CanSIA
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Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, Suite 2700 Toronto
Ontario M4P 1E4

September 16, 2019

Attn: Board Secretary

Re: Board File Number: EB-2019-0207
Distributed Energy Resources (DER) Connections Review Initiative

On behalf of the Canadian Solar Industries Association (CanSIA), I am pleased to provide the attached comments in respect of the Board's staff letter dated August 13, 2019 announcing the commencement of the DER Connection Review Initiative ("the kick-off letter").

CanSIA and its members are very supportive of this undertaking which will have significant impacts on customers who choose to adopt solar PV and other DERs such as energy storage. In recent years, there has been a significant uptake of solar PV in Ontario, accelerated by the Feed-in Tariff (FIT) and microFIT programs. With the FIT and microFIT programs now closed, customers are pursuing other options to mitigate their energy costs through net metering or load displacement, or through participation in the Industrial Conservation Initiative. Further, customers also have increasing opportunities to participate in the Independent Electricity System Operator's (IESO) wholesale market through demand response and future capacity auctions.

CanSIA has developed this submission in consultation with the members of Nexus - a strategic project founded by CanSIA and operating in collaboration with the Canadian Wind Energy Association (CanWEA) that focuses on customer adoption of energy management technologies and enabling broader uptake of renewable energy.

This submission focuses on the four questions posed by the OEB staff in the kick-off letter:

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Are the objectives for the DER Connections Review initiative clear?

The objective of the DER Connections Review initiative appears to be the achievement of "consistency across the Province in terms of cost responsibility and process timelines." CanSIA supports this objective; however, rather than focusing exclusively on standardization, CanSIA recommends two additional objectives:

- to raise-the-bar with respect to customer experience for connection of DERs across the province, and
- to establish appropriate incentives to encourage distributors to improve performance with respect to facilitating DER connections.

Furthermore, CanSIA suggests adding objectives for timelines with respect to implementation of new rules or codes to ensure clarity for customers who are advancing projects during this review period.

Have staff identified the right topics for the DER Connections Review and do stakeholders have any specific concerns that they want to identify?

CanSIA agrees that staff have identified appropriate topics. The topics are aligned with issues identified in the 2018 recommendation report to the OEB from the Advisory Committee on Innovation. In addition to the topics outlined, CanSIA recommends adding the following:

- Development of information and data-sharing platforms (e.g. hosting capacity maps);
- Specifically ensuring that revised definitions are developed for energy storage and load displacement generation;
- Identifying scenarios that would enable an LDC to fast-tracked a connection application;
- Removal of the 1% subscription threshold for net metering under the Distribution System Code (DSC) [1]; and
- Coordination of connection impact assessments involving an upstream distributor and/or transmitter.

Are there any proposed solutions that stakeholders wish to identify at this point?

CanSIA suggests the following proposed solutions to be considered:

- Developing a consistent, standardized platform to enable better information sharing with customers (e.g., hosting capacity, distributions system plans, etc.);

[1] Distributors are not required to connect net metering beyond 1% of distributors annual maximum peak load per Section 6.7.2 of the DSC.

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- Reporting and performance benchmarking for distributors related to connections (e.g., reporting on the number of connection requests, number of projects awaiting connection, abandoned projects, average connection timelines, etc.);
- Reorganizing the connection streams based on impact to the distribution system (e.g., rotating motor vs. inverter based, directly connected vs. behind-the-meter, exporting power to the grid vs. load displacement);
- Identifying opportunities to fast-track projects within prescribed timelines wherever possible (i.e., minimum standards should be established, however, projects should be advanced through the connection process as quickly as possible); and
- Consistent technical standards and requirements (e.g., transfer trip)
- Options for mediation or establishment of a technical panel to help with the interpretation of rules and standards, and to assist with dispute resolution between distributors and customers; and
- Clear rationale for when connections are denied and follow up on what needs to be done to complete the connection (e.g., insight to distribution system planning process and costs to connect).

Recently, Hydro One Networks Inc. accepted submissions from stakeholders on its Distributed Generation Technical Interconnection Requirements. For transparency, CanSIA's submission to Hydro One is enclosed.

What is the best approach for development of solutions to the issues identified?

CanSIA welcomes a transparent discussion with distributors and other impacted agencies with respect to evolving the DER connection process in Ontario. Therefore, we recommend the following approaches:

- Development of working groups with broad, sector-wide participation;
- Establish an annual technical conference to review the latest standards and best practices with industry, including equipment vendors and other experts;
- Materials from all session should be available publicly, action items should be tracked, and progress reports should be developed regularly; and
- Adopt a multi-agency approach to remove silos between the OEB, Ministry of Energy, Northern Development and Mines, IESO, Electrical Safety Authority, Hydro One Networks Inc. (Transmission), etc.

