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February 3, 2021

BY EMAIL AND RESS

Ms. Christine Long
Board Secretary
Ontario Energy Board
2300 Yonge Street, Suite 2700, P.O. Box 2319
Toronto, Ontario M4P 1E4

Dear Ms. Long:

Re: EB-2020-0265 – Hydro One Networks Inc. – Hawthorne to Merivale Reconductoring Project

I am writing to request that the procedural steps in this case be amended to include time for the evidence that Environmental Defence proposes to submit in this proceeding and to provide further details regarding that evidence.

In our intervention request, Environmental Defence noted that it wishes to submit evidence to assess whether it would be cost-effective and ultimately lower energy bills for Hydro One to install a larger conductor, as outlined in alternative 4 in Hydro One's evidence. Environmental Defence is seeking to retain Travis Lusney of Power Advisory LLC for this purpose. Mr. Lusney prepared evidence for Hydro One's 2017 rates case (EB-2016-0160) relating to transmission system electricity losses. This evidence was accepted and relied on by the Board in its decision in that case.[1] Mr. Lusney and others at Power Advisory prepared the most recent Ontario Wholesale Electricity Market Price Forecast for the Ontario Energy Board. His *curriculum vitae* is attached.

Importance of the Proposed Evidence

Hydro One has noted that it could reduce line losses by a further 10% by upgrading to a larger conductor.[2] Although Hydro One estimates the value of these loss reductions to be less than the $4.5 million incremental cost, it has provided few details and we believe this is worth exploring further through the proposed intervenor evidence. For example, based on past proceedings there is reason to believe that loss reductions have been valued only at the Hourly Ontario Energy Price (HOEP). This completely excludes the Global Adjustment (GA) and any value for avoided

[1] EB-2016-0160, Decision and Order, September 28, 2017.
[2] EB-2020-0265, Exhibit B, Tab 5, Schedule 1, p. 3.

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capacity or generation costs. In addition, it is not clear whether the analysis on a larger conductor:

(a) Was conducted over an appropriate time horizon;

(b) Was based on the most reasonable forecast of demand and incremental loss reductions;

(c) Accounted for the fact that loss reductions are greatest at the peak when the value of energy and capacity is the highest; and

(d) Accounted for other benefits (e.g. the value of the option of increasing capacity on this line through station upgrades in the future to expand imports or exports with Quebec).

This evidence is important both in relation to this specific project and for the issue of transmission losses more generally. First and foremost, it may be that a larger conductor would be cost-effective and substantially lower energy costs. In addition, the loss reductions would displace gas-fired generation because they both are highest at the time of peak demand. This would reduce greenhouse gas emissions while also lowering energy costs. Upsizing a conductor is generally only cost-effective where it is being replaced for other purposes. It is worthwhile considering this alternative further while this opportunity exists.

But even if a larger conductor is not ultimately implemented, the evidence would shed light on Hydro One's practices when it comes to estimating and valuing transmission loss reductions and could lead to improvements in those practices. The OEB has repeatedly highlighted the importance of taking steps to cost-effectively reduce transmission losses. For example, the OEB held as follows in the most recent Hydro One rates case:

> *[T]he OEB concludes that the importance of this matter warrants a separate issue. The OEB shall include an explicit separate issue in the approved issues list dealing with transmission line losses. …*
>
> *The OEB finds that this is a significant issue which needs to have a visible profile in this proceeding. …*[3]

Other examples include the following:

- In Hydro One's 2017 rates case (EB-2016-0160) the Board directed Hydro One to work jointly with the IESO to explore cost-effective opportunities to reduce transmission losses and report on these initiatives. [4]

[3] EB-2019-0082, *Decision on Issues List and Confidentiality*, September 23, 2019, p. 3-4.
[4] Decision in EB-2016-0160, p. 32.

