April 2017.

Panelist on "A Regulatory Perspective of Grid Transformation" at the IEEE Innovative Smart Grid Technologies Conference, September 2016.

Panelist on the "Comprehensive Energy Plan Update" at the Renewable Energy Vermont Conference, October 2015.

Hopkins, A. S. 2015. "Vermont's Total Energy Study." Presentation at the National Association of State Energy Officials Energy Policy Outlook Conference, February 2015.

Panelist on "The Role of Energy Efficiency in Mitigating Winter Peak Issues" at the Association of Energy Services Professionals (Northeast Chapter) & Northeast Energy Efficiency Council, November 2014.

Hopkins, A. S. 2014. "Total Energy Study." Presentation at the Renewable Energy Vermont Conference, October 2014.

Panelist on "State Energy & Economic Policy Impacts on Industry Transformation" at the Power Industry Transformation Summit, April 2014.

Hopkins, A. S. 2008. "Mobilizing Pasadena Democrats: Measuring the Effects of Partisan Campaign Contacts." Presentation at the American Political Science Association Annual Meeting, August 2008.

HONORS, AWARDS, AND FELLOWSHIPS

Certified Public Manager, 2014

AAAS Science and Technology Policy Fellowship, 2010 – 2011

Dean's Award for Community Service, 2009

Delegate to the 2004 Democratic National Convention

NSF Graduate Research Fellow, 2002 – 2005

Los Alamos National Laboratory Student Distinguished Performance Award, 2002

Two-time first-team Academic All American, 2000 and 2001

Barry M. Goldwater Scholar, 1999 – 2001

OTHER ACTIVITIES

NASEO - Electricity Committee: Affiliate Co-Chair, 2020-present

Newton, MA Citizens Commission on Energy, Member 2017-present

Guest on Synapse Energy Economics, Inc.'s *Energy Nerd Show*, Aug 6, 2020

Board Member, National Association of State Energy Officials, 2015-16

Industrial Advisory Board for ARPA-E-funded project "Packetized Energy Management," 2016

Burlington, VT Public Works Commission: Member 2012 –2014, Chair 2015

Resume updated January 2023

DR. SEAN CLEARY, CFA

Queen's School of Business
Goodes Hall, Queen's University
Kingston, Ontario, K7L 3N6
[\(613\) 533-3384](tel:6135333384) FAX [533-2321](tel:6135332321)
E-mail: scleary@business.queensu.ca

4014 Bath Road
Kingston, Ontario
K7M 4Y4
M [\(613\) 539-5627](tel:6135395627)

Areas of Interest

Research: Empirical studies in corporate finance and investments.

Teaching: Investments, Business Finance and Corporate Finance. I have also taught numerous courses and delivered seminars in many preparatory programs designed to prepare students to write exams for all three levels of the CFA program and the CSC for over 10 years.

Education

University of Toronto	Ph.D., Finance, 1993 - January, 1998
Saint Mary's University	M.B.A., Finance, 1987-1989
Saint Francis Xavier University	B.Ed., Secondary, 1983-84
Acadia University	B.A., Economics, 1979-1983

Career Experience

Queen's University	Professor of Finance Chair, Institute of Sustainable Finance (July 2018-present) Director of Master of Finance (July 2008 – June 2014; January 2017- December 2022)
Saint Mary's University	Associate Dean and Pengrowth Nova Scotia Professor in Petroleum Financial Management: (July 2007 – June 2008) Professor: (September 2006 – June 2007) Associate Professor: Finance (September 2000 - June 2001, July 2002 – August 2006) Assistant Professor: Finance (July 1998 - August 2000) Lecturer: Finance and Statistics, (1990-1993, Full Time)
York University	Assistant Professor: Finance (July 2001 – June 2002)

The University of Lethbridge

Assistant Professor: Finance (1997- 1998, Full Time)

The University of Toronto

Lecturer: Business Finance (Undergraduate and MBA)
(1994-1997, Part Time)

Ryerson University
Time)

Lecturer: Investment Finance (1994-1997, Full

WSC Investment Services

Instructor for CSC and CFA Seminars and
Prepare Course Materials and Deliver Seminars for various
professional organizations; (1996-present, Part Time)

Royal Bank of Canada

Commercial Lender; (1989-1990, Full Time)

Expert Witness Experience:

September 2019-April 2020 – Utilities Consumer Advocate (UCA) of Alberta

Prepared evidence regarding an appropriate ROE and capital structure for regulated Alberta utilities.

July-November 2018 – Newfoundland Consumer Advocate

Prepared evidence regarding an appropriate capital structure for Newfoundland Power.

