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**Frank D'Andrea**

Vice President, Reliability Standards and Chief Regulatory Officer

BY EMAIL AND RESS

September 16, 2021

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

Dear Ms. Long,

EB-2021-0117 – Proposed Amendments to the Distribution System Code to Enable the Connection of Distributed Energy Resources

On August 5, 2021, the Ontario Energy Board (“Board” or “OEB”) issued a Notice of Proposal to amend the Distribution System Code (DSC) to clarify the requirements and process for connecting distributed energy resources (DER) to an electricity distributor’s system (the “Notice”). The proposed amendments, which include the establishment of Distributed Energy Resource Connection Procedures (DERCP) and template forms that support the DERCP, are intended to standardize the framework and process that electricity distributors need to follow in response to a DER connection request. The Board believes that the implementation of a streamlined DER connection approach will result in a more efficient and predictable process, irrespective of the DER project fuel type, application or connection point.

Hydro One Networks Inc. (“Hydro One”) believes that the proposed DSC amendments represent an important first step in providing much needed clarity to the DER application and connection process. As the potential use cases for DERs grow and DER solutions are increasingly adopted, distributors and proponents need a regulatory framework that provides certainty in terms of how a request to connect a DER project will be treated and processed. The connection requirements need to ensure that the information required by distributors to assess a DER project application is clearly specified and that appropriate timelines are established. This will enable DER projects to be assessed and connected in a safe and efficient manner. Furthermore, distributors and DER proponents should have a common understanding of the expectations and outcomes that derive from the DER connection process.

That notwithstanding, Hydro One believes that certain aspects of the DER connection framework and process require further clarity and review to ensure that they can be applied consistently by all distributors. Please refer to the attachment for our written comments with respect to these matters.

If you have any additional questions regarding Hydro One's comments or would like to discuss these comments in further detail, please contact Jason Savulak by phone at 647-293-7226 or by email at jason.savulak@hydroone.com.

Sincerely,

A handwritten signature in cursive script that reads "Frank D'Andrea". The signature is written in dark ink and is positioned below the word "Sincerely,".

Frank D'Andrea

HYDRO ONE'S COMMENTS

The proposed DSC amendments culminate the first phase of the Board's review of the requirements and process for connecting DER facilities, which was initiated in August of 2019. To guide its review, the Board established a DER Connection Review Working Group (the Working Group) in November 2019 that was comprised of representatives for DER developers, distributors, the IESO, the ESA and other industry stakeholder groups. The Working Group's objective was to identify issues and barriers that are currently impacting the ability to effectively connect DERs to the distribution system and advise the Board of potential solutions.

A Technical and Process sub-group was subsequently formed to perform a detailed analysis of the issues in their respective focus areas and provide recommendations to help the Working Group deliver on its objective. From November 2019 until April 2021, the two sub-groups held several meetings to identify key issues, establish consensus on the priority issues and develop recommendations for addressing these issues. The recommendations provided by the sub-groups were presented to the Working Group and the Board for their endorsement. These recommendations have largely informed the proposed DSC amendments.

Hydro One commends the Board for undertaking its review and supports the approach taken by the Board to implement a streamlined and procedure-oriented methodology for connecting all types of DERs, which now includes energy storage facilities as well as generation and energy storage facilities connected behind the customer meter. This will provide clarity to both distributors and DER proponents on the process that needs to be followed for connecting DER facilities, as well as the outcomes that should result from this process. However, there are certain aspects of the proposed DER connection framework that still require further clarity and review in order to achieve the Board's objective of establishing an efficient and predictable connection process that can be applied consistently by all distributors.

Hydro One’s comments, below, are intended to call attention to the proposed DSC amendments and related documents that require further clarification, review or additional modifications to address an existing problem. Our comments have been divided into two parts. Part 1 provides a detailed summary of Hydro One’s key comments and recommendations in response to the proposed DSC amendments and the related documents. Part 2 of these comments will discuss other less significant issues regarding the amendments and the related documents that should be addressed, including corrections, omissions and suggested editorial changes.

Part 1 – Hydro One’s Key Comments and Recommendation

1. Definition of a DER and the Applicability of the Term within Section 6.2 of the DSC and the DERCP

The Board has proposed to define the term “DER” within the new “DERCP” definition in the DSC. The definition and use of the term “DER” to describe an “electricity source or sink” that can be connected to the distribution system or a load customer’s facility represents a significant and necessary change in terms of how system connections, which have the ability to inject energy and change power flows through the distribution system connection point, should be viewed. As a result, the DSC should include a stand-alone definition for DER.

The new proposed definition for a “DER” would also enable the Board to expand the applicability of Section 6.2 of the DSC to include additional resource types other than grid-connected generation facilities. However, it is unclear why the Board has elected not to replace references to a “generation facility” in Section 6.2 and in the forms of connection agreements attached to the DSC in Appendix E with a reference to “DER” (where the requirements are intended to apply all types of resources covered under the “DER” definition). Maintaining references to only generation facilities in Section 6.2 of the DSC and in the forms of connection agreements attached to the DSC in Appendix E, while referencing the DERCP, has the potential to create further ambiguity and confusion

1 as to whether the requirements in Section 6.2 apply to DERs. Hydro One believes that
2 Section 6.2 of the DSC and the forms of connection agreements attached to the DSC in
3 Appendix E should be updated to apply to DERs in general, except where the treatment
4 needs to be differentiated for a particular type of resource.

5
6 Similarly, references to generation facilities in the DERCP should also be updated to
7 reference DERs, where appropriate. On page 7 of the DERCP, the statement that “the
8 term “generation facility” applies to the discharge mode of a storage facility” is
9 somewhat confusing when the definition for a DER clearly includes storage facilities.
10 The Board should clarify exactly what is meant by this statement and what process
11 should be followed to assess the charging mode of a storage facility. Since a storage
12 facility also needs to be assessed from a load perspective, the assessment and connection
13 process for a storage facility needs to account for its dual operating modes.

14
15 Lastly, Hydro One believes that the use of the term “sink” to describe a DER may have
16 unintended scope consequences because it would effectively include any type of
17 connection to the system that is able to control energy withdrawals or injections at the
18 distribution system connection point, which would include energy efficiency products or
19 controllable loads used for demand response. Based on our understanding of the
20 discussions that took place at the sub-working group level, the Board does not intend for
21 the definition of DERs to include such types of facilities or devices that can provide
22 demand response, other than generation or storage facilities. To avoid potential
23 ambiguity, Hydro One recommends removing the term “sink” from the definition.