- In the IESO's 2017 fees case (EB-2017-0150), the Board again directed the IESO and Hydro One to work on transmission losses issues.[5]

- In the IESO's 2018 fees case (EB-2018-0143), the Board added a stand-alone transmission losses issue to the issue list.[6] The Board also approved a settlement that included a number of provisions regarding transmission losses.[7]

- In Hydro One's 2019 rates case (EB-2018-0130), the Board again directed it to work on the transmission losses issue.[8]

- In Hydro One's 2020 rates case (EB-2019-0082), the Board addressed transmission losses in its decision, accepted settlement terms requiring further work to seek cost-effective loss reductions, and incorporated those terms into its order.[9]

The evidence proposed by Environmental Defence will be focused solely on the issues in this proceeding and will be aimed at ensuring a robust assessment of alternatives. However, as an additional benefit it will also shed light on transmission loss reduction practices, which is important for reducing costs, has been highlighted by the OEB in recent decisions, and fits squarely within the statutory objective of the Board to "protect the interests of consumers with respect to prices and the adequacy, reliability and quality of electricity service."[10]

Cost Estimate

In some cases the OEB will ask for an estimate of the cost of evidence to be submitted in a proceeding. We are proactively providing this information in case it may be desired. Power Advisory LLC has estimated the cost to be between $15,000 and $24,000 (plus tax) in accordance with the Board's *Practice Direction on Cost Awards*. This would cover the preparation of the evidence and answers to any interrogatories.

The final cost is a challenge to estimate prior to the delivery of interrogatory responses. The evidence describes the larger conductor alternative in a mere 14 lines. It does not provide, for example, an estimate for the value of the incremental loss reductions or any underlying calculations. The amount of work that remains to be done will depend in part on details that we do not yet have. Of course, we understand that the final request for a cost award in relation to this evidence will be subject to a decision of the Board at the conclusion of this proceeding pursuant to the *Practice Direction on Cost Awards*.

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[5] EB-2017-0150, *Decision and Procedural Order No. 5*, October 31, 2017, p. 2.
[6] EB-2018-0143, *Decision on Issues List and Procedural Order No. 2*, July 30, 2018, p. 5
[7] EB-2018-0143, *Decision and Order*, October 25, 2018, Schedule A (Settlement Proposal), p. 15.
[8] EB-2018-0130, *Procedural Order No. 1*, January 24, 2019, p. 3.
[9] EB-2019-0082, Decision and Order, April 23, 2020, pp. 56-59 & 182-183.
[10] *Ontario Energy Board Act, 1998*, s. 1(1)1.

We believe this evidence is a very good use of funds in light of the potential savings that could accrue from this specific project and the general lessons that can be learned.

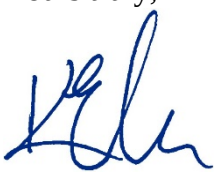
Procedural Requests

We ask that a deadline of March 26, 2021 be set for Mr. Lusney's evidence. Hydro One's interrogatory responses are due on February 26, 2021. For the reasons noted above, Mr. Lusney will certainly require those responses to prepare his evidence.

If Hydro One seeks to ask interrogatories, we request two weeks to prepare them. If the OEB or Hydro One believes there is any urgency in relation to this case and is concerned about extending the schedule, we could submit our interrogatories to Hydro One earlier (e.g. by February 5th) to allow the schedule to be brought forward.

Finally, we plan to reach out to Hydro One to assess whether a brief ADR session might be worthwhile and whether to request an adjustment of the schedule to address that. We anticipate that Hydro One will have an open mind to suggestions from stakeholders and may be open to discussions regarding this case after reviewing Mr. Lusney's evidence.

Yours truly,



Kent Elson

cc: Parties in the above proceeding

Travis Lusney

Travis Lusney
Manager, Procurement and Power Systems

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Professional History

- Ontario Power Authority (2008-2011)
- Hydro Ottawa Limited (2006-2008)

Education

- Queen's University, MSc Electrical Engineering, 2007
- Queen's University, BSc Electrical Engineering, 2004

Mr. Lusney is a Professional Engineer (P.Eng) with 14 years of experience working in both the commercial and regulated areas of the electricity sector. Mr. Lusney is a knowledgeable industry leader with a focus on generation development, energy storage resources, market assessment, regulatory & policy analysis, business strategy, and risk mitigation. Mr. Lusney is a former distribution and transmission planner with a deep expertise in power system planning and resource integration.