September 2017-June 2018 – Utilities Consumer Advocate (UCA) of Alberta

Prepared and testified regarding an appropriate ROE and capital structure for regulated Alberta utilities.

April 2017-September 2018 – Utilities Consumer Advocate (UCA) of Alberta

Preparing evidence and testifying regarding appropriate risk margins for commodity risk for regulated Alberta utilities.

July-October 2016 – Manitoba Public Insurance

Prepared a report and testified regarding interest rate forecasts.

September 2015-July 2016 – Utilities Consumer Advocate (UCA) of Alberta

Prepared and testified regarding an appropriate ROE and capital structure for regulated Alberta utilities.

December 2015-June 2016 – Newfoundland Consumer Advocate

Prepared and testified regarding an appropriate capital structure for Newfoundland Power.

April-November 2014 – Utilities Consumer Advocate (UCA) of Alberta

Prepared and testified regarding appropriate risk margins for commodity risk for regulated Alberta utilities.

December 2013-August 2014 – Utilities Consumer Advocate (UCA) of Alberta
Prepared and testified regarding an appropriate ROE and capital structure for regulated Alberta utilities.

Publications:

Academic Journals:

“The Cost of Delaying to Invest: A Canadian Perspective,” 2022, Forthcoming, Finance Research Letters. Co-authored with Neal Willcott, Smith School of Business, Queen’s University.

“Post-Crisis M&As and the Impact of Financial Constraints” 2020. Journal of Financial Research, Vol 43 No. 2, 407-454. Co-authored with Ashrafee Hossain, Memorial University. Recipient of “Outstanding Article Award” for 2020.

“Institutional Investors, Monitoring and Corporate Finance Policies,” 2017. International Journal of Managerial Finance, Vol. 13, Issue No. 2, 186-212. Co-authored with Jun Wang, The University of Western Ontario. Outstanding Paper Award.

“The Cash Effect and Market Reaction over Three Decades,” 2016. Journal of Accounting and Finance, December 2016, 93-115. Co-authored with Fatma Sonmez, Queen’s University.

“An Efficient and Functional Model for Predicting Bank Distress: In and Out of Sample Evidence,” 2016. Co-authored with Greg Hebb, Dalhousie University. Journal of Banking and Finance, Vol. 64, March 2016, 101–111.

“Managerial Practices and Corporate Social Responsibility,” 2015. Co-authored with Najah Attig, Saint Mary’s University. Journal of Business Ethics, Vol. 131 (No. 1), 121-136.

“Organization Capital and Investment Cash Flow Sensitivity: The Effect of Management Quality Practices,” 2014. Co-authored with Najah Attig, Saint Mary’s University. Lead Article - Financial Management, Vol. 43 (No. 3), 473-504.

“Corporate Legitimacy and Investment-Cash Flow Sensitivity,” 2014. Co-authored with Najah Attig, Saint Mary’s University, Sadok El Ghoul, University of Alberta, and Omrane Guedhami, South Carolina University. Journal of Business Ethics, Vol. 121 (No. 2), 297-314.

“Debt Rating Initiations: Natural Evolution or Opportunistic Behavior?” 2013. Co-authored with Laurence Booth, University of Toronto, and Lynnette Purda, Queen’s University. Journal of Modern Accounting and Auditing, Vol. 9 (No. 12), 1574-1595.

“Institutional Investment Horizons and the Cost of Equity Capital,” 2013, Co-authored with

Najah Attig, Saint Mary's University, Sadok El Ghouli, University of Alberta, and Omrane Guedhami, South Carolina University. Financial Management, Vol. 42 (No.2), 2013, 441-477. Selected as one of 8 papers (since 2005) that was included in a Special Virtual edition on

"Monitoring Management," 2018.

"Institutional Investment Horizon and Investment-Cash Flow Sensitivity." Co-authored with Najah Attig, Saint Mary's University, Sadok El Ghouli, University of Alberta, and Omrane Guedhami, South Carolina University. Journal of Banking & Finance, Vol. 36, (No. 4), 2012, 1164-1180.

"Capital Market Developments in the Post-October 1987 Period: A Canadian Perspective." Co-authored with Laurence Booth from the University of Toronto. Review of Accounting and Finance, Vol. 8 (No.2), 2009, 155-175.

"Cash Flow Volatility, Financial Slack and Investment Decisions," 2008, China Finance Review, Number 1, Vol 2, 63-86. Co-authored with Laurence Booth from the University of Toronto.