24 25 2. Definition of a Storage Facility

26 The Board has proposed that a storage facility be defined as “a facility that is connected
27 to a Transmission or Distribution System” and is capable of storing energy withdrawn
28 from the system and “then re-injecting only such energy back into the Transmission or
29 Distribution System.” Based on our understanding of the language used in the proposed
30 definition, a storage facility connected behind the customer meter or to another

1 generation source, such as a solar facility, would not satisfy the definition because the
2 facility is not connected to assets that form part of the distribution system.
3 Consequentially, it is unlikely that this resource would ever be injecting energy back into
4 the grid, unless it is permitted to export. Since Hydro One believes that the definition of a
5 “DER” was intended to encompass all types of storage facilities, including storage
6 facilities connected behind the customer meter, the definition would therefore introduce a
7 regulatory gap as to how these facilities should be treated. Hydro One believes that that
8 definition of a storage facility should be revised such that it is agnostic to the connection
9 point of the facility.

10
11 Given that the provisions in the DSC only apply to facilities connected to the distribution
12 system, the proposed definition for a storage facility should exclude storage facilities that
13 are connected to the transmission system.

14
15 3. Definition of Emergency Backup Generation Facility and Amendment to Section
16 6.2.1 of the DSC

17 Hydro One does not believe that the proposed definition explicitly prevents a customer
18 from utilizing an Emergency Backup Generation Facility (EBGF) to supply their load in
19 the scenario where a customer’s load facility is normally supplied from the grid and by a
20 load displacement generator and their load displacement generator becomes unavailable.
21 In this scenario, a customer should not be permitted to use their EBGF as a substitute for
22 their load displacement generator, unless they apply for a connection impact assessment.
23 Furthermore, certain loads may be subject to regulatory requirements that could require
24 an EBGF to be run for testing purposes when the normal supply of electrical power is
25 available. The following definition was recommended by members of the sub-working
26 group and Hydro One believes that this definition would address these two issues:

27
28 *“Emergency Backup Generation Facility” means a generation facility whose sole*
29 *function is to provide backup power during an interruption of the normal supply*
30 *of electrical power to a load facility. For clarity, any generation facility that is*

1 *used to reduce the facility load when the normal supply of electrical power is*
2 *available for any period of time, except where required to satisfy regulatory*
3 *requirements related to testing, shall not be classified as an Emergency Backup*
4 *Generation Facility.*

5
6 The Board has also proposed to amend Section 6.2.1 of the DSC as follows:

7 *6.2.1 Section 6.2 does not apply to the connection or operation of an emergency backup*
8 *generation facility ~~or an embedded generation facility that is used exclusively for~~*
9 *~~load displacement purposes at all times.~~ When connected in parallel with the*
10 *distribution system, an emergency backup generation facility must have a transfer*
11 *switch that isolates it from the distribution system within 100 milliseconds.*

12
13 Hydro One supports the Board's decision to amend Section 6.2.1 and remove the
14 exemption for embedded generation facilities that are used for load displacement
15 purposes. This exemption has always created a lack of clarity and confusion for
16 proponents as to what connection framework should apply for load displacement
17 generation facilities. Since most distributors follow the same process to assess and
18 connect load displacement generation facilities as they do for grid-connected generation
19 facilities, the exemption is not necessary.

20
21 While maintaining the exemption for EBGFs continues to be appropriate, the switching
22 requirements for an EBGF should be included as part of the DSC definition for an EBGF
23 rather than be included as part of Section 6.2.1. Hydro One also recommends that the
24 Board add a provision, as part of Section 6.2.1 of the DSC, stating that customers
25 wanting to install an EBGF shall follow the connection requirements for an EBGF
26 specified in their distributor's Conditions of Service or on their website.

27
28 4. Cost Responsibility Rules for the Connection of Generation and Storage Facilities

29 The Board has proposed to include a new requirement 6.2.31 that states that the
30 provisions in Chapter 3 of the DSC apply to all generation and storage facilities. Hydro

One believes that it is already clear in the DSC that the provisions in Chapter 3 apply to generation facilities and does not need to be reiterated. The proposed amendment could simply state that the provisions in Chapter 3 shall apply to all DERs, without making any reference to the connection point.

While the Board has taken the step to clarify the applicability of the cost responsibility rules, the Board has not indicated how the cost responsibility rules in Chapter 3 would actually apply to other types of DERs that do not satisfy the definition of a “generation facility.” For instance:

- Are storage facilities supposed to be treated as a load or a generator or both? If storage facilities should be treated as both a load or generator, how should the rules be applied with respect to the facility?
- If the intention is for storage facilities to be treated as generators, which cost responsibility rules that are applicable to generation facilities should now apply to storage?
- How should the installation of a behind the meter connected generation or storage facility be treated if it reduces the load consumed at a new or existing facility connection or shifts the demand off-peak?
- Would any of the rules applicable to renewable generation facilities apply to storage facilities?

Hydro One believes that these types of questions require further discussion and review by the Working Group and sub-groups. In our view, the cost responsibility rules in Chapter 3 need to specify how different types of DER connections should be treated so that the rules are clear for both distributors and applicants.

5. Requirement to Publish a Restricted Feeder List

The Board has proposed to amend Section 6.2.3 to require distributors to make available “a list of *restricted feeders* by name and feeder designation that the distributor operates that are known not to have any short circuit capacity to accommodate a distributed energy

1 resource connection.” On page 8 of the Notice, the Board notes that the proposed
2 amendment would permit a distributor to employ an interactive tool for achieving this
3 purpose.

4
5 Hydro One agrees that distributors should be required to publish information that would
6 identify whether a feeder has available capacity. However, Hydro One does not believe
7 that the restricted feeder list should only be limited to those feeders that cannot
8 accommodate additional short circuit capacity. There could be other known reasons that
9 more DER capacity cannot be connected to a feeder and distributors should be required to
10 account for any factors that may cause a feeder to be identified as restricted.