Mr. Lusney joined Power Advisory after a position as the Senior Business Analyst of Generation Procurement at the Ontario Power Authority, where he was responsible for management and development of the Feed-In Tariff program. Prior to joining Generation Procurement, Mr. Lusney worked as a Transmission Planner in Power System Planning at the Ontario Power Authority where he was actively involved in regional transmission planning, bulk system analysis and supporting system expansion procurements and regulatory procedures. Mr. Lusney also worked for Hydro Ottawa Limited as a Distribution Engineer responsible for reliability analysis, capital budget planning, power system planning, and project management. Mr. Lusney offers a unique understanding of the similarities, differences and interactions between different power system network components and economics.

PROFESSIONAL EXPERIENCE

Power System Planning

Lead a jurisdictional survey on behalf of the Independent Electricity System Operator (IESO) on five core initiatives: bulk system planning process, regional planning and non-wires alternatives, customer reliability, end-of-life assets, and competitive transmission procurement. Jurisdictional survey included developing a detailed survey tool and performing over 50 interviews with represents from the around the world including all US Northeastern ISOs, CAISO, system operator and regulator in the UK, system operator, regulator and market operator in Australia, as well as multiple distribution and transmission facility operators. The lessons learned from the analysis were used as an input into a comprehensive overhaul of the IESO's planning methods.

Prepared multiple power system outlook to determine future resource needs and potential investment opportunities for supply resources. Analysis included reviewed and commentary on resource adequacy, operability needs, transmission integration, customer reliability and broad regulatory framework. The power system outlook considered key areas of risk assessment, supply development scenarios, investment opportunities based on connection capability and project economics by supply type.

Acted as a witness in Hydro One's transmission rate filing, an Ontario transmitter, providing an assessment on transmission loss in regulation in other jurisdictions and how transmission losses are included in power system planning decisions, including how those losses are related to conservation and demand management initiatives.

Provided strategic advice and power system analysis to generation development and energy storage resource clients on connection capability of proposed generation projects. Assisted clients in determining optimal project location and estimation of connection cost for different interconnection options.

Reviewed and prepared commentary for the 2020 New Brunswick Power Integrated Resource Plan (IRP). The review included preparing analysis for supply resource decisions, assessing the impact of a potential federal ghg equivalency agreement for continued operation of the Belledune coal-fired generation facility and other power system component analysis.

Assisted in leading engagement with distributors, transmitters and system operators for variety of clients. Engagement included determining interconnection options, assessing connection risks and establishing timelines and milestones to support overall project development.

Supported analysis for the Integrated Power System Plan (IPSP) dealing with bulk and regional system considerations, including reliability assessment. Developed regional integrated plans for constrained areas. Lead stakeholder consultation with local distribution companies, regulatory agencies, transmitters and local government officials to develop 10 to 20-year plans and activity coordination.

Represented through expert evidence and testimony the Utility Consumer Advocate Alberta during Transmission Rate Tariff hearing in front of the Alberta Utility Commission as an expert witness on transmission planning and cost allocation.

Advised and supported a major gas generation procurement for the Province of Ontario. Work included analysis of regional power system needs and constraints. Assisted in the development of evaluated criteria considerations.

Developed procedures and policy for system connection assessment under the Feed-In Tariff program, in particular lead the development of the Transmission Availability Test (TAT) and Distribution Assessment Test (DAT) used to assess connection capability. Oversaw development of custom database to support the connection assessment process and coordination with over 80 local distribution companies. Managed staff for regional system analysis as part of the Feed-In Tariff program to determine connection capability for contract awards.