"The Investment Nature of Income Trusts and Their Role in Diversified Portfolios," Canadian Journal of Administrative Sciences. Co-authored with Greg MacKinnon from Saint Mary's University, (Vol 24(4)), 2007, 314-325.

"The U-Shaped Investment Curve: Theory and Evidence." Co-authored with Paul Povel, University of Minnesota, and Michael Raith, University of Southern California, Lead article, Journal of Financial and Quantitative Analysis, Vol. 42 (No. 1), March 2007, 1-39.

"Financial Constraints and Investment: An Alternative Empirical Framework." Co-authored with Bert D'Espallier, Hasselt University, Anales de Estudios Economicos y Empresariales, Vol. 17, 2007, 9-41.

"Dividend Smoothing and Debt Ratings." Co-authored with Laurence Booth and Varouj Aivazian, both from the University of Toronto. Lead article, Journal of Financial and Quantitative Analysis, Vol. 41(No. 2), June 2006, 439-452.

"International Corporate Investment and the Relationships between Financial Constraint Measures," Journal of Banking and Finance, Volume 30 (5), 2006, 1559-1580.

"Are U.S. Variables Good Predictors of Foreign Equity Risk Premiums?" 2006. Co-authored with John Schmitz, President, Sci-Vest Capital Management Inc., The Cyprus Journal of Sciences.

"Income Trusts: Past Performance and Future Prospects." Co-authored with Greg MacKinnon of Saint Mary's University. Canadian Investment Review, Winter 2005, 53-54.

"Dividend Policy and the Role of Contracting Environments" FSR Forum, December 2005, 13-20. Co-authored with Laurence Booth and Varouj Aivazian, both from the University of Toronto.

"Corporate Investment and Financial Slack: International Evidence," The International Journal of Managerial Finance, 2005, 140-163.

“Industry Affects Do Not Explain Momentum in Canadian Stock Returns,” [Investment Management and Financial Innovations](#), 2005(2), 49-60. Co-authored with John Schmitz, President, Sci-Vest Capital Management Inc., and David Doucette, Saint Mary’s University.

“Do Emerging Market Firms Follow Different Dividend Policies from U.S. Firms?” [The Journal of Financial Research](#), Fall 2003, 371-387. Co-authored with Laurence Booth and Varouj Aivazian, both from the University of Toronto.

“Dividend Policy and the Organization of Capital Markets.” [Journal of Multinational Financial Management](#), Spring 2003, 101-121. Co-authored with Laurence Booth and Varouj Aivazian, both from the University of Toronto.

“The Risk-Adjusted Performance of Closed-End Funds and the Impact of Discounts.” [Journal of Today](#), December 2002, 119-133. Co-authored with Greg Hebb of Dalhousie University and Greg MacKinnon from Saint Mary’s University.

“Transactions Costs for TSE-Listed Stocks,” [Canadian Investment Review](#), Spring 2002, 20-26. Co-authored with John Schmitz, President, Sci-Vest Capital Management Inc., and Kevin Kerr, TD Securities, Toronto.

“What Has Worked on Bay Street,” [Canadian Investment Review](#), Winter 2001, 25-34. Co-authored with John Schmitz, President, Sci-Vest Capital Management Inc.

“The Sensitivity of Canadian Corporate Investment to Liquidity,” [Canadian Journal of Administrative Sciences](#), September 2000, 217-232.

“Diversification with Canadian Stocks: How Much is Enough?” [Canadian Investment Review](#), Fall 1999, 21-25. Co-authored with David Copp, Mount Allison University.

“The Relationship Between Firm Investment and Financial Status,” [Journal of Finance](#), April 1999, 673-692. Received at least one vote from the editorial board for the top Corporate Finance Paper Award during the year of publication.

“Momentum in Canadian Stock Returns,” [Canadian Journal of Administrative Sciences](#), September 1998, 279-291. Co-authored with Michael Inglis, University of Toronto.

One of five nominations for “best 1998 CJAS paper.”

Books and Book Chapters:

[Introduction to Corporate Finance](#), first five editions, John Wiley & Sons Canada Limited. The first three editions were co-authored with Laurence Booth from the University of Toronto (2007, 2010, 2013), and the fourth and fifth editions (2016, 2020) co-authored with Laurence Booth and Ian Rakita from Concordia University. This is an Introductory Canadian Finance text that was written from “scratch.”

Corporate Finance, First US Edition. Co-authored with Laurence Booth from the University of Toronto and Pamela (Petersen) Drake) from Virginia Commonwealth University. John Wiley & Sons. In progress – publication date 2013.