11
12 Hydro One also agrees with the Board that there are various ways in which a distributor
13 could make information regarding restricted feeders available to properly inform DER
14 applicants and that distributors should have the flexibility to make this information
15 available in a way that they determine to be appropriate and achieves the Board’s desired
16 objective. For instance, Hydro One has developed a capacity calculator that enables
17 applicants to check for available capacity on a feeder or at a station. Hydro One also
18 publishes two lists: a List of Station Capacity and a List of Applications, which can be
19 used to determine the available capacity at all Hydro One-owned buses and stations.
20 While the Notice indicates that distributors would have flexibility in terms of making
21 information available regarding restricted feeders, Hydro One would simply like to note
22 that the proposed amendment does not state that distributors are able to make restricted
23 feeder information available in other ways.

24
25 6. Connection Process Requirements for a Mid-Sized or Large Generation Facility

26 The timelines specified in the proposed amendment to Section 6.2.13 of the DSC do not
27 consider the additional time that would be required to complete and issue a Connection
28 Impact Assessment (CIA) in situations when a host-distributor is also required to perform
29 a CIA. In accordance with Section 6.2.14, if the proposed project is connecting to an
30 embedded distributor’s system, the embedded distributor has up to 15 days to submit a

1 CIA study application request to the host-distributor, who also has 60 or 90 days
2 (depending on the type of connection) to complete their CIA. A host-distributor would
3 therefore have significant challenges in complying with the proposed CIA timelines
4 whenever the host-distributor is required to assess the connection. The additional time
5 for this scenario has also not been accounted for in the CIA process flowcharts in the
6 DERCP and these timelines should be revised to capture this scenario (see #9 in this
7 Section for additional details).

8
9 To ensure consistency, Hydro One recommends that Section 6.2.13 reference the DERCP
10 for specific timeline details (similar to proposed amendment for Section 6.2.12). This
11 would also eliminate the need for the proposed Section 6.2.23.

12 13 7. DERCP – Connection Impact Assessments (Section 5.1 – Table 1)

14 Table 1 in Section 5 of the DERCP indicates that Small DER projects (up to 500 kW or 1
15 MW) do not require a transmitter or host-distributor study. This statement is repeated
16 once again in Section 5.6.

17
18 Hydro One would like to point out that, with the exception of micro-embedded DER
19 projects, the need for a transmitter and host-distributor (where applicable) to perform an
20 assessment is not dictated by the size of the project. If a small DER project applies to
21 connect to an embedded distributor's system, a transmitter and host distributor
22 assessment is required. Therefore, Section 5 of the DERCP should be revised to clarify
23 that, depending on the proposed project's connection to the system, a small, mid-sized or
24 large project could require a transmitter and a host-distributor (where applicable) to
25 perform an assessment.

26 27 8. DERCP – Project Cost Estimates and Option to Request a Detailed Estimate (Section 28 5.1.4, 6.4)

29 Section 6.2.12 of the DSC presently requires distributors to provide a “detailed cost
30 estimate” to an applicant proposing to connect a small generation facility within the

1 prescribed 60 or 90 day timelines that the distributor has to issue a CIA. For applicants
2 proposing to connect a mid-sized or large generation facility, Section 6.2.14 only requires
3 distributors to provide the applicant with a CIA within the prescribed 60 or 90 day
4 timelines. In accordance with Section 6.2.16, an applicant can seek a “detailed cost
5 estimate” from the distributor after they receive their CIA once both the distributor and
6 applicant have agreed on the project scope of work and the applicant pays the distributor
7 to prepare the detailed cost estimate.

8
9 The DSC has never clarified what is meant by a “detailed cost estimate” and what
10 accuracy range should be associated with this type of estimate. Furthermore, if an
11 applicant proposing to connect a mid-sized or large generation facility does not seek a
12 detailed cost estimate, it is unclear if there is a requirement to provide an estimate. In
13 such cases, Hydro One has typically provided applicants with a “Class C” level estimate,
14 which has a target accuracy of +/- 50%, because it is not possible to provide a more
15 accurate estimate based on the CIA requirements.

16
17 On page 10 and 11 of the DERCP, the Board has established new requirements 5.1.2 and
18 5.1.4 to clarify the expected accuracy range of a project cost estimate that a distributor
19 must provide to a DER applicant. Hydro One supports the Board’s attempt to clarify the
20 accuracy expectations for estimates but is somewhat surprised that the Board has taken
21 steps to establish accuracy tolerance requirements without further consulting and
22 discussing this matter with stakeholders or giving consideration to industry standards.
23 The issue of estimates was identified as a topic to be discussed during the next round of
24 meetings (Tranche 3) of the Working Group and sub-groups. Hydro One believes that
25 further discussion is required on this matter but would like to offer the following
26 comments:

- 27 • The quality and accuracy of an estimate provided by a distributor to an applicant
28 is largely dependent on how much information is known about the DER project
29 design and connection at the time that the estimate is prepared.
- 30 • Any estimate that is provided to an applicant along with the CIA, within the

prescribed 60/90 day timelines in the DSC, will invariably be a “desk side” estimate. This is because there is not enough known information regarding the scope of the project design at this stage to provide a more accurate cost estimate. As a result, the estimate is developed based on the CIA requirements and a review of the costs of similar types of projects. Hydro One has tended to specify a “target” accuracy range of +/- 50% for such estimates but actual costs can exceed this range due to the previously stated reasons. In fact, industry best practices (ie. AACE) indicate that an estimate based on the CIA requirements would have an expected accuracy range of +100/-50%. To avoid setting performance expectations that may not always be achievable, Section 5.1.2 of the DERCP should specify an accuracy tolerance for the project cost estimate that is aligned with industry standards and considers the maturity of the project design when the CIA has to be issued.

- The ability to provide a “detailed cost estimate” depends on the extent to which the project definition and design can be advanced further. Any accuracy requirements established in regards to issuing a detailed estimate must consider the amount of time that the distributor has to perform these activities and that the DER connection cost estimate could also require input from a host-distributor and the transmitter. In addition, there could be more challenges in producing a “detailed cost estimate” for a storage facility because the system design requirements from a load perspective also need to be considered.
- The time available to further define the project is also constrained by the fact that the distributor and applicant have a specific amount of time to enter into a CCA once the DER project application is received by the distributor. For example, a typical DER connection project requires that the CIA be provided within 60 days of the date of a complete application and for the CCA to be executed within 6 months of the application date. In this case, a distributor would have 3 months at best to improve the quality of the estimate provided to the applicant. This is due to the fact that, assuming the proponent requests a detailed estimate immediately after receiving the CIA, approximately 30 days is needed prior to executing the

1 CCA for the distributor to prepare the CCA and project scope of work and for the
2 applicant to secure financing. Although the Board has established that the option
3 to obtain a detailed estimate should reduce the level of cost uncertainty to +/-
4 25%, it is unlikely that this can be achieved within a time period of less than 3
5 months.

