DISTRIBUTED ENERGY RESOURCES CONNECTION PROCESS

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The following document defines the process for connecting distributed energy resources to Welland Hydro Electric System Corporation's (WHESC) distribution system as defined by Ontario Energy Board Documents Distribution System Code and Distributed Energy Resource Connection Procedures.

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1. Overview

a. Preliminary Consultation, exchange of information and capacity check
Planning, information exchange, capacity check

b. Connection Impact Assessment
Capacity allocation

c. Project Development
Project scope and cost
Connection Cost Agreement

d. Build and energization
ESA Review and Inspections
Build and Commissioning
Connection Agreements



DER Connection Process - Figure 1

Note:

Proponents applying for the connection of distributed energy resources to the WHESC's distribution system are the sole responsibility of WHESC. Small, mid-sized and large generation projects may involve a host transmitter or the Independent Electricity System Operator throughout the application and connection process. WHESC will remain the sole primary contact between the applicant and all transmission companies. All applicants requiring contracts with the Independent Electricity System Operator for exporting energy to the distribution system are required to complete the process with the IESO directly.

2. Connection Process Documents

The following documents are available on the WHESC's website for applicant use:

- Preliminary Consultation Information Request
- Connection Impact Assessment Application
- Connection Impact Assessment Agreement
- Connection Impact Assessment Fee Schedule
- Protection Philosophy Checklist
- Single Line Diagram Checklist
- DER Connection Cost Agreement (small, mid-sized, large)
- Micro-Embedded Generation Facility Connection Application
- Micro-Embedded Generation Facility Connection Agreement
- WHESC DER Technical Interconnection Requirements

The following documents are provided to applicants during the connection process:

- Preliminary Consultation Report
- Site Assessment Report
- Distribution Operating Map
- Offer to Connect, Connection Cost Estimate, Connection Cost Agreement (small, mid-sized, large)
- Micro-Embedded Generation Facility Offer to Connect

3. Regulatory Documents

- Distribution System Code – Ontario Energy Board website
- Distributed Energy Resources Connection Procedure – Ontario Energy Board website

4. Definitions

Applicant

An applicant means a person who approaches a distributor and requests to connect or information to connect a DER to a distributor's system.

Connection Impact Assessment (CIA)

A connection impact assessment means a study performed by or on behalf of the distribution company to assess the impact of a proposed DER connection on its system. The CIA will specify technical requirements for the connection.

Distributed Energy Resource (DER)

Distributed Energy Resource (DER) means, for the purposes of the DERCP, an electricity source or load that is connected to a distribution system, typically through a connection on the customer-side of an ownership demarcation point. Sources generate electricity (e.g. generation facilities, including energy storage facilities when discharging), while loads do not generate electricity (e.g. energy storage facilities when charging).

Generation Classification

DER Classification	Rating	Sample List of Studies
Micro	<= 12 kW	None
Small	(a) <= 500 kW connected on distribution system voltage < 15kV (b) <= 1 MW connected on distribution system voltage >= 15kV	1. Distributor 2. Host Transmitter (if applicable)
Mid-Sized	(a) <= 1 MW but > 500 kW connected on distribution system voltage <= 15kV (b) > 1 MW but <= 10MW connected on distribution system voltage >= 15kV	1. Distributor 2. Transmitter (if applicable)
Large	> 10 MW	1. Distributor 2. Transmitter 3. IESO System Impact Assessment

5. Processes

5.1 Micro Embedded Generation Facility

Micro-embedded generation facilities are equal to or less than 12 kW and are considered to pose a relatively low connection risk to the distribution system compared to larger generation facilities. The distributor (in accordance with Section 6.2.6 of the DSC) and applicant are expected to follow the process steps outlined below.

5.1.1 Process Steps

- The applicant proposing the installation of a micro-embedded generation facility with a non-exporting connection contacts the distributor and the Electrical Safety Authority (ESA) to gather connection and process information.

- The distributor makes the information available to the applicant in a timely manner. The information package will include the description of the connection process approvals needed by the distributor for connection; technical requirements including metering; contractual requirements (Micro-Embedded Generation Facility Connection Agreement); and application forms.