Investments: Analysis and Management, First, Second and Third Canadian Editions, co-authored with Charles P. Jones of North Carolina State University, John Wiley & Sons Canada Limited (1999, 2004, 2008). I was solely responsible for the development of all three Canadian editions, the first being based on an adaptation of the sixth U.S. edition, authored by Professor Jones.

The Canadian Securities Exam Fast Track Study Guide, First, Second, Third and Fourth Editions (2001, 2006, 2009, 2013) – sole author. Published by John Wiley & Sons Canada Limited.

Finance in a Canadian Setting, Sixth Edition, co-authored with Peter Lusztig and Bernard Schwab, both of the University of British Columbia, John Wiley & Sons Canada Limited, March, 2001. I was solely responsible for the development of this edition of the text, based on an adaptation of the fifth edition, authored by Professors Lusztig, Schwab and Randall Morck of University of Alberta.

Market Efficiency, a chapter in the CFA Institute Investment Series book entitled Investments: Principles of Portfolio and Equity Analysis (Wiley, 2011), which is currently used as CFA Level I material within the Candidate Body of Knowledge.

“Introduction to Financial Markets,” (on-line course). Developed all seven modules for the Bourse de Montreal, 2002.

“Derivatives for the Retail Investor,” (on-line course). Developed two modules (Forwards and Future, and Options) for the Bourse de Montreal, 2002.

“Derivatives for the Institutional Investor,” (on-line course). Developed two modules (Options and Derivatives for Equity and Index Products) for the Bourse de Montreal, 2002.

“Investment Strategies and Asset Allocation,” Chapter 5, Investment Management Techniques, The Canadian Securities Institute, 1999.

“Equity Securities,” Chapter 12, Investment Management Techniques, The Canadian Securities Institute, 1999.

Cases:

“Time Value of Money: The Buy versus Rent Decision,” with Stephen Foerster. Ivey Publishing, August 2014.

Conference Proceedings:

I have published numerous articles in conference proceedings, as summarized below:

European Financial Management Association annual conference, 2008, 2006, 2005, 2002.

Hawaii International Conference on Business, 2002.

Multinational Finance Society annual conference, 2001.

Atlantic Schools of Business annual conferences, 2000, 1998.

ASAC annual conferences, 2006, 2001, 2000.

Conference Best Paper Awards:

“The Information Content of Institutional Investment Horizon: Evidence from Firms’ Implied Cost of Equity,” 2012, Working Paper, Co-authored with Najah Attig, Saint Mary’s University, Sadok El Ghoul, University of Alberta, and Omrane Guedhami, South Carolina University. Chosen Best Paper in Banking and Finance – 2012 European Business Research Conference.

“Income Trusts: Why All the Fuss and What About the Future?” 2006. Co-authored with Greg MacKinnon from Saint Mary’s University. Chosen as the best paper in the Finance division for the 2006 ASAC Conference in Banff, Alberta.

“The U-Shaped Investment Curve: Theory and Evidence” 2004. Co-authored with Paul Povel, University of Minnesota, and Michael Raith, Rochester University. Presented at the 2004 NFA Conference and received award as the “Best Paper in Managerial Finance.”

“The Sensitivity of Canadian Corporate Investment to Liquidity.” Published in conference proceedings for the 1999 ASAC Conference in Saint John, New Brunswick.

Chosen as the best paper in the Finance division for this conference.

Conference Presentations:

Keynote Speaker (Finance Area) – ASAC 2012 Annual Conference.

I have presented papers at numerous conferences, as summarized below:

World Finance Conference, 2015, 2014, 2013, 2011, 2010.

Paris Financial Management Conference, 2014.

Northern Finance Association annual conferences, 2022, 2013, 2011, 2010, 2008, 2005, 2004, 2002, 2000, 1996.

Multinational Finance Society annual conferences, 2010, 2001, 1999.

European Financial Management Association annual conference, 2008, 2006, 2005, 2002.

Hawaii International Conference on Business, 2002.

Eastern Finance Association annual conferences, 2003, 2000.

Atlantic Schools of Business annual conferences, 2000, 1998, 1996.

ASAC annual conferences, 2006, 2000, 1999.

Financial Management Association annual conferences, 2013, 2011, 2010, 2008, 2005, 2004, 2001, 1999, 1996.

Southern Finance Association annual conference, 2022, 2016, 2008.

Finance Workshops (invited presentations):

Atlantic Canada CFA Society, 2006.

Melbourne Centre for Financial Studies, 2006.

Melbourne CFA Society, 2006.

Monash University (Caulfield), 2006.

University of Melbourne, 2006.

University of New South Wales, 2006.