6 • Hydro One believes that further discussion at the sub-working group level is
7 needed to determine how much time a distributor should be required to spend on
8 preparing a more detailed estimate and what improvement in accuracy should be
9 expected from these efforts. The estimate quality and accuracy will vary
10 depending on what agreement is made between the proponent and distributor and
11 how much time the distributor is allocating to prepare the estimate. Time spent
12 negotiating and finalizing the terms and conditions associated with the detailed
13 estimate option will also impact the quality and accuracy of the estimate that can
14 be provided. If the Board intends to establish a streamlined approach for
15 connecting DERs, which can be applied consistently by all distributors, the Board
16 should consider standardizing the details, terms and conditions associated with the
17 provision of a more detailed estimate. The improvement in estimating accuracy
18 that can be achieved from providing a more detailed estimate must consider the
19 amount of time that a distributor has to further define the project design and
20 correlate with industry standards for estimate accuracy.

21 • Hydro One believes that the DERCP needs to clarify whether all DER applicants,
22 regardless of the size of their proposed project and connection requirements,
23 should have the ability to seek a detailed cost estimate. The Board may want to
24 consider only providing applicants who receive an initial estimate that is above a
25 certain amount with the ability to obtain a more detailed cost estimate.

26 • In accordance with the provisions of the DSC, generators are required to pay
27 100% of their connection costs. Hydro One believes that the DERCP should
28 clarify that a DER applicant is still required to pay the actual connection costs of
29 their DER project, even if these costs are outside of the prescribed accuracy
30 tolerance of the estimate that was provided.

1 9. DERCP – Connection Process for Embedded Generation Facilities

2 The Connection Impact Assessment Process flowchart and timeline for small, mid-sized
3 and large embedded generation facilities (Figure #4 and #5) do not capture the scenario
4 where the proposed facility is connecting to an embedded distributor's system and the
5 host-distributor must perform a CIA. The Board needs to clarify the process for this
6 scenario and ensure that the timelines properly account for the additional distributor CIA
7 that must be performed.

8
9 When this scenario was discussed at the DER Process sub-group meetings, Hydro One
10 highlighted that, due to the provisions in Section 6.2.14A of the DSC, the prescribed 60
11 and 90 day timelines in the DSC for issuing a CIA cannot be met when a host-distributor
12 must perform a CIA. If the embedded distributor is permitted up to 15 days to prepare
13 and submit a CIA application to the host-distributor and the host-distributor has 60 or 90
14 days to complete their CIA, the process to complete each of the CIAs for the proposed
15 project will take up to 75 or 105 days. Hydro One also stressed that an application to
16 connect a facility to an embedded distributor's system is more complex from a
17 coordination standpoint because there are two distributor CIAs and a transmitter review
18 that must be performed. To ensure that the connection requirements are accurately
19 captured and reflected in the total cost estimate, Hydro One believes that the timeline
20 should be increased by an additional 5 days (ie. to 80 or 110 days), whenever a host-
21 distributor CIA must be performed.

22
23 10. DERCP – Connection Agreements

24 Section 6.2.22 of the DSC requires distributors to enter into a standard form agreement
25 with embedded generation facilities, as set out in Appendix E of the DSC. While these
26 agreements remain appropriate for most embedded generation facility connections,
27 certain requirements in these agreements may not be suitable or appropriate for
28 addressing the operation of some DER connections, such as load displacement generation
29 facilities, storage facilities or facilities that have flexible hosting capacity. The Board
30 should provide clarification as to whether the existing provisions in the standard form

1 agreements apply to all types of DERs. Furthermore, the Board needs to clarify whether
2 a distributor has flexibility to modify the provisions of these standard form agreements,
3 as it sees fit, to address certain characteristics or aspects of a DER connection that may
4 not be addressed appropriately by the current standard form agreements.

5
6 Hydro One believes that it is also important for the Board to provide clear direction as to
7 what type of agreement should be entered into between the distributor and a load
8 customer who connects a DER, which may or may not be owned by the customer, to their
9 load facility. To date, Hydro One's approach has been to enter into a load connection
10 agreement with the load customer. Since the load connection agreement template in the
11 DSC is less prescriptive than the generator agreement, any details pertaining to the
12 connection and the operation of the DER facility can be specified in the agreement or
13 operating schedules. If a DER facility connected behind the customer meter is not owned
14 by the load customer, it should be the responsibility of the load customer to enter into a
15 separate agreement with the load displacement generator to ensure that these provisions
16 are met. The Board may want to consider providing additional clarification in the DSC
17 or DERCP on this subject so that the expectations are understood by both distributors and
18 applicants.

19 20 **Part 2 – Hydro One's Additional Comments and Recommendations**

21 22 1) New and Modified Definitions in the DSC

23 24 *OEB Proposal:*

25 *Removal of the definition for load displacement generation as the new approach to*
26 *categorizing the connection behaviour makes that definition no longer necessary (pg. 5 of*
27 *the Notice)*

1.2 Definitions

“Exporting connection” means a connection through which power flow is from the customer’s premises to the distribution system where the injection to the system is intentional (the connection is supporting a generation facility). This connection type may also support power flow from the distribution system to the customer’s premises (non-exporting mode), e.g. storage in charging mode, or station or customer load.

“System power” means power flowing through a connection to a customer from the distribution system.

“Non-exporting connection” means a connection through which power flow is only from the distribution system to the customer’s premises (the connection is considered to be supplying a load).

“Restricted feeder” means any feeder owned by the distributor that has zero capacity for connection of generation facilities even if the constraint is caused by an upstream asset that it does not own.