- ESA provides information on Electrical Safety Requirements.

- The applicant reviews relevant information from the distributor and the ESA on the project, and prepares:
  - an installation plan, including the size/type of generation facility (i. e. load displacement/net metering/isolated from distribution system/grid connection); and
  - a project plan.

- The applicant submits application to the distributor to review.

- The distributor makes an Offer to Connect the approved DER or provides its refusal to connect with reasons within 15 calendar days.

The distributor's review of an Application submitted for the connection of a micro-embedded generation facility at the existing customer connection will include:

  - typical requirement for new meter only;
  - check for service upgrade requirement;
  - check for significant amount of other generation on feeder;
  - response to the applicant with an offer to connect or refusal
  - response to applicant with requirements specific to the connection (typically requirements for metering) and costs, timing to implement, etc.

- The applicant decides whether to proceed with the connection process.

- The applicant notifies the distributor that it has decided not to proceed with the connection application.

- The applicant ends the process.

- The applicant must indicate its intention to connect within the 30-day validity period of the offer to connect. The applicant must work closely with the distributor, the ESA and any other organizations from which work, inspections, approvals, or licenses are required to prevent delays.

The activities will be planned in coordination with project milestones, and it is up to the applicant to initiate actions at the required times.

- Where required by the ESA, the applicant must file a notification to receive an ESA Authorization to Connect.

- The applicant reviews and signs the Connection Agreement.

- ESA provides an Authorization to Connect when the installation meets all the applicable requirements of the Ontario Electrical Safety Code as determined by ESA.

- The distributor completes any work required to facilitate the connection to the distribution system.

- The distributor works with the applicant to complete the connection including any testing and verification requirements.

5.1.2 For an existing customer connection where a site assessment is not required, the distributor will make an offer to connect within 15 days of receiving a completed application or provide reasons for refusing to connect.

5.1.3 The distributor will not charge to prepare the offer to connect outlined in section 5.3.2 above.

5.1.4 For new projects where a site assessment is required, the distributor will make the offer to connect within 60 days of receiving a completed application or provide reasons for its refusal.

5.1.5 In all cases, the offer will be open for 30 days after it is provided after which it may be revoked by the distributor.

5.1.6 If a site assessment is needed, the distributor may charge a connection fee deposit for preparing the offer to connect, which shall be payable in the form of cheque, electronic funds transfer, letter of credit from a bank.

5.1.7 If the distributor refuses the connection after a site visit, it will return the deposit within 30 days.

5.1.8 If the DER applicant does not accept the offer or withdraws its application, the distributor will keep the deposit.

5.1.9 If actual connection costs are less than the deposit, the distributor will refund the difference when the connection is completed and in service.

5.1.10 Interest shall accrue monthly on connection deposits made by way of cash or cash equivalents commencing on receipt of the total deposit required by the distributor. The interest rate shall be at

the Prime Business Rate as published on the Bank of Canada website less 2 percent, updated quarterly. Refunds, in whole or part, of deposits made in cash or cash equivalents will include interest on the refunded amount from the date of receipt.

5.1.11 A DER applicant must notify the distributor that it has satisfied all applicable service conditions and received all necessary approvals including confirmation of issuance of the authorization to connect from the ESA.

5.1.12 The applicant must enter into a Connection Agreement and pay the required connection costs, including costs for any necessary new or modified metering.

5.1.13 Once these conditions have been satisfied, the distributor shall connect the DER applicant's micro-embedded generation facility to its distribution system within 5 business days, or at such later date as agreed to by the DER applicant and the distributor.

5.1.14 The distributor must meet the five-day requirement for connection 90 percent of the time on a yearly basis.

5.2 Processes for Small, Mid-Sized, and Large Embedded Generation Facility Projects

The processes for small, mid-sized, and large embedded generation facilities are similar with the difference primarily being the number of impact assessments that may be applicable. Unlike the micro-embedded generation facility process, the connection process for small, mid-sized, and large embedded generation facilities includes a common screening process on application intake.