University of Sydney, 2006.

University of Manitoba CGA Finance Conference 2005

Wilfred Laurier University, 2002.

University of Western Ontario, 2001.

York University, 2001, 2010.

Dalhousie University, 2001, 2013.

Queen's University, 2000.

Saint Mary's University, 2002, 2001, 2000, 1999.

Schulich School of Business, 2010.

Concordia University, 2013.

The University of Waterloo, 2015.

Research Grants

Co-investigator for an Insight Development Grant in the amount of \$55,626 from the Social Sciences and Humanities Research Council of Canada (SSHRC) for the 2016 to 2018 period (Principal investigator – Jun Wang of the University of Western Ontario).

Co-investigator for a Standard Research Grant in the amount of \$129,980 from the Social Sciences and Humanities Research Council of Canada (SSHRC) for the 2013 to 2017 period (Principal investigator - Najah Attig of Saint Mary's University).

Awarded four Research Grants of \$90,000 each over three years from the Smith School of Business at Queen's University (2008-11; 2011-14; 2014-17; 2018-2020).

Principal investigator for a Standard Research Grant in the amount of \$60,500 from the Social Sciences and Humanities Research Council of Canada (SSHRC) for the 2008 to 2011 period.

Co-investigator for a Standard Research Grant in the amount of \$111,000 from the Social Sciences and Humanities Research Council of Canada (SSHRC) for the 2006 to 2009 period (Principal investigator - Najah Attig of Saint Mary's University).

Principal investigator for a Standard Research Grant in the amount of \$70,118 from the Social Sciences and Humanities Research Council of Canada (SSHRC) for the 2003 to 2006 period.

Awarded a Research Grant of \$25,000 per year for three years from the Schulich School of Business at York University (July 2001).

Principal investigator for a Standard Research Grant in the amount of \$61,530 from the Social Sciences and Humanities Research Council of Canada (SSHRC) for the 1999 to 2002 period.

Awarded Research Grant for \$1,500 from Saint Mary's University (2003-2004).

Awarded Research Grant for 2,500 from Saint Mary's University (2002-2003).

Awarded Research Grant for \$2,500 from Saint Mary's University (2000-2001).

Awarded Research Grant for \$3,030 from Saint Mary's University (1999-2000).

Awarded Research Grant for \$2,000 from Saint Mary's University (1998-99).

Research Grant in the amount of \$20,000 from the Intellectual Infrastructure Partnership Program (IIPP) at the University of Lethbridge (1997-98).

Research Grant from the University of Lethbridge Research Fund for \$4,500 (1997-98).

Work-in Progress

"The Leverage-Profitability Puzzle Revisited," 2018, Working Paper. Co-authored with Alan Douglas, and Tu Nguyen, both from the University of Waterloo.

"Does Dual Holdings by Institutional Investors Make a Big Difference?" 2018, Working Paper.

Co-authored with Jun Wang, the University of Western Ontario, and Keke Song, University of Melbourne.

“Leverage, Financial Flexibility, and Dividend Smoothing: An Empirical Investigation,” 2018, Working Paper. Co-authored with Alan Douglas, the University of Waterloo.

Professional Activities

Member - CFA Society Toronto Advisory Council (January 2018-present)
Editorial Board – *Managerial Finance* (July 2017-present)
Associate Editor (Finance area) for the *Canadian Journal of Administrative Sciences* (2017-present);
Editor (Finance area) (2014-2016).
Associate Editor for the *European Journal of Finance* (2008-present).
Editorial Advisory Board – Investor Lit (2013-present)
Senior Advisor – Toronto CFA Professional Development Committee (2014-2021); Chair (2013-14);
Vice-Chair (2012-13)
Chair – Awards Committee – CFA Toronto Board of Directors (2008-2011)
President - Board of Directors for the Atlantic Canada CFA Society (2007-2008). Served on the board from 2001 to 2008.
Editorial Board – *Canadian Investment Review* (2008-2011).
Served as a reviewer for the *Review of Financial Studies*, the *Journal of Financial and Quantitative Analysis*, *Journal of Business*, *Financial Management*, *Journal of Money, Credit and Banking*, the *Journal of Banking and Finance*, the *European Journal of Finance*, the *Journal of Corporate Finance*, the *Journal of Applied Economics*, the *Multinational Finance Journal*, *Financial Review*, *Journal of International Financial Management*, the *International Review of Economics and Finance*, the *Canadian Journal of Administrative Sciences*, the *Review of Financial Economics*, the *Journal of Risk Finance*, and for the *Journal of Management and Governance*.
Reviewer for several SSHRC grant applications.
External reviewer/examiner for several tenure and renewal applications received for professors at other universities, as well as for Ph.D. dissertations.
Conference chair for 2001 Northern Finance Association Annual Meeting, held in Halifax.
Conference organizing committee and Reviewer for several conferences.
Completed the Chartered Financial Analyst (CFA) program, and awarded the CFA designation.
Completed the Professional Financial Planning Course offered by the Canadian Securities Institute, as well as the Canadian Securities Course (CSC).

