



Transmission
Connection Procedures
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Transmission Connection Procedures

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HYDRO ONE NETWORKS INC. TRANSMISSION CONNECTION PROCEDURES

1.0 INTRODUCTION

On July 25, 2005 the Ontario Energy Board (the Board) issued revisions to the Transmission System Code (the Code). The revised Code came into force on August 20, 2005. The Code directs all licensed transmitters in Ontario to file with the Board, within one year of the revision date, a transmitter's connection procedures referred to in section 6.1.3 of the Code. Section 6.1.4 states that a transmitter's connection procedures referred to in section 6.1.3 shall include the following:

- (a) a Total Normal Supply Capacity Procedure;
- (b) an Available Capacity Procedure;
- (c) a Security Deposit Procedure;
- (d) a Customer Impact Assessment Procedure;
- (e) an Economic Evaluation Procedure;
- (f) a Contestability Procedure;
- (g) a Reconnection Procedure;
- (h) a Dispute Resolution Procedure;
- (i) an obligation on the transmitter to provide a customer with the most recent version of the Regional Infrastructure Plan or Integrated Regional Resource Plan referred to in section 3C, if any, that covers the applicable portion of its transmission system;
- (j) a schedule of all charges and fees that may be charged by the transmitter and that are not covered by the transmitter's Rate Order; and
- (k) reasonable timelines within which activities covered by the procedures referred to in paragraphs (a) to (g) and (i) must be completed by the transmitter or the customer, as applicable, including typical construction time for facilities.

Hydro One has developed these connection procedures to meet the direction in the Code,

Stakeholder Consultations:

On May 23, 2006 Hydro One provided a presentation on its draft customer connection procedures to the company's Customer Advisory Board (CAB). The CAB comprises representatives from Hydro One's main customer groups, including representation from:

- a number of large industrial customers and AMPCO
- a number of LDCs and the EDA
- APPrO
- the Consumers Council of Canada (CCC)
- the Ontario Federation of Agriculture (OFA)
- the Federation of Ontario Cottagers' Associations (FOCA)

Some comments on the procedures were provided at the meeting and members were also invited to submit written comments to Hydro One over the following several weeks.

Hydro One also presented the proposed connection procedures to the EDA Operations Council meeting on June 7, 2006. The EDA published a notice in its publication, EDA Weekly - Volume 6, Issue 24 – June 14, 2006. The notice explained that the proposed transmission connection procedures will be filed with the OEB and referenced a copy of the presentation from the Operations Council meeting. The notice invited members to provide comments regarding the proposed procedures to Hydro One by June 23, 2006. A copy of the Presentation was also sent to London Hydro for their review and comments, as London Hydro is not a member of the EDA. No comments were received by Hydro One.

Hydro One's Transmission Connection Process

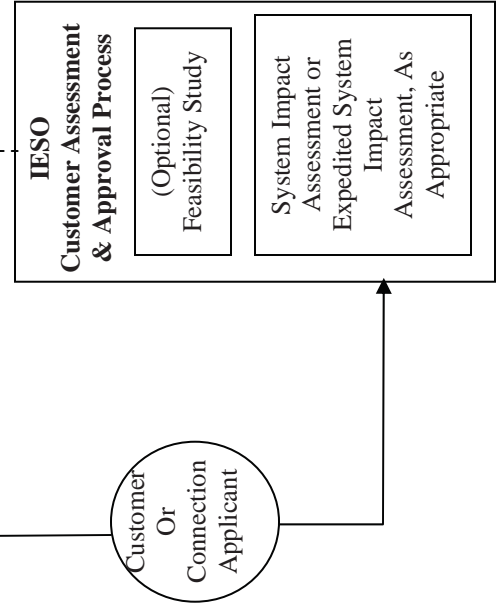