5.3 Screening Process for Small, Mid-sized, and Large Embedded Generation Facility Projects

CIA applications are subject to a review for completeness, i.e. a screening process. 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. Upon submission of an application, the distributor confirms if the application is substantially complete. A substantially complete application is a submission in which there is sufficient information provided for the distributor to process the application and complete the CIA. To aid an applicant in determining the information requirements that a distributor would typically deem as being sufficient information.

In order to facilitate timely processing of applications, payment for the applicable studies should be included with the submission when possible. Distributor is to identify required study cost in the Preliminary Consultation Report. The fees for required studies and assessments should be identified on the distributor's website and in the Preliminary Consultation Report.

If the application is incomplete, the distributor will return the incomplete part of the application to the applicant with a deficiency notification identifying the error and omissions in the application. Upon receipt of a deficiency notification, an applicant should review and correct the application and resubmit the revised application within 14 days. If the application is not returned in 14 days, the application may lose its position in the processing queue.

Upon receipt of a revised CIA application, the distributor must review the application within 7 days to determine if there is sufficient information for the distributor to process the application. If there is sufficient information, the submission is deemed substantially complete and the distributor will reconfirm that the distribution and transmission capacity that was available at the PCR stage is still available. Please note that capacity is not reserved until the CIA is completed. If capacity is available, the application is added to the processing queue and the distributor will proceed with a CIA. This begins the 60-day window for the distributor to return the completed CIA to the DER applicant where no distribution system reinforcement or expansion required. Also, a 75-day window of the receipt of the application where no distribution system reinforcement or expansion is required, and where a host transmission connection impact assessment is needed. In addition, a 90-day window of receipt of the application where a distribution system reinforcement or expansion is required, regardless of the need for host transmission connection impact assessment.

Once screening process confirms that an application is substantially complete, the following procedural steps are performed by the distributor.

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- The applicant initiates the CIA Application and gathers the current application form and Distributor's application requirements.

- The applicant submits the completed CIA Application package, including completed application form, payment for required studies, attachments, and application checklist.

- The distributor determines if this is the initial submission or a revised application submission.

- For initial submissions, the Distributor reviews the application for completeness within 14 calendar days.

- For revised application submissions, the Distributor reviews the application for completeness within 7 calendar days.

- For the completeness check outlined above, the distributor will review the application to determine if there is sufficient information provided by the applicant to process the submission. Once the distributor determines that the submission provides the necessary information to commence a CIA study, the application is deemed substantially completed.

- For submissions that are not substantially complete, the distributor will notify the applicant of the application deficiencies via email or letter if the applicant's email is not provided. The deficiency notification shall identify any errors and omissions in the application that would prevent the distributor from proceeding with the CIA. The notification shall outline the available remedies required to have the application deemed substantially complete.

- On receipt of a deficiency notification, an applicant should review and revise the application to address the deficiencies and resubmit the application. The process allows 14 days for the applicant to resubmit a revised application. If the applicant does not return the revised application within 14 days, the distributor may remove the application from the processing queue. If the application is removed from the queue, it may be treated as a new application once it is resubmitted.

- For submissions that are deemed substantially complete, the distributor will reconfirm transmission and distribution capacity availability. This is a secondary check to address the possibility of system changes between the Preliminary Consultation phase and the CIA application.

- If capacity is confirmed to be available, the distributor proceeds with the assessment.

- The distributor will add the application to the processing queue in the order in which they are deemed substantially complete and within 5 days notify the applicant of the date the application was deemed substantially complete.

- The date the submission is deemed substantially complete starts the timed-day window for the distributor to send the completed connection impact assessment to the applicant and proceed with

the connection agreement.

- If available capacity is not confirmed, the distributor will notify the applicant via email that capacity is not available to support the connection

- If there is no capacity available, the process concludes.

5.4 Small Embedded Generation Facility

The screening process ends when the application is deemed to be substantially complete. i.e., there is enough information to begin processing the CIA. The corresponding procedure steps for the distributor.