Further, we recommend adopting a framework for quickly prioritizing potential changes. The OEB should implement a phased approach to advance solutions that are "quick-wins", and ensure effort is

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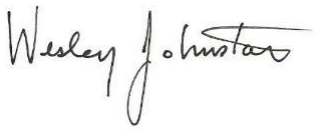
prudently spent on issues that will have the greatest impact. CanSIA recommends the prioritization approach as illustrated in the Appendix.

Next steps

CanSIA acknowledges that the kick-off letter requested that stakeholders identify their interest in participating in the Working Group. CanSIA requests the opportunity to participate and contribute to the Working Group. Depending on the scope, timing and requirements of the Working Group, CanSIA requests the ability to send staff, representatives from CanSIA membership, and/or technical consultants.

Thank you for your consideration of this submission.

Sincerely,



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Incl: *Appendix: Proposed Prioritization Approach*
HONI TIR Review submission

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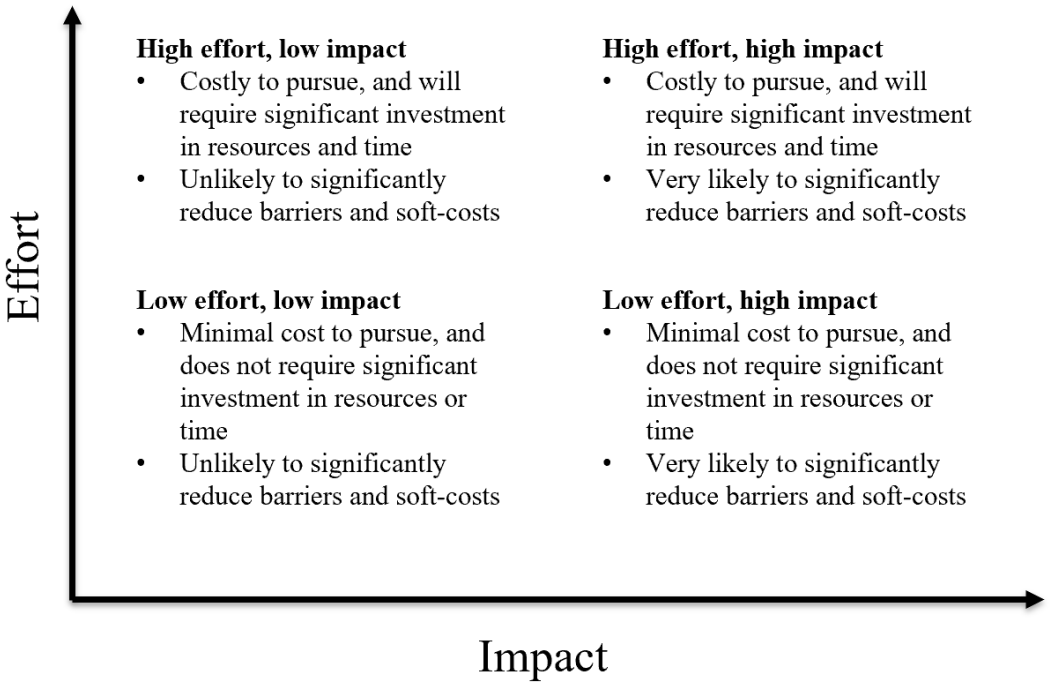
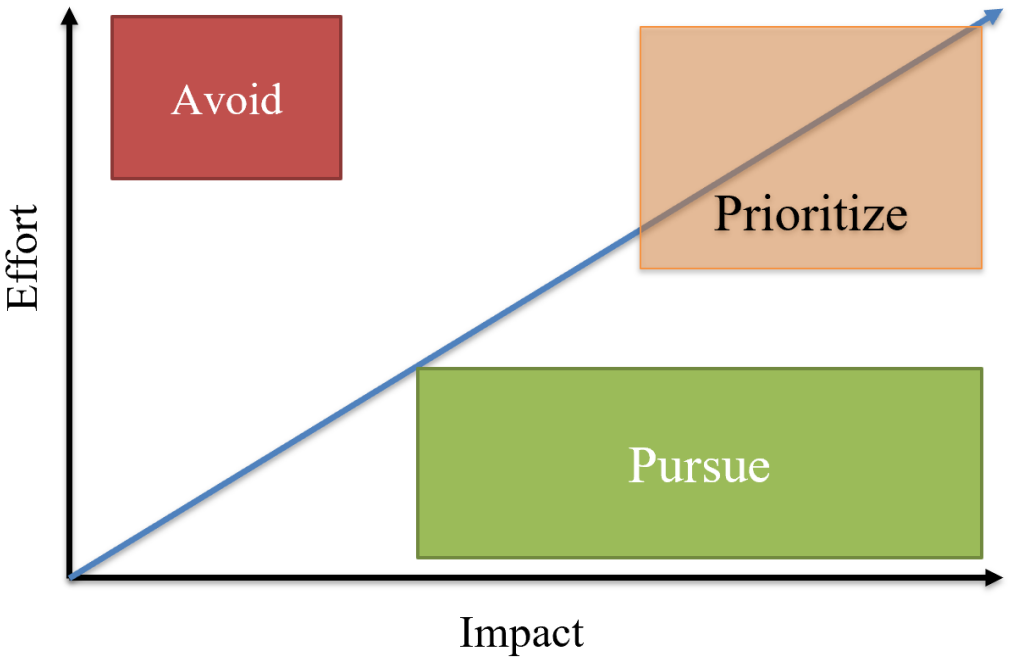
Appendix: Proposed Prioritization Approach