On page 5 of the Notice, the Board states that it has removed the definition for load displacement generation as it no longer fits the new proposed paradigm for classifying DER connections. However, the definition for “load displacement” in the DSC, which makes reference to a load displacement generation facility, is not shown as being struck out in Appendix A of the Notice. Based on our understanding, it would appear that the Board has deleted references to a load displacement facility in the DSC and replaced this term with the new “non-exporting connection” terms. Hydro One would like the Board to confirm that it is not in fact proposing to delete the term “load displacement” from the Definitions section of the DSC. Hydro One would like to note that the term “load displacement” is used in Hydro One’s Distribution Rate Order to establish the applicability rules for Gross Load Billing. Removing this term from the DSC could introduce a lack of clarity regarding the meaning of a load displacement facility and the

1 application of the Gross Load Billing rules.

2
3 Hydro One has the following additional comments regarding the new proposed
4 definitions:

- 5 • System power – It is unclear why the Board has introduced a new term called
6 “system power”, which is only included in the proposed definition for an EBGF.
- 7 • Exporting connection – Since an exporting connection can include a facility
8 connected to the grid, “customer’s premises” may not be the correct terminology
9 to use. In addition, the reference to a generation facility should be deleted as an
10 exporting connection could include a storage facility. The second sentence of the
11 definition is also unclear. Consider revising this sentence to state a “facility that
12 could be used for load displacement purposes but not exclusively.”
- 13 • Non-Exporting connection – The statement in parentheses creates confusion
14 because the connection is considered to be supplying the load only from a
15 distribution perspective. The Board may want to consider removing the statement
16 in parentheses or including a statement that the distribution system is considered
17 to be supplying load.
- 18 • Restricted feeder – The definition should reference DERs and not simply
19 generation facilities as all types of DERs have the ability to create capacity
20 restrictions on feeders.

21 22 Connection of Micro-Embedded Generation Facilities

23
24 *OEB Proposal:*

25 *6.2.5 A distributor shall make available a Micro-Embedded Generation Facilities*
26 *Application, in the form specified in Appendix E, to a person who is considering*
27 *applying for the connection of a micro-embedded generation facility to the*
28 *distributor’s distribution system. The Micro-Embedded Generation Application*
29 *shall be available electronically, on the distributor’s website where available,*
30 *with a paper copy available at the distributor’s address. ~~A distributor shall~~*

~~require a person that applies for the connection of a micro-embedded generation facility to the distributor's distribution system to provide, upon making the application, the following information:~~

The specified Micro-Embedded Generation Facilities Application form in Appendix E has not been updated since it was first established. This form should be reviewed to determine whether the provisions in the form remain relevant and if they would apply to all micro-embedded DER connections, including energy storage facilities. In addition, the technical requirements of the form should be updated to align with the CSA C22.3 No. 9 standard.

Preliminary Consultation Information Request and Report

OEB Proposal:

~~6.2.9.1 Upon request, a distributor shall provide the following to a person that has requested a meeting under section 6.2.9:~~

~~The distributor shall respond within 15 days of receipt of a completed Preliminary Consultation Information Request form with a completed Preliminary Consultation Report, in the form specified in the Distributed Energy Resources Connection Procedures.~~

~~(a) a description of the portion of the distributor's distribution system relevant to the person's embedded generation facility, including the corresponding portions of an up-to-date system schematic map showing, at a minimum, the following:~~

- ~~• major distribution and sub-transmission lines;~~
- ~~• transformer and distribution stations;~~
- ~~• the voltage levels used for distribution;~~
- ~~• sufficient geographic references to enable the person to correlate all of the above features with a municipal road map; and~~
- ~~• such other information as the Board may from time to time determine;~~

~~(b) subject to section 6.2.9.4, information on voltage level, fault level and minimum/maximum feeder loadings for up to three locations in the distributor's service area; and~~

~~(c) for each of the proposed locations included in the request, information about the amount of additional generation, above and beyond what is already connected and what capacity has already been allocated, that can be accommodated i) within the distributor's feeder and/or substation technical capacity limits; ii) within any host distributor's feeder and/or substation capacity limits; iii) within the transmitter's TS technical capacity limits; and iv) without exceeding the IESO's requirement for a SIA.~~

A distributor shall provide a Preliminary Consultation Report to a person without charge up to 3 times in a calendar year. The distributor may recover from the person the reasonable costs incurred by the distributor in preparing the information Preliminary Consultation Report for the additional locations Preliminary Consultation Information Request forms beyond the three to be provided at no charge.

~~(b) subject to section 6.2.9.4, information on voltage level, fault level and minimum/maximum feeder loadings for up to three locations in the distributor's service area; and~~

A distributor shall meet with a person who requests a meeting coincident with the issuance of a Preliminary Consultation Report or after the person has received a Preliminary Consultation Report.

~~At the preliminary meeting, the distributor shall discuss the basic feasibility of the proposed connection including discussing the location of existing distribution facilities in relation to the proposed generation facility and providing an estimate of the time and~~

~~costs necessary to complete the connection. The distributor shall not charge for its preparation for and attendance at the meeting.~~

Given that it is the Board's intention to streamline the preliminary consultation phase of the application process, Hydro One believes that the Board should retain some requirements or guidelines regarding the scope of any meetings requested following the issuance of a Preliminary Consultation Report.

Connection Process Requirements for a Mid-Sized or Large Generation Facility

OEB Proposal:

~~6.2.14A The distributor shall, within 10 days of initiating a connection impact assessment study, advise in writing any transmitter or distributor whose transmission or distribution system is directly connected to the specific feeder or substation to which the proposed embedded generation facility is proposing to connect. The distributor shall include in the written communication, at a minimum, the proposed in-service date, the rated capacity and type of technology of the proposed embedded generation facility. If the distributor requires a transmitter or host distributor to complete a Transmission System (TS) review study or connection impact assessment, the distributor shall file an application with the transmitter or host distributor for such within 15 days of initiating a connection impact assessment study. A distributor will also inform the transmitter or host distributor in writing on an ongoing basis of any change in status of the project including removing the capacity allocation for the project, material changes in the projected in-service date of the project or placing the project in service.~~

For clarity, Hydro One recommends the following edits to the proposed Section 6.2.14A:

If the distributor requires a transmitter or host distributor to complete a Transmission System (TS) review study or connection impact assessment, the

1 distributor shall file an application with the transmitter or host distributor for
2 such within 15 days of ~~initiating~~ receiving a complete connection impact
3 assessment study application. A distributor will also inform the transmitter or
4 host distributor in writing on an ongoing basis of any updates or corrections to
5 the application information or any change in status of the project, including
6 removing the capacity allocation for the project, material changes in the
7 projected in-service date of the project or placing the project in service.