- The applicant initiates the CIA process and gathers the current CIA application form and distributor's application requirements from the distributor.
- The applicant submits the completed CIA Application package, including completed application form, payment for required studies, attachments, and application checklist.
- The distributor determines if this is the initial submission or a revised application submission.
- For initial submissions, the distributor reviews the application for completeness within 14 calendar days.
- For revised application submissions, the distributor reviews the application for completeness within 7 calendar days.
- For the completeness check outlined in steps 4 and 5 above, the distributor will review the application to determine if there is sufficient information provided by the applicant to process the submission. Once the distributor determines that the submission provides the necessary information to commence a CIA study, the application is deemed substantially completed.
- For submissions that are not substantially complete, the distributor will notify the applicant of the application deficiencies via email or letter if the applicant's email is not provided. The deficiency notification shall identify any errors and omissions in the application that would prevent the distributor from proceeding with the CIA. The notification shall outline the available remedies required to have the application deemed substantially complete.
- On receipt of a deficiency notification, the applicant should review and revise the application to address the deficiencies and resubmit the application. The process allows 14 days for the applicant to resubmit a revised application. If the applicant does not return the revised application within 14 days, the distributor may remove the application from the processing queue. If the application is removed from the queue, it may be treated as a new application once it is resubmitted.
- For submissions that are deemed substantially complete, the distributor will reconfirm transmission and distribution capacity availability. This is a secondary check to address the possibility of system changes between the Preliminary Consultation phase and the CIA application.
- The distributor will notify the DER applicant via email if there is no capacity available to support the connection.
- If there is no capacity available, the process concludes.
- If capacity is confirmed to be available, the distributor proceeds with the assessment.

- The distributor will add applications to the processing queue in the order in which they are deemed substantially complete and within 5 days will notify the DER applicant of the date the application was deemed substantially complete.

- The date the submission is deemed substantially complete starts the 60-day or 90- day window set out below.

- The distributor completes the CIA.

- The distributor will provide with its CIA assessment a detailed cost estimate of the proposed connection and an offer to connect within:

    - 60 days of the receipt of the substantially complete application where no distribution system reinforcement or expansion is required; or
    - 90 days of the receipt of the substantially complete application where a distribution system reinforcement or expansion is required

- The process moves onto the connection agreement phase.

5.5 Mid-sized / Large Embedded Generation Facility

Mid-sized and Large embedded generation facilities as classified in Table 1, are also subject to the screening process. Once they are deemed substantially complete, they will be assessed. The CIA process for the connecting distributor is essentially the same as for the small projects. If the connecting distributor is connected to transmitter's system and a study from the upstream transmitter to assess the impact on the transmitter's system. Large projects also require a System Impact Study from the IESO to assess their impact on the IESO-administered grid.

The distributor has responsibility for providing information to the upstream reviewers to ensure that the reviews occur as near to concurrently as is possible. In any case, the distributor is responsible for finishing its review within 60 days of the application being substantially complete for mid-sized embedded generation facilities and within 90 days of the application being substantially complete for large embedded generation facilities. Where a host transmitter CIA is also required, these timelines will be increased by a further 30 days. The corresponding procedure steps below is for the distributor

- The applicant initiates the CIA process and gathers the current CIA application form and distributor's application requirements from the distributor.
- The applicant submits the completed CIA Application package, including completed application form, payment for required studies, attachments, and application checklist.
- The distributor determines if this is the first submission or a revised application submission.
- For initial submissions, the distributor reviews the application for completeness within 14 calendar days.
- For revised application submissions, the distributor reviews the application for completeness within 7 calendar days.
- For the completeness check outlined above, the distributor will review the application to determine if there is sufficient information provided by the applicant to process the submission. Once the distributor determines that the submission provides the necessary information to commence a CIA study, the application is deemed substantially completed.
- For submissions that are not substantially complete, the distributor will notify the applicant of the application deficiencies via email or letter if the applicant's email is not provided. The deficiency notification shall identify any errors and omissions in the application that would prevent the distributor from proceeding with the CIA. The notification shall outline the available remedies required to have the application deemed substantially complete.
- On receipt of a deficiency notification, the applicant should review and revise the application to address the deficiencies and resubmit the application. The process allows 14 days for the applicant to resubmit a revised application. If the applicant does not return the revised application within 14 days, the distributor may remove the application from the processing queue. If the application is removed from the queue, it may be treated as a new application once it is resubmitted.