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Submission to Hydro One Networks Inc. on its Distributed Generation Technical Interconnection Requirements

July 31, 2019

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Introduction

The Canadian Solar Industries Association (CanSIA) is a national trade association that represents the solar energy industry throughout Canada. Solar electricity is a mainstream energy source and an integral part of Canada's diversified electricity mix. CanSIA offers feedback to Hydro One's consultation on its Distributed Generation Technical Interconnection Requirements Interconnections at Voltages 50 kV and Below, Rev3 (TIR) document. CanSIA's members actively provide services to support customers in managing their electricity services and provide value to the electricity grid. Members work with Ontario's residential, commercial and industrial customers to provide a suite of services including behind-the-meter solar generation (including net metering and non-exporting) and energy storage.

CanSIA appreciates this opportunity for input to Hydro One and encourages Hydro One to undertake a more formal and comprehensive stakeholder engagement effort in future to recognize the technological changes that are taking place in the distributed energy resource (DER) sector.

Many of our members actively engage with Ontario's distributors and Hydro One directly in partnership with end use electricity customers and therefore we offer insights into customer experiences in Ontario and lessons learned from best practices in other markets. We wanted to take this opportunity to offer specific recommendations for improvements to the TIR, and as well endorse a process for greater stakeholder engagement in a broader and more frequent consultation effort.

Our feedback is structured in the following manner and specific areas of input:

1. Requirements appropriate to the use, size and type of DER
2. Technical conference for information sharing and setting priorities
3. Specific recommendations for improvements to the TIR

Requirements Appropriate to the Resource

In preparing this submission, CanSIA canvassed members for feedback to submit to Hydro One. Members stated they experience the connection process and requirements to be insensitive to the project technology characteristics, project size and the project impacts on the distribution gird. CanSIA recommends that the TIR adapt to clearly outline and define requirements specific to different generator technologies, connection arrangements, and operating characteristics. To better reflect the modern mix of technologies and services available to customers and HONI.

The OEB's Distribution System Code was drafted in the late 1990s in anticipation of market opening when new generation was expected to come on to the grid. Many of the requirements from the TIR may be appropriate for the MW scale generation from conventional generation technologies that include rotating

electrical machines. However, the technological trends of today's electricity system are towards smaller sized resources that are inverter based. Thus, the TIR should include distinct requirements for the two types of generators:

- Rotating electrical machines
- Inverter based technologies

There are differences in the impact on the distribution system between generation or storage technologies that are directly connected to the grid, as compared to those that are load connected and designed operate behind the meter and manage electricity usage. Protection and control requirements should be distinct for the connection arrangement:

- A resource connected directly to the distribution system
- A resource designed to reduce customer usage and/or demand (behind the meter)

Finally, a third category of resource differentiation should take into account whether a resource is configured in a manner to return electricity to the grid or whether the resource is intended to never export electricity onto the distribution system. A customer that installs a technology that is intended to reduce consumption and NOT export power should be considered along the lines of a conservation technology not a merchant generation facility. The connection assessment and technical requirements should reflect the operating characteristic differences. Therefore, the TIR should have a third category that has appropriate specifications based on:

- Projects that export power to the grid
- A resource that is designed to be a zero-export generation – merely offsetting customer consumption

In support of the above three distinct categories, CanSIA recommends that the TIR include specific definitions of energy storage resources and non-exporting load displacement for clarity and certainty. CanSIA notes that members were pleasantly surprised at the updated cost schedule posted by Hydro One for CIA fees, in that the approach taken by Hydro One was to further refine CIA fees by project size and use case and this differentiated approach should be applied to every aspect of the TIR.