8
9 *OEB Proposal:*

10 6.2.16 In the case of an application for the connection of a mid-sized or large embedded
11 generation facility, once the impact assessment is provided to the applicant, the
12 distributor and the applicant have entered into an agreement on the scope of the
13 project and the applicant has paid the distributor for the cost of preparing a
14 detailed cost estimate of the proposed connection, the distributor shall provide the
15 applicant with a detailed cost estimate and an offer to connect by the later of 90
16 days after the receipt of payment from the applicant and 30 days after the receipt
17 of ~~comments~~ study results from a transmitter or distributor ~~that has been advised~~
18 requested under section 6.2.14A.

19
20 If the Board intends to clarify the quality and accuracy range for preparing a detailed cost
21 estimate in the DERCP, Section 6.2.16 should make reference to this requirement. The
22 DERCP should also clarify whether the detailed estimate option is available to DER
23 facilities of all sizes and whether the quality of the detailed estimates would differ
24 depending on the size of the project. In addition, the timing for the delivery of a detailed
25 cost estimate in Section 6.2.16 is confusing because of the wording that has been used.
26 Hydro One recommends deleting the statement that reads "...and 30 days after the receipt
27 of study results form a transmitter or distributor requested under section 6.2.14A" as a
28 complete "detailed cost estimate" cannot be prepared based on study results received
29 from a transmitter or host-distributor. To provide a detailed cost estimate, the transmitter
30 and host-distributor would also need to advance the project definition by performing

1 further detailed design work. Please refer to #8 in Part 1 for further comments regarding
2 the need to clarify and properly establish expectations related to a detailed cost estimate.

3
4 *OEB Proposal:*

5 *6.2.18 (b) applies only to an exporting generation facility if the applicant does not have*
6 *an executed ~~OPA~~-IESO contract which includes a requirement for security*
7 *deposits or similar payments, a requirement that the applicant pay a capacity*
8 *allocation deposit equal to \$20,000 per MW of capacity of the embedded*
9 *generation facility at the time the connection cost agreement is executed;*

10
11 *(c) applies only to an exporting generation facility if the applicant does not have*
12 *an executed ~~OPA~~-IESO contract which includes a requirement for additional*
13 *security deposits or similar payments, a requirement that if fifteen (15) calendar*
14 *months following the execution of the connection cost agreement the embedded*
15 *generation facility is not connected to the distributor's distribution system, the*
16 *applicant must pay an additional capacity allocation deposit equal to \$20,000 per*
17 *MW of capacity of the embedded generation facility on the first day of the*
18 *sixteenth(16th) calendar month following the execution of the connection cost*
19 *agreement;*

20
21 Hydro One questions whether additional security or capacity allocation deposits should
22 still be required from applicants. These requirements were established to support the
23 previous Ontario Power Authority's large scale procurement program (the Feed in Tariff
24 program) to connect renewable generation facilities to Ontario's grid. Now that the Feed
25 in Tariff program has been canceled, it does not seem necessary for distributors to request
26 higher upfront costs from applicants requesting to connect an exporting facility that does
27 not have an IESO contract.

Distributed Energy Resource Connection Procedures (DERCP)

Definitions

- The definition for “Applicant” should include a clarification that, where the DER facility is connecting behind the meter of a load customer, the applicant must be a person who is connected to the distributor’s system, regardless of whether they own the DER facility. For example, if the proposed DER facility is connected behind the meter of a load facility but the load customer does not own the DER facility, the applicant should still be the load customer.

Distributed Energy Resources Connection Procedures Overview

- On page 7, the first two sentences of first paragraph are confusing. In the first sentence, it seems appropriate to simply state that the DERCP applies to DERs, which includes generation and storage facilities. The term DER should replace “generation facility” throughout the document since the term generation facility does not encompass all types of DERs. The second sentence creates confusion by stating that the term generation facility applies to “the discharge mode of a storage facility”. It is unclear if this implies that the modes of operation of a storage facility should be assessed separately or if the storage facility should be assessed differently when it is charging.

Preliminary Consultation

- Section 4.1 should clarify that it is acceptable for distributors to implement a web-based form for collecting information during the Preliminary Consultation stage, if a distributor determines that this is an appropriate format for engaging with potential applicants. The Board should also clarify that it is not mandatory for a proponent to file a Consultation Information Request prior to submitting a CIA application.
- Section 4.4 should clarify that the main objective of the Preliminary Consultation Report (PCR) is to provide distribution system information related to the proposed location of the DER facility, the feeder connection point, the supply station, etc.

1 *Connection Impact Assessment*

- 2 • On page 10, for clarity, the statement “In response to a successful CIA application...”
3 should be reworded to read “In response to a CIA application where the distributor
4 has determined that there is capacity available to connect the project...”
- 5 • For clarity, instead of specifying the minimum period of time for which capacity will
6 be reserved, requirement 5.1.3 should state that capacity will be reserved for the
7 project up until the deadline date that the project has to enter into a CCA with the
8 distributor, in accordance with Section 6.2.4.1 (c) of the DSC.
- 9 • The reference to “Connection Agreement” in Sections 5.1.4 and 6.4.1 should be
10 “Connection Cost Agreement” (CCA).
- 11 • On page 11, it is stated that “...applicants are encouraged to provide payment for all
12 required studies with the application...” It should be noted that applicants “must pay
13 for all study costs” prior to a distributor commencing a study.
- 14 • Regarding the Micro-Embedded Generation Facilities section, the last sentence of the
15 paragraph should be the first sentence. As mentioned previously, the Board has not
16 reviewed or made any changes to the connection agreement for micro embedded
17 generation facilities. Certain parts of this form reference industry standard technical
18 requirements that are out of date. As previously mentioned, the Board should also
19 clarify whether this form would apply to micro-embedded storage facilities.