- For submissions that are deemed substantially complete, the distributor reconfirms transmission and distribution capacity availability. Capacity is not reserved for the project until the CIA has been completed. This is a secondary check to address the possibility of system changes between the Preliminary Consultation phase and the CIA application.

- The distributor notifies the applicant via email if there is no capacity availability to support the connection.

- If there is no capacity available, the process concludes.

- If capacity is confirmed to be available, the distributor proceeds with the assessment.

- The distributor adds the application to the processing queue and within 5 days notifies the DER applicant of the date the application was deemed substantially complete. The date the submission is deemed substantially complete starts the timed window for the distributor to return the completed CIA.

- The distributor prepares and issues an application to the transmitter for a CIA, a Study Agreement, and payment within 15 days of starting the assessment.

- The transmitter receives the application from the distributor along with the Study Agreement and payment. The Transmitter has 15 days to review the submission and notify the distributor

- The transmitter notifies the distributor of the Transmitter Assessment start date.

- Distributor notifies the applicant of the Transmitter Assessment start date.

- The transmitter executes and completes the assessment within 45 days. Where possible the transmitter completes this study concurrently with the distributor Assessment.

- The transmitter notifies the distributor on the results of the assessment.

- The distributor also completes its CIA.

- The distributor will provide the completed CIA to the applicant within:

  i. 60 days of the receipt of the substantially complete application in the case of a proposal to connect a mid-sized DER; and
  ii. 90 days of the receipt of the substantially complete application in the case of a large DER.

The applicant can use the assessment start date notification to monitor the distributor's and transmitter's assessment progress against the applicable 60-day or 90-day assessment window. The assessment period is increased by 15 days where a host distributor assessment is also required.

- The process moves on to the connection agreement phase.

6. Agreements

Once the distributor and transmitter have completed their respective CIAs, the process moves to the connection agreement phase. The DERCP provides process steps for the connections of DERs to the distribution system. Please refer to Appendix E of the DSC for the Requirements for Connection Agreements. The OEB does not specify requirements for the form of Connection Cost Agreements and Connection Cost Recovery Agreements.

6.1 Connection Agreement

A Connection Agreement between a distributor and a generator contains specific terms and conditions relating to connection and access to the distributor's distribution system. Appendix E of the DSC contains the standard connection agreements for micro-embedded generation facilities. It sets terms and conditions for small embedded generation facilities, mid-sized embedded generation facilities and large embedded generation facilities.

6.2 Connection Cost Agreement

The Connection Cost Agreement (CCA) sets out the scope of work and the associated cost the distributor will seek to recover from the Applicant to connect the project to the distribution system. Because the connection may also impact the transmission system, the transmitter will require a transmitter study and its equivalent to a CCA in response to the proposed DER project. The transmitter equivalent to a CCA is a Transmitter Capital Cost Recovery Agreement (CCRA). Where there is a CCRA the distributor will include the costs of any transmission work in its CCA as it is the responsibility of the distributor to contract for and pay the transmitter then collect from the customer. The steps below outline the interaction between the applicant, distributor, and transmitter when multiple assessments and agreements are involved. The corresponding procedure steps below is for the distributor.

Steps 1-3

The process starts with the applicant reviewing the completed CIA (s) from the distributor, the host distributor and if applicable, the transmitter.

- The applicant decides whether to cancel or proceed with the connection of the project.
- The applicant notifies the distributor in the case of a decision not to proceed with the project.
- The distributor notifies the host transmitter that the applicant is not proceeding with the project. The distributor removes the project from the application processing queue and the process concludes for the distributor.
- The host transmitter removes the project from the application processing queue and the process concludes for the host transmitter.