Technical Conference for Information Sharing

CanSIA respectfully recommends that Hydro One use this TIR outreach effort as a beginning to engage stakeholders in a meaningful way on interconnection standards. The Hydro One TIR is for all intents and purposes the de facto interconnection standard for Ontario based on the transmission and distribution asset ownership structure in the province. CanSIA recommends that Hydro One arrange to host a technical conference where experts from Hydro One can raise the level of understanding of stakeholders on the

rationale for and the application of the various standards in the TIR. Attendees can include service providers, customers and distributors. Engagement and consultation with stakeholders can assist Hydro One in identifying priority areas for refinement and evolution over time. Specifically, CanSIA recommends that a regular (e.g., annual) technical conference be arranged to ensure the interconnection standards is consistent with national and international standards. Further, stakeholder experience in other jurisdictions can be assessed and changes to the requirements made where appropriate. Finally, regular consultation on the TIR can inform all stakeholders about the Ontario context in the TIR and the unique requirements needed in the Hydro One electricity network.

In short, CanSIA recommends that Hydro One take feedback from stakeholders as input to areas where industry would be best benefit from greater background and consideration of areas for improvement and evolution of the TIR. An open stakeholder session would also create a forum for a discussion of global best practices and evolving international standards dealing with DERs in other markets. The approach to a technical conference should lead to a commitment to doing so on a regular and recurring basis.

Specific Recommendations to the TIR

Members offer the following as specific areas of concern where additional consideration should be given to amendments to the TIR.

1. The 7% rule

> *total generation must not exceed 7% of the annual line section peak load on F-class feeders or 10% for M Class feeders*

The concern regarding the application of this restriction is that the rule does not take into consideration the generation profile (i.e., seasonal and hourly) of the customers that contribute to the threshold limit.

2. The 40% minimum load rule

Hydro One assumes the worst-case scenario in applying this restriction without taking into account the potential use case for utilization and operation of the DER. Non-exporting load displacement resources, for example, would be expected to only offset customer demands and not inject into the grid. Energy Storage facilities do not discharge at minimum load times, they operate at times the feeder would be heavily loaded.

3. Breaker fail requirements

Hydro one specifies that if a generator breaker fails to open then a backup breaker is required to ensure safety and protection on the grid. This restriction is not necessary to apply to inverter-based generation as the inverter can perform the same function for the low probability breaker failure event. This requirement in section 2.3.4 of the TIR specifies that a second redundant disconnect is required in the next open zone, which some utilities interpret to mean on the high voltage side of the transformer. This is unnecessary and

expensive. Clarification for other distributors and service providers would benefit customers. Furthermore, the requirement for an HVI is not implementable with behind the meter connections.

4. Adoption of evolving international standards

Standards organizations worldwide such as CSA, UL and IEEE are advancing protection and control standards to keep pace with the rapid advancement and technological deployment of DERS. Reference to evolving standards in the TIR would ensure that Hydro One and its customers are up to date with best practices.

Table 10 of the TIR should more clearly reflect the requirements for protection and control for the various technologies and connection arrangements mentioned in this letter. Specifically, it should clearly outline instances where the certifications UL1741 etc., are insufficient and additional protection and control relays are required.

5. Transfer Trip

There are many customer-DER configurations where transfer trip should not be a requirement. The equivalent treatment across resource types without distinguishing end use or configuration or technology results in high costs with little incremental benefit. In short, non-exporting DERs and front-of-the-meter DERs should be treated differently.

6. The 15-minute Rule

The TIR section 2.4.7 requires that if a feeder is down for more than 15 minutes then the DER install control systems to keep the line down. This is another example where the inverter functionality will accomplish this protection and should be recognized as having this capability without the need to install redundant systems. Also, should not be applicable to ESS systems that do not automatically restart generation.

Conclusion and Summary of Recommendations

CanSIA commends Hydro One for initiating this stakeholder outreach exercise and encourages its continuation in the form of a technical conference, and as well an ongoing commitment to the stakeholder engagement going forward. CanSIA strongly recommends a connection requirements philosophy that looks at ensuring that technical interconnection requirements are appropriate for the resource, taking into account size, configuration and impacts on the distribution grid.