Completed the Investment Funds Institute of Canada’s Mutual Fund Course.

Prepared course materials for several “on-line” finance courses.

Instructor for Canadian Securities Course Seminars.

Prepared Course Materials for the Canadian Securities Institute.

Delivered Seminars for the Canadian Securities Institute on the Canadian Securities

Course (CSC), Fixed Income Securities and Portfolio Management Techniques.

Student Supervision

External Examiner for several PhD students.

Supervisor, Queen’s PhD Finance Students, Neal Willcott 2019-present, and Dhruv Baswal 2022-present.

Supervisor, Queen’s MSc Finance Students, Aashray Kaudinya 2022-present, Dhruv Baswal 2022, Ehsan Dehghanzadeh 2019, Wayne Charles 2010.

Served as co-director for the Investment Management of Portfolios in Atlantic Canada Training Program (IMPACT) at Saint Mary’s University. This innovative program has students manage a portfolio of over \$150,000 of “real” money (2005-2008).

Served as faculty advisor to several MBA students preparing their Management Research Project (MRP) in finance (FIN 669) to satisfy their MBA requirements:

Robert March, "Using Canadian and US Macroeconomic Variables to Predict Canadian Equity Risk Premiums" (1999).

Simon Sagar, "Do Canadian Investors Overreact?" (2000). Simon also presented his paper at the 1999 Atlantic Schools of Business (ASB) conference in Halifax.

Kevin Kerr, "Bid-Ask Spreads and Commissions on the TSE" (2000).

Scott LeBlanc, "An Investigation of Derivative Use: A Case Study of Cambior Inc." (2000).

David Doucette, "Industry Momentum in Canadian Stock Returns" (2001).

Balakrishna Murty, "The Effect of Board Composition on Firm Value: Some Canadian Evidence" (2003).

Bashir Jallow, "US Economic Factors and International Equity Risk Premia Predictability" (2005).

Kathy Isnor, "The Effect of Corporate Governance Policies on the Corporate Bond Rating" (2005).

References

Dr. Laurence Booth

Professor of Finance

University of Toronto

105 St. George Street

Toronto, Ontario M5S 3E6

Phone: [\(416\) 978-6311](tel:4169786311)

Email: Booth@Rotman.utoronto.ca

Dr. Paul Halpern

Professor of Finance
Rotman School of Management
University of Toronto

105 St. George Street

Toronto, Ontario M5S 3E6

Phone: [\(416\) 978-5703](tel:416-978-5703)

Email : Halper@Rotman.utoronto.ca

Dr. Gordon Sick

Professor of Finance
Haskayne School of Business
University of Calgary
Calgary, Alberta T5N 1N4

Phone : [\(403\) 220-7165](tel:403-220-7165)

E-mail: gordon.sick@haskayne.ucalgary.ca

WORK EXPERIENCE

Consultant, Regulatory and Financial Reporting

December 2011 - Present

Summary of Work for Various Clients

Calgary, Alberta

- Preparation of expert testimony in a wide variety of areas including cost-of-service, revenue requirement, income tax, valuation, depreciation, and cost of capital.
- Hands on experience in the strategic planning, development and coordination of all elements of regulatory proceedings, including preparation of interrogatories, evidence, responding to information requests, oral testimony, and preparation of written argument and reply argument.
- Recognized expertise and detailed knowledge of financial reporting and treasury processes, utility income tax principles, and International Financial Reporting Standards (“IFRS”), including a significant amount of online and face-to-face teaching experience.