Lead a study on Distributed Generation impacts and opportunities in the major urban centers as part of a long-term energy plan. Lead analysis on behalf of the Ontario Power Authority to determine the distribution generation potential in Central and Downtown Toronto along with the associated cost to develop the distributed generation resources. Worked closely with the local distribution companies, city officials and key stakeholders in understanding specific and general barriers and benefits.

Review of Impact Assessments for multiple clients to assess project operations risks and potential future power system constraints. Estimated reliability of supply for load customers or deliverability for supply resources. Worked with clients to amend or adjust impact assessments to resolve or mitigate project risks.

Consulting resource for a First Nation community to review and comment on a System Impact Assessment for a mining development nearby. Analysis focused on the impact to the community's reliability and determine potential options to resolve service quality concerns. Reviewed evidence filed by the mining developer and transmitter (i.e., Hydro One) to determine system constraints and potential options for removing or mitigating the constraint.

Developed capital work planning process for Asset Management department to ensure accountability and situation and issue identification. Lead the development of the capital budget and work plan for all distribution projects including a 25-year capacity plan for Distribution rate filing. Oversaw capital project tracking and reporting metrics to ensure accountability and transparency for senior management requirements.

Managed reliability statistical reporting as part of regulatory requirements and senior executive requests. Involved in evolution of information gathering methods and worst feeder identification. Lead reliability engineer working closely with planning, design and construction personnel in identifying issues and resolution members. Chair of the asset management committee which oversaw the expectations of future capital sustainment work and associated risk levels.

Involved in the development of the distribution and station asset management plan as key support for distribution Rate filing. Involvement included preparing financial analysis, reviewing rate-filing materials, presenting to senior executive teams and coordinating internal team analysis and responses.

Strategic Investment and Risk Assessment

Lead the development of Ontario wholesale electricity price forecast for multiple clients. Clients were provided with a description of wholesale price formation in Ontario. The forecasts include a description of assumptions and methodology based on assessments of power system fundamentals, government policy and Ontario's regulatory framework. Performed sensitivity analysis and scenario assessment to support a wide variety of investment and risk assessments.

Financial and technical due diligence for generation and energy storage resource acquisition/sales. Due diligence includes detailed electricity market assessment, multiple scenarios of electricity price forecasts, analysis of input costs and risk factors for project economics. Provided summary and commentary on recent regulatory and policy activities that could impact project economics. Prepared financial models for different project arrangements and capital structures, performed sensitivity analysis and stress-testing results for clients. Hosted meetings with clients to respond to feedback and questions and ensure client understands risks and opportunities.

Strategic guidance for investments in energy storage solutions in Ontario. Advice included detailed summary of Ontario's electricity market and assessment of opportunities for energy storage solutions along with identification of primary risks to potential revenue streams. Calculated value stacking opportunities and discounts for providing multiple electricity services from a single energy storage resource. Provide an overview and assessment of regulatory and policy structure impacting energy storage resources. Clients for this service included project developers, technology providers, load customers, financial investors, and insurance companies. Energy storage technology types included battery-based, compressed air, pumped hydro, flywheel, novel technologies and thermal energy storage.

Primary consulting resource for New Jersey Resources (NJR) in preparing responses and analysis for the community solar initiative in New Jersey. Lead discussion and analysis with senior leadership team including researching activities in other jurisdictions, potential marketing cost impacts and commentary on potential community solar program procedure requirements. In addition, prepared multiple energy storage use case analysis for NJR existing and future assets.

For multiple clients provide market monitoring services for jurisdictions across Canada. Market monitoring includes following and analyzing electricity market developments, policy initiatives and regulatory activities. Prepared regular agendas and analysis for clients customized for their specific business and needs. Lead discussion and completed action items following meets to assist customers in maintaining and enhancing their business.

Led the creation of a GHG marginal emissions factor analysis and tool to estimate the potential GHG emissions reduction potential for distributed combined heat-and-power (DCHP) applications in Ontario. Analysis included detailed assessment of Ontario power system outlook and calculations of marginal emission factor based on electricity market operations and supply. Prepared a model to assess the GHG emissions saving potential for different DCHP applications.