20
21 *Micro-Embedded Generation Facility Connection Process*

- 22 • While it is true that the connection process for micro-embedded facilities is typically
23 straightforward when capacity is clearly available, capacity limitations prevent the
24 connection of micro-embedded projects on certain feeders. It should also be noted
25 that it is not uncommon for a micro-embedded generation project to trigger a
26 transformer upgrade, pole changes or a system expansion. To avoid giving a false
27 impression that all micro-embedded connections are straightforward, the Board may
28 want to consider deleting the second sentence of Section 5.3.1.
- 29 • Hydro One recommends that the flowchart and the steps that describe the flowchart
30 be included as an appendix. The requirements that begin on page 15 relate to the

1 connection process for micro-embedded generation facilities and should be listed as
2 sub-requirements under Section 5.3.1 (ie. 5.3.1.1, 5.3.1.2, ...)

- 3 • The timelines on the flowchart need to be presented in a manner such that it can be
4 clearly understood what steps are being taken within the specified time periods.
- 5 • It would be helpful if the Board could clarify what constitutes a site assessment and
6 what activities would be permitted within the context of a site assessment.
- 7 • The current DSC requirements for connecting a micro-embedded generation facility
8 do not permit distributors to be able charge applicants for a CIA. At the time that
9 these requirements were established, there was clear policy supporting the connection
10 of renewable generation to the distribution system and few capacity constraints on the
11 system. To enable this objective, rules were created to expedite the connection
12 process and reduce connection costs for micro-embedded generation facilities.

13
14 With sufficient amounts of renewable generation now connected, there is less
15 available capacity on the system and additional assessment may be required to
16 determine if a micro-embedded generation facility project can connect. Hydro One
17 has encountered instances where a proponent has applied to connect a micro-
18 embedded generation facility to a feeder that is identified as being constrained but it
19 may still be possible to connect a discrete amount of generation pending the results of
20 a CIA. However, since the DSC prevents a distributor from being able to charge for
21 an assessment to connect a micro-embedded generation facility, a distributor cannot
22 offer to perform the assessment even if the applicant is willing to pay for the
23 assessment. This is an issue that Hydro One expects to become more prevalent and
24 believes that flexibility needs to be provided to allow for distributors to charge for
25 and perform this assessment in specific scenarios where capacity availability needs to
26 be confirmed.

27
28 *Screening Process for Small, Mid-Sized and Large Embedded Generation Facility*
29 *Projects*

- 30 • On page 17, the Board states that “*The screening process is intended to provide*

feedback to the applicant early in the process on any deficiencies in their submission that would prevent a distributor from proceeding with a review.” For clarity and to ensure that the activities performed by the distributor during this process are well understood, Hydro One suggests revising the statement as follows: “The screening process is intended to be an initial review of the application information and its objective is to identify any errors or omissions that would prevent a distributor from proceeding with a review.”

- Regarding the Screening Process flowchart on page 19, Note #1 states that a distributor needs to check for the availability of capacity *“to address system changes between the Pre-consultation phase and the CIA application.”* While this may be one reason for checking the availability of capacity, this is not the only reason that the check is performed as an application may be filed without submitting a pre-consultation request. Effectively, the availability of capacity needs to be checked prior to the distributor performing a CIA as any number of things may have changed from the time when capacity was first determined to be available. Hydro One does not believe that Note #1 is necessary.
- Step #6 of the Screening Process should indicate that distributor will review the application to determine if the applicant has provided all required information to perform a CIA and that this information appears accurate.
- Step #9 and #10 of the Screening Process should not use the word “confirm” when assessing capacity. This is simply a check that capacity is available. The CIA provides the only confirmation of available capacity and that the capacity is being allocated to the applicant.

Connection Process for Small Embedded Generation Facilities

- The first statement on page 22 should be deleted. The point of connection to the system (and not the size of the embedded generation facility) determines whether a connecting distributor or host-distributor CIA is required.

1 *Connection Process for Mid-Sized and Large Embedded Generation Facilities*

- 2 • The last statement of the first paragraph needs to be corrected. A distributor is
3 permitted 90 days to complete a CIA if the project is a large embedded generation
4 facility or a distribution expansion is required to connect a proposed embedded
5 generation facility.
- 6 • The terminology used in the flowchart should be reviewed. For example, the top
7 swim lane of the flowchart refers to “Other” LDCs, which is unclear. If an
8 applicant is proposing to connect a DER facility to an embedded distributor’s
9 system, the term host-distributor has been used to define the distributor whose
10 distribution system supplies the embedded distributor. There is no other
11 distributor that would be involved.
- 12 • The process that the transmitter and host-distributor need to follow after both have
13 received a CIA study application from an embedded distributor is not clear in the
14 top swim lane. It would appear that these studies are performed sequentially
15 when these activities can be performed concurrently. The flowchart also does not
16 contain steps for the transmitter, host-distributor or embedded distributor to notify
17 the other parties if any one of the parties determines that the project cannot be
18 connected to their system.
- 19 • The notes at the bottom of the flowchart do not relate to the Connection Impact
20 Assessment Process and should be deleted.
- 21 • Steps #14, 15, 16, 17, 18 and 19 only reference the transmitter. They should also
22 reference the host distributor.
- 23

24 *Agreements*

- 25 • On page 30, the Board should refrain from using references to terminology used
26 in the Transmission System Code (TSC) for a CCA in the DERCP, which is only
27 intended to apply to DER connections to the distribution system.
- 28 • It should be noted that a transmitter would not be legally bound by the DSC or the
29 DERCP, despite there being current requirements on the transmitter to
30 performance certain activities as part of the CIA process. Is the Board planning to

1 amend the TSC to require a transmitter to review a DER project connecting to the
2 distribution system as required by the DSC, when requested?

3 • Hydro One has the following comments regarding the Connection Impact
4 Assessment: Dual CIA/DTCA and CCRA/CCA Process flowchart:

5 ○ The Board has introduced the term “DTCA”, which is not defined in the
6 DSC or the DERCP. The term DTCA refers to the assessment that Hydro
7 One performs to assess connection applications for load displacement
8 generation and storage facilities. If the Board makes Section 6.2 of the
9 DSC applicable to load displacement generation facilities and storage
10 facilities through the use of the term DER, there is no need to reference
11 the term “DTCA”.

12 ○ The note associated with Step #1 of the process is not correct. This step
13 references the completion of the CIA and not the completion of the CIA
14 screening process.

15 ○ The process and flowcharts do not include steps for the scenario where the
16 proponent elects to obtain a more detailed estimate.