Accounting, Finance, Tax and Regulatory Consultant

January 2016 – Present

Emrydia Consulting (owner)/MCPC (owner)

Calgary, Alberta

- Preparation of evidence and expert testimony both written and oral on a variety of areas, including cost-of-service, revenue requirement, income tax, valuation, depreciation, and cost of capital. Some examples of oral testimony include:
 - Witness in the New Brunswick Power 2020-21 GRA on all revenue requirement matters and retained in the New Brunswick 2023-24 GRA.
 - Prepared a depreciation study, cost-of-service study and asset valuation for a utility client in Alberta.
 - Filed expert evidence in the Northwest Territories Power Corporation 2022-23 GRA on operating costs, capitalization and depreciation matters.
 - Filed expert evidence in the ATCO Electric 2020-2022 and 2023-2025 GTAs on a variety of matters.
 - Filed expert evidence in the AltaLink 2022-2023 GTA on a variety of matters.
 - Witness in AltaLink’s 2019-2021 GTA on matters related to AltaLink’s proposed change in salvage collection methodology, the reasonableness of AltaLink’s applied for salvage costs, and line clearance mitigation expenditures.
 - Witness in the AESO’s Capacity Market Application on various matters pertaining to the AESO’s application.
 - Witness in Alberta PowerLine Fort McMurray West 500 kV Project, on matters pertaining to AESO compliance with legislative requirements, and cost concerns related to routing and the competitive procurement process.
 - Witness in ATCO Electric Transmission’s 2018-2019 GTA on matters related to deferral and reserve accounts, fixed and variable compensation, operating costs, head office costs, allocated costs, depreciation matters, and other various areas.
 - Witness in the 2018 Generic Cost of Capital (“GCOC”) Proceeding on matters relating to generic income tax methods and the recommended capital structure.
 - Witness in ATCO Electric Transmission’s 2015-2017 General Tariff Application (“GTA”), on matters relating to regulatory accounts, forecasting accuracy, approach to budgeting, operating costs, income taxes and other financial matters.

DUSTIN MADSEN CA, CPA, CPA (IL, USA), CDP, CRRA

Tel: 403-869-9294 E-mail: dustin@emrydia.com

- Prepared a comprehensive cost-of-service study for an Alberta based distribution facility owner.
- Prepared a comprehensive business and succession plan for an Alberta based distribution facility owner.
- Completed a business valuation, including a calculation of the fair market value and replacement cost new less depreciation value of the assets of an Alberta based distribution facility owner.
- Provided advice to various parties in Alberta's regulated and unregulated utility industry on numerous matters including cost-of-service rate design, business issues, hedging, regulated rate option calculation, and other specific matters.

Business Valuation and Accounting/Regulatory Risk Consultant Nov 2015 – January 2016 Berkshire Hathaway Energy Canada Calgary, Alberta

- Advise senior management at Berkshire Hathaway Energy Canada on potential acquisition risks and rewards.
- Evaluate all financial, treasury, regulatory, operational and legal elements of potential acquisitions and coordinate with other senior team members to develop a go/no-go proposal for each potential acquisition.
- Construct and maintain a business valuation model to support calculations of the enterprise value, including development of assumptions around levered/unlevered discount rates, cash flows, terminal values and certain tax assumptions depending upon the ultimate structure of the transaction.

Regulatory Specialist (Consultant) November 2012 – July 2015 AltaLink L.P. Calgary, Alberta

- Drafted or coordinated the drafting of AltaLink's 2012/2013 Deferral Account Application and 2015/2016 GTA, including responses to information requests, updates to the applications and other matters as required.
- Assisted AltaLink, working in conjunction with other Alberta utilities, in the drafting of the 2013 GCOC R&V application and the Utility Asset Disposition (UAD) Appeal. This work included detailed research and analysis into GCOC and UAD matters.
- Actively engaged in the AUC proceeding to assess the AltaLink sale, including responses to information requests and responding to due diligence questions from the sale itself.
- Prepared AltaLink's 2011, 2012, 2013 and 2014 Reports on Operations and Finances in compliance with AUC Rule 005.
- Assisted in the coordination of the 2013/2014 GTA oral hearing, including undertakings, preparation of cross-examination questions and monitoring of oral testimony.
- Prepared the public and confidential rebuttal evidence, responses to additional information requests, and argument/reply argument for the 2013/2014 GTA.
- Acted as AltaLink's lead representative on a variety of key applications filed by other Alberta Utilities, including PBR applications, GCOC, capital tracker applications, GTAs, Deferral Account Applications, and also the AESO's Tariff Application.
- Automated the majority of the Report on Operations model and improved the documentation related to the process, thereby reducing the time required to update the Report on Operations to a matter of a couple weeks rather than a couple months.
- Automated and refined the Hearing Cost and Legal Cost process, including filing of costs with the AUC, reconciliation of costs for accounting purposes, and installation of an improved internal information system for gathering and reporting.
- Continued monitoring of other proceedings and performed all other duties as required by

DUSTIN MADSEN CA, CPA, CPA (IL, USA), CDP, CRRA

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the Vice President, Regulatory Rates and Tariffs.