Led the completion of an energy storage market assessment across select US jurisdictions. The report included a summary of existing and potential regulatory and policy structures for energy storage in each jurisdiction. Prepared a financial model for each jurisdiction and compared return expectations for different energy storage applications. Provided a summary of energy storage projects in service or under development within each market.

Prepared and hosted strategy and information session for a district energy corporation. The workshop focused on the Ontario electricity market, participation of district energy, regulatory framework and market design changes, and future outlook. Attendance was from multiple departments including finance, regulatory, business development, operations and legal. Subsequently hired to provide wholesale price forecast in support of ongoing strategy support

Lead the assessment of connection capability of renewable generation for the City of Swift Current and their local distribution company Swift Current Light & Power (SCLP). Estimate the future cost of renewable generation for comparison to future SaskPower wholesale electricity rates. In addition, SCLP requested an outlook on the battery-based energy storage system (BESS) market and the potential for deployment of BESS to support the integration of renewable generation within their distribution system. The assessment concluded that both solar generation and wind generation were viable options for SCLP.

Building on the feasibility assessment, assessed the capability of the SCLP distribution system to become self-sufficient using a combination of renewable generation and other resources. Self-sufficiency for the purpose of the assessment was the ability to supply all electricity consumptions needs of the SCLP system on an hourly basis. SCLP would remain connected to the SaskPower transmission system and therefore receive power quality and reliability services from SaskPower. Power Advisory assessed two self-sufficiency scenarios to determine the appropriate mix of wind and solar generation installed capacity. The No Export Scenario assumes no excess energy will be delivered to the SaskPower transmission system. The 60% Back-feed Scenario assumed a reasonable amount of excess energy could be exported in any given hour (the amount of export capability was the technical back-feed limit determined in the feasibility assessment report).

Review, analysis and commentary on regulated and unregulated of comparable LDCs for a large Ontario distributor. Analysis included detailed modeling of capital spending patterns of multiple LDCs and assessment of differences between spending focus and system plans.

Advising generation developers on new competitive procurement processes and determining strategy to help ensure successful participation while reduce exposure to risk. Participated in consultation and stakeholder engagement as an expert in transmission planning, procurement design, and proposal bid development.

Provided detailed analysis of operating gas-fired generation facilities as part of potential asset sale. Analysis included modeling financial returns, assessment of operational risks. Provided a summary of technical requirements and opportunities the facilities could provide the power system currently and in the future.

Working with renewable energy developers (mainly wind and solar PV) to plan, construct and successfully reach commercial operation for projects with long-term. Work includes assessment of project risk, investment opportunities, development strategy, solutions for connection issues and advice for securing construction approvals and permits.

Completed due diligence on project economics, connection capability and estimated generation operating performance for wide range of generation types as part of strategic acquisitions. Services included analysis of natural gas delivery, operation restrictions and government policy drivers.

Analyzed the Long-Term Transmission Plan (LTP) for Alberta and developed a comprehensive forecast of Capital Expenditures over the planning time period (2014-2032). The forecast includes an estimate of Development Capital Expenditures by project and region over the three time periods considered in the LTP. Estimated Capital Expenditures for General Plant and Sustainment based on the growth expectations of Alberta's transmission rate base. The analysis provides a detailed view of the long-term trend for capital investment in Alberta's transmission system and includes an alternative scenario for lower economic growth and oil sand development.

Working with manufacturers of solar PV and wind generation components regarding strategic advice and solutions to meet Provincial content requirements and ultimately increase their market share.

Constructed a quantitative project attrition model for projects with FIT PPAs to determine opportunities for future investment for clients. The model determined probabilistically which contracted FIT projects were at risk of failing to reach commercial operation and identify where new connection capacity would become available.