- The applicant should discuss with the distributor any concerns, questions and/or proposed adjustments that need to be agreed upon before the Connection Assessments expiration date(s). An extension may be granted by distributor if deemed necessary.
- The applicant must notify the distributor of its intent to proceed with the Project.
- The distributor prepares the Capital Cost Agreement (CCA) and submits a Transmitter Capital Cost Recovery Agreement (CCRA) Application to the transmitter.
- The transmitter prepares the CCRA within 45 days.
- The transmitter issues this CCRA to the distributor.
- The distributor reviews the CCRA and issues the distributor's CCA to the applicant.
- The applicant is expected to review the CCA and seek any clarification from the distributor if required.
- If the applicant agrees with the terms of the CCA, the applicant sign and issues payment to the distributor.
- The distributor acknowledges receipt of the CCA, assigns a Project Manager within 45 days, issues payment to the transmitter, and executes the CCRA and any other required agreements.
- The distributor shall review the detailed design within 1 month of signing the CCA.
- The transmitter acknowledges receipt of the CCRA and assigns a project manager within 45 days.
- The process moves onto the build phase after assignment of the Project Manager for the distributor and transmitter.

6.3 Connection Cost Responsibility (CCR)

Connection cost responsibility is covered in Chapter 3 and Appendix B of the DSC.
Option to Request a More Detailed Cost Estimate

6.4 Option to Request a More Detailed Cost Estimate

As noted earlier, the outcome of a CIA includes: the technical requirements of the connection; and an estimate of costs. The cost estimate at this point is usually based on typical pricing and the distributor will indicate the anticipated level of uncertainty for the estimate. As described in section 5.1.4, an applicant for a mid-sized or large generation facility may request a detailed cost estimate, at the applicant's expense. The applicant has the option of paying for the detailed cost estimate which would be intended to reduce the level of uncertainty to a lower amount before deciding on the project and before signing a connection cost agreement.

6.5 Build and Energization Process

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After the CCA is executed, the construction drawings are finalized, and the applicant can proceed to construction. A kick-off meeting is scheduled with an assigned project manager within 45 days of the CCA being signed. The Build and Energization process flowchart starts with the assignment of the distributor project manager at the end of the CCA phase. The corresponding process steps for the distributor, transmitter and Applicant follow thereafter. The corresponding procedure steps below is for the distributor.

- The distributor assigns a project manager who will coordinate a project kick-off meeting with the applicant and the host transmitter.
- The distributor's Project Manager will complete a project kick off meeting with all parties involved to discuss facility design, SLD, protections and controls, cost estimates and the project schedule including target in-service date.
- Applicant is to provide project design details including single line diagrams (SLDs) and the proposed project schedule including targeted in-service date.
- The DER Applicant must provide information to the ESA for the Plan Review process.
- ESA reviews the Plan and provides feedback.
- The Applicant shall, at transmitter's and distributor's request, provide a summary of testing results, including any certificates of inspection or other applicable authorizations or approvals certifying that any of the applicant's new, modified or replacement facilities have passed the relevant tests and comply with all applicable instruments and CSA C22.3 No 9.
- The Applicant begins construction of the project.
- The Applicant submits the Commissioning Plan to the distributor and the transmitter via the distributor.
- The distributor completes any additional work required.
- The transmitter completes any additional work required.
- The applicant files a notification with ESA.
- The Applicant finalizes the terms of the Connection Agreement with the distributor and signs the agreement.
- The distributor finalizes the terms of the Connection Agreement with host distributor/transmitter if required and signs the agreement(s).
- The host transmitter finalizes the terms of the Connection Agreement with the distributor and signs the agreement(s).

- The applicant proceeds with commissioning and testing of the generation facility.
- The ESA inspections through the construction process up to and including the issuance of an Authorization to Connect. ESA may issue a temporary Authorization to Connect according to its own processes.
- The distributor witnesses and verifies the applicant's commissioning process related to the connection facilities.
- The distributor (and transmitter where and when applicable) will grant the applicant permission to operator once all the distributor connection requirements have been satisfied and ESA Authorization to Connect have been received by the distributor.
- The connection process concludes when the DER is fully connected and operational.