17 ○ The CCA timelines and activities are also not clear when there are
18 multiple entities involved, such as a transmitter and host-distributor, and
19 these parties have identified a scope of work and associated costs.

20

21 *Connection Cost Responsibility*

22 • Hydro One does not believe it is necessary to make reference to cost
23 responsibility within the DERCP when the proposed Section 6.2.31 amendment to
24 the DSC already establishes rules for cost responsibility.

25

26 *Option to Request a More Detailed Cost Estimate*

27 • The requirement that provides a DER proponent with the option to be able to
28 obtain a more detailed cost estimate has already been established in Section 5.1 of
29 the DERCP. It is unclear why this requirement is repeated again in Section 6.4.

1 *Build and Energization Process*

- 2 • Section 6.5 can be simplified by referring to Figure 7 (which is currently labeled
3 as Figure 5) for the Build and Energization process.
- 4 • Hydro One believes that distributors should be afforded some flexibility in terms
5 of how the Build and Energization process should be implemented. While it may
6 be appropriate to require distributors to follow certain requirements, certain
7 aspects of the process should not be standardized. For example, Step #16 process
8 states that a distributor has to witness and verify that applicant's commissioning
9 process. In reality, it may not be feasible for a distributor to do this and the
10 distributor will implement a process that requires the applicant to certify that they
11 have commissioned their facility and that the results satisfy the distributor's
12 connection requirements.
- 13 • The flowchart in Figure 7 seems to imply that steps #2, 3 and 4 are occurring
14 coincidentally when they are not. The timeline also implies that the connection
15 must happen within 60 or 180 days (depending on whether an expansion is
16 required) from these steps. However, this timeline does not begin until the
17 connection agreement is finalized and the ESA Authorization to Connect is
18 received. Hydro One recommends that the Board review the flowchart to confirm
19 that it accurately reflects the DSC requirements.
- 20 • Hydro One has the following comments regarding Table 2 on page 36:
 - 21 ○ Construction Agreements (1st Row) – This should actually read
22 “Connection Cost Agreement (CCA)”.
 - 23 ○ Construction Agreements (2nd Row) – This should actually read “Capital
24 Cost Recovery Agreement”.
 - 25 ○ Conditions of Service – “Distributor” and “Generator” should be listed as
26 the “Parties”. Transmitters do not have a Conditions of Service and are
27 not bound by distributor's Conditions of Service. In accordance with the
28 TSC, transmitters have OEB-approved Transmission Connection
29 Procedures and a transmission-connected Distributor is bound by those
30 procedures.

- Additional Operations Agreement – This should read “Additional Connection Agreements.” “Distributor” and “Generator” should be listed as the “Parties.” Hydro One would like to know if this type of agreement would be utilized to address connections where the existing standard form agreements are not suitable (See #10 in Section 1 of this letter). If that is the case, the Board may want to indicate that distributors have the ability to develop and execute specific agreements to address connections that are suitably covered by the standard templates in Appendix E of the DSC, such as storage facilities or load displacement facilities.

Glossary

- Since the terms specified in Section 7 relate to the templates/forms contained in Section 8, it may be more appropriate to include the Glossary as part of Section 8.
- For POC, the definition is not correctly depicted in the diagram. Both the PCC and POC should be the red point for the middle case, assuming this is a stand-alone DER connection.

Appendix A – Sample Protection Philosophy

- Any reference to “proponent” in the DERCP (including in Appendix A) should be replaced with “Applicant”. Whereas the term “Applicant” is a defined term, “proponent” is not a defined term in the DERCP; using these terms interchangeably could cause confusion.
- “Generator Facility” and “Energy Resource Facility” are not defined terms in the DSC or DERCP and should be replaced by the term “DER”.
- The protection philosophy document does not include certain key requirements, such as the IESO-mandated ride-through requirements and does not reference the new CSA 22.3 No. 9 standard. Since the protection philosophy document was created based on an older template developed by Hydro One, a more recent version can be provided that addresses these items, as well as other requirements for load displacement projects.

1 *Appendix B – Sample SLD*

- 2 • The Sample SLD was created based on an older template developed by Hydro
3 One, which has now been updated to address the IESO-mandated ride-through
4 requirements. It is recommended that the latest version be used as the Sample
5 SLD.

6
7 *Appendix C (i) – Preliminary Consultation Information Request*

- 8 • Under Project Intent, the reference to a program should be removed as a project
9 could still inject without a program contract.
- 10 • Under Project Intent, the option to select “Emergency Backup only when the grid
11 is not available” should be deleted. As specified in the proposed Section 6.2.1 of
12 the DSC, emergency backup generation facilities are not subject to Section 6.2,
13 nor are they subject to the DERCP.

14
15 *Appendix C (iii) – Preliminary Consultation Report*

- 16 • The report only provides an option for one connection point. There could be
17 cases where there are multiple feeder or voltage connection options for
18 connecting a proposed DER project. Hydro One recommends that the report
19 allow for the identification of different connection points (if options exist) and
20 provide the distributor with the ability to specify the preferred connection point.
- 21 • Under the heading “Process and Requirements for Connection Impact Assessment
22 (CIA)”, the statement immediately below should read as follows:

23
24 *“If you proceed to submit an application to connect your project ~~apply for a CIA~~*
25 *~~study, the following characteristics will likely apply~~ impact assessment studies*
26 *will likely need to be performed based on the information provided.* *This*
27 *information is provided for your guidance only and does not assume the outcome*
28 *of the CIA.*

1 *Appendix C (iv) – CIA Instructions and Guidance Document*

- 2 • It is recommended that this document be reviewed more thoroughly before
3 issuing for stakeholder comment. There are several inconsistencies in the
4 document and it may not align with the proposed DERCP and associated template
5 forms. For example:
- 6 ○ The Program Types in the Form B do not match the Program Types listed
7 in the instructions.
 - 8 ○ The instructions still reference the OPA.
 - 9 ○ The instructions uses definitions for PCC and POC that do not align with
10 the definitions in the DERCP
 - 11 ○ Form B uses a new term “POE” which is not defined in the instructions

12
13 *Appendix C (v & vii) – CIA Template and Sample Application*

- 14 • The CIA Template was created based on an older template developed by Hydro
15 One, which has now been updated to address IESO-mandated ride-through
16 requirements. It is recommended that the latest version be used as the CIA
17 Template.