Supply Resource Procurement and Contracting

Retained by the City of Edmonton to assist in assessing the options to purchase green electricity (i.e., electricity from sources that do not emit carbon dioxide). Scope of work involved analyzing renewable electricity technologies and contracting options available to the City. Specifically, the City is interested in: assessing the cost of wind, solar, and biomass (biogas and landfill gas) technologies; determining the supply need and renewable generation resource potential to meet the 100% green electricity objective; and an overview of contracting models and summary of potential risks for the City

Part of the Procurement Administrator for the Marine Renewable energy procurement to secure novel tidal resources in the Bay of Fundy. Supported engagement with perspective proponents and discussions with government agencies. Prepared request for proposal documents and power purchase agreement terms.

Retained by Alberta Climate Change Office (ACCO) to prepare detailed design recommendations for a community generation program. The recommendations included eligibility requirements for proposed projects and evaluated price methodology to stack proposals in order of their relative value, with the ranking within the stack used to award contracts to successful applicants. Proposed contract provisions, payment structure and an outline of responsibilities for successful applicants in developing, constructing, operating and maintaining a community generation facility.

Acted as the Independent Administrator for the Atlantic Link Solicitation. The solicitation process was initiated for energy to be bundled with transmission capacity on Emera Inc.'s proposed Atlantic Link submarine electricity transmission project for the delivery of clean energy into the ISO-New England market. As the Independent Administrator, provided assurance to proponents and the Federal Energy Regulatory Commission (FERC) as to the fairness and transparency of activities related to the Atlantic Link energy solicitation.

Technical expert for the Alberta Infrastructure (AI) solar RFP. Provided analysis and strategic guidance on program design, commercial agreement provisions and stakeholder engagement. Assisted the evaluation team in the review and assessment of proposals submitted to the RFP including evaluation of technical requirements for participation and assisting in evaluated cost bid price assessment.

Provide to select clients detailed competitor assessment for clean energy procurements including relative cost of capital analysis, capital cost estimates, procurement strategy, contract risk assessment, bid preparation and quality review of submissions.

Prepared a framework for a unique demand response program for a district energy system. The program design included key qualifications for customers, methodology for calculating incentive structure, program administration requirements and presented draft terms for demand response service agreement.

Technical expert for procurement participation for a variety of resource developers including renewables and energy storage. Provided detailed analysis and assessment of procurement process and documentation including strategy for development of proposed projects to maximize opportunities within the Request For Proposal (RFP) and Contract in the multiple procurement processes.

Worked as the Renewable Electricity Administrator in Nova Scotia responsible for the developing and administrating a Request for Proposal (RFP) process to procure over 300 GWh of low impact renewable energy. The process included engagement with stakeholders, development of an RFP document and Power Purchase Agreement and filing the Power Purchase Agreement for regulatory approval with the Nova Scotia Utility and Review Board On August 2nd 2012, after completing the evaluation of all 19 proposals that were submitted, the process successfully concluded with the execution of 355 GWh of contracted facilities.

Provided support to Non-Utility Generators (NUGs) in negotiations with the Ontario Power Authority for extension of existing Power Purchase Agreement. Support included economic dispatch analysis, development of net revenue requirement pro formas to determine contract value, leading negotiation and providing strategic advice.

Modeling procurement mechanics and Ontario system characteristics for renewable energy developers to establish a strategic direction for successfully securing power purchase agreements. This work included modeling connection capability within both the distribution and transmission system and assessing attrition risk of currently contracted and under development projects.Responsible for development and ongoing management of the standard offer Feed-In Tariff program for Renewable Energy. Involved with a wide range of stakeholders including project developers, manufactures, investors, regulatory agencies and Government. Analyzed ongoing project costs and market rates to update and maintain Feed-In Tariff price assumptions. This work included analysis of supply chain evolution, equipment providers capability and assessment of project economics.

Involved in domestic content development within the Feed-In Tariff program as chair of the Domestic Content Working Group. Advised and clarified expectations for project developers and manufactures in understanding the domestic content requirements.