Manager, Financial Reporting (Contract)

April 2012 – October 2012

AltaLink L.P.

Calgary, Alberta

- Managed the Financial Reporting group, and performed all duties as required of the Manager, Financial Reporting and any other duties as required.
- Coordinated the implementation of BPC to assist with the consolidation of financial results in SAP.
- Provided technical IFRS input for a variety of projects and Canadian Electricity Association matters.

Consultant, Corporate Finance and Tax

February 2012 – April 2012

Enerflex Ltd.

Calgary, Alberta

- Assisted with pre-implementation planning for IFRS 9 through 13.
- Reviewed the hedging policy in place at Enerflex to assess ongoing effectiveness and provided feedback on a new treasury management system.
- Reviewed annual financial statements, Management's Discussion and Analysis and the AIF, and provided feedback for changes and improvements to the first quarter financial statements.
- Performed a review of existing accounting policies including embedded derivative review of major contracts, lessee and lessor accounting, segmented reporting, borrowing costs, stock options and more.

Manager, Forecasts and Budgets

January 2010 – November 2011

IFRS Project Manager/Sponsor

February 2007 – December 2010

Senior Financial Accountant, Financial Reporting

February 2007 – March 2010

FortisAlberta Inc.

Calgary, Alberta

- Prepared/reviewed monthly, quarterly and annual forecasts and all associated financial analysis for the CFO in comparison to actuals.
- Review of regulatory filings and annual regulatory financial statements submitted to the Alberta Utilities Commission.
- Preparation/review of annual Business Plan for approval by Board of Directors.
- Improvement of monthly and daily treasury forecasts and involvement in debt issuances and responses to due diligence requests.
- Management and review of the monthly tax calculation and development of various tax planning strategies from both a regulatory and financial reporting perspective.
- Assisted in the review of all corporate tax processes and calculation of tax provisions, as well as, design of complex tax planning strategies.
- Responsible for the planning and oversight of the conversion to International Financial Reporting Standards including the review of all policy papers, issues lists, system conversion issues etc.
- Responsible for financial reporting, including the preparation and review of financial statements in accordance with Canadian generally accepted accounting principles, the preparation and review of the MD&A, preparation of the monthly management report, and preparation and review of accounting research and policies.
- Involved in the design, implementation and ongoing improvements of various accounting processes and internal controls within financial reporting, accounts payable, capital assets, inventory, general accounting, treasury, taxation and payroll.
- Provided IFRS transition course for all Finance staff at FortisAlberta.

DUSTIN MADSEN CA, CPA, CPA (IL, USA), CDP, CRRA

Tel: 403-869-9294 E-mail: dustin@emrydia.com

- Demonstrated effective time management, organization, supervisory and problem solving/analytical skills.

Vice Chair, CEA`s Finance and Accounting Subcommittee May 2011 – December 2011
Member May 2007 – December 2011
Canadian Electrical Association Ottawa, Ontario

- Attended all bi-annual meetings as an active participant involved in presentations at the meetings, organized special purpose conference calls, prepared response letters to both the IASB and AcSB on a variety of topics, and assisted in the special subcommittee on Rate Regulated Accounting.
- Assisted the Chair in the preparation of meeting content, arranging speakers and guest attendees, and other duties as requested.

IFRS Classroom Facilitator June 2009 – November 2011
IASeminars London, England

- Classroom facilitator for IASeminars focusing on IFRS accounting within the Utilities and Energy industries.

Experienced Module Facilitator January 2006 – September 2009
CA School of Business Calgary, Alberta

- Facilitated Modules 1 to 5 multiple times with class sizes between 8 and 20 students.

Senior Auditor September 2003 – February 2007
Deloitte and Touche LLP Saskatoon, Saskatchewan/ Calgary, Alberta

- Performed review, audit, SOX 404 and CSOX work for a variety of large multi-national clients including Petro Canada, Potash Corporation, and Superior Propane, as well as review and audit work for smaller to mid-sized for profit and not-for-profit organizations.
- Completed personal tax returns and assisted in the audit of corporate tax provisions.
- Provided audit and oil and gas accounting training to new and existing staff at Deloitte.

EDUCATION

Certified Rate of Return Analyst
Society of Utility and Regulatory Financial Analysts

Certified Depreciation Professional
Society of Depreciation Professionals

Certified Public Accountant
Illinois Board of Accountancy

Chartered Professional Accountant
Chartered Professional Accountants of Alberta

Chartered Accountant
Institute of Chartered Accountants of Alberta

Bachelor of Commerce, Major in Accounting, with Great Distinction
University of Saskatchewan