Regulatory and Policy

Supported many clients in the participation of stakeholder engagements for potential evolution of regulatory framework in multiple jurisdictions. Support included analyzing proposed design changes for electricity markets, regulatory structures, and legislation. Assisted clients in preparing for stakeholder meetings and submissions. Acted on client's behalf in stakeholder engagements and provided strategic advice to clients on how best to position feedback and alternatives where warranted.

Involved in an energy storage valuation report for Energy Storage Canada. The report summarized and calculated the benefits energy storage resource deployment in Ontario could provide to customers both quantitatively and qualitatively. Lead the analysis of transmission & distribution system investment deferral and direct-to-customer benefits. Support analysis on wholesale market savings. Presented to leadership council, working group and general membership at Energy Storage Canada.

Supported for a consortium of clients the analysis of substation cost allocation for potential cost sharing between distributed connected generation and load customers within a distribution network in Alberta in response to the AESO pursuit of sub-station fractioning. The AESO had proposed and received initial regulatory approval to seek cost recovery from distributed connected generation for use of existing connection assets to the Alberta transmission system. Researched cost and design differences between load customer and generation customer substation design, prepared approach with justification for cost allocation and presented to consortium and the AESO during stakeholder engagement sessions.

Drafted a discussion paper and presentation on co-location of energy storage resources with renewable generation resources. The discussion paper outlined the benefits and barriers for co-location projects, provided an overview of ongoing policy & regulatory activities, identified options to address barriers and provided near-term recommendations.

Consulting resource for the Electricity Distributor Association (EDA) on the analysis and preparation of a best practices discussion paper for evolving the Ontario connection process for distributed energy resources. Engaged with EDA members and DER proponents to determine best practices, barriers and opportunities. Lead the drafting of the discussion paper, engagement with stakeholders for feedback and assisted in preparing presentation to board of directors.

Supported research, consultation with Electricity Distributor Association (EDA) members and drafting of the report entitled *Power to Connect: A Roadmap to a Brighter Ontario*, which identified the challenges and barriers within the statutory framework, and proposed solutions, with respect to the transition of LDCs to "Fully Integrated Network Orchestrators". The report provided detailed analysis of Ontario's regulatory framework, market design, and organizational structure.

For multiple clients provided strategic advice on evolution of electricity regulatory framework including electricity market design, legislation, regulation, system codes and approval processes. Clients include Canadian Solar Industrial Association, Canadian Wind Energy Association, Association of Power Producers of Ontario, Energy Storage Canada, Quality Urban Energy Solutions of Tomorrow (QUEST) and federal and provincial government agencies & ministries.

Prepared a detailed submission on behalf of Energy Storage Canada (ESC) for the Alberta Utilities Commission (AUC) Distribution System Inquiry (DSI) Module One. Module One focuses on the impact of innovative and emerging technologies impact on distribution system design, operations, capital requirements and cost of providing services. In addition, Module One seeks to understand the opportunity for new market entry within the monopolistic franchise. Reviewed, researched and analyzed multiple jurisdictions and energy storage technology types to support drafting of the submission. Prepared a presentation for the Module One technical conference and participated in the technical conference on behalf of ESC.

Developed a discussion paper on the barriers to development of load-displacement energy storage applications in Ontario. The paper detailed the benefits of energy storage for customers and the power system as a whole. The paper described key barriers restricting the ability to adopt energy storage solutions and proposed multiple regulatory framework changes that would reduce or remove the barriers based on experience in other jurisdictions and reflecting the unique Ontario electricity market.

Performed analysis of industrial rate design options in Ontario for Canadian Solar Industries Association (CanSIA) to determine the potential impact to net-metered solar generation and energy storage applications. Analysis modeled eight different rate design options over a ten-year forecast period. The avoided cost revenue from the industrial rates were then used in a financial model to assess the potential returns for each option.

Review, analysis and drafting of responses on behalf of the Association of Power Producers of Ontario (APPrO) and Canadian Solar Industries Association (CanSIA) to the Ontario Energy Board (OEB) for Residential distribution rate design and Commercial & Industrial distribution rate design. The analysis included assessment of impact on customers and suppliers economics, review of rate design in other jurisdictions, and identification of appropriate rate design that benefits rate-payers and distributed energy resource suppliers.

Primary consulting resource for CanSIA's Distributed Generation Task Force (DGTF). The DGTF objective included developing a customer-based generation model for solar generation after the conclusion of the Feed-In Tariff (FIT) program in Ontario (post-FIT solution), to identify transitional changes to the existing FIT program to support the post-FIT solution and to support solar market growth in the long-term. Responsible for jurisdictional review to identify best practices for customer based solar generation, technical and policy analysis to support the post-FIT solution and development of recommendation report and accompanying communication plan with key stakeholders.

Co-leader of Solar Development Evolution Working Group which has participation and support from key solar PV project developers, EPC firms, asset operators and owners. The mandate of the working group was to develop policy for a long-term customer centric procurement approach for solar PV generation and identify priorities for transition of the existing FIT program.

Selected Speaking Engagements

Engineering Insurance Conference (AEIC 2019): Speaker -Energy Storage: Game Changer

Canadian Wind Energy Conference 2019: Speaker -Hybrid Wind Energy Project Opportunities in Canada

Energy Storage Canada 2019: Panelist - Markets and Regulations - Frameworks on the Move

Alberta Utilities Commission Distribution System Inquiry Module One Technical Conference: Speaker - Energy Storage Resources

Energy Storage Canada 2018: Speaker – Behind-the-Meter Storage for Commercial and Industrial Applications

Energy Storage Canada 2018: Keynote Speaker -How Market Reforms are Driving Energy Storage Opportunities, April 2018 (Toronto) and June 2018 (Calgary)

CanWEA Spring Forum 2017: Panelist - What lies ahead in Ontario and Quebec the low demand future, April 2017

APPrO Conference 2016: Panelist - The evolving connection assessment and planning process in Ontario, November 2016

Canadian Energy Research Institute (CERI) 2016 Electricity Conference: Ontario – A Case Study of Retail Price Impacts, October 2016

Solar Ontario 2016: Moderator for panel on Ontario Electricity Market Renewal Implications for Solar Generation, May 2016

Clean Energy BC - BC Generate 2015: Panelist on Overview of Canadian Renewable Energy Markets, November 2015

CanWEA 2015: Panel Member on Wind Generation Integration in Canadian Wholesale Electricity Markets, October 2015

Solar Ontario 2015: Panel Member on Lessons Learned for the Large Renewable Procurement, May 2015

Green Profit 2015: Plenary Panel Member on The Future is Now: The Economic Case for Renewables, March 2015

CanSIA's Solar Canada 2014: Panel Member on Setting Precedents for the Future of Solar Distributed Generation Utility Programs, December 2014

CanSIA's Solar Ontario 2014: Moderator on Balancing Supply: A look inside Ontario's Electricity System during Peak Demand on July 17, 2013, May 2014

CanSIA's Solar Ontario 2013: Presenter and Moderator on Electricity Consumer Empowerment – Enabling Distributed Solar Power Generation, May 2013

Ontario Feed-In Tariff Forum: Panel Member on Barriers to Connection Solar Projects at the Local Level, April 2012

EUCI's 3rd Annual Conference on: Ontario's Feed-In Tariff, June 2011

4th International Conference on Integration of Renewable and Distributed Resources, Albuquerque, December 2010

OSEA Community Power Conference, November 2010

List of Expert Testimony

Ontario Energy Board, Hydro One Networks Inc's 2017/2018 Transmission Revenue Requirement & Rate Application (EB-2016-016), Transmission Loss Reduction Options (December 2016)

Alberta Utilities Commission, Alberta Electric System Operator's 2014 General Tariff Application (Proceeding 2718), Proposed Approach for Designating Transmission Projects (February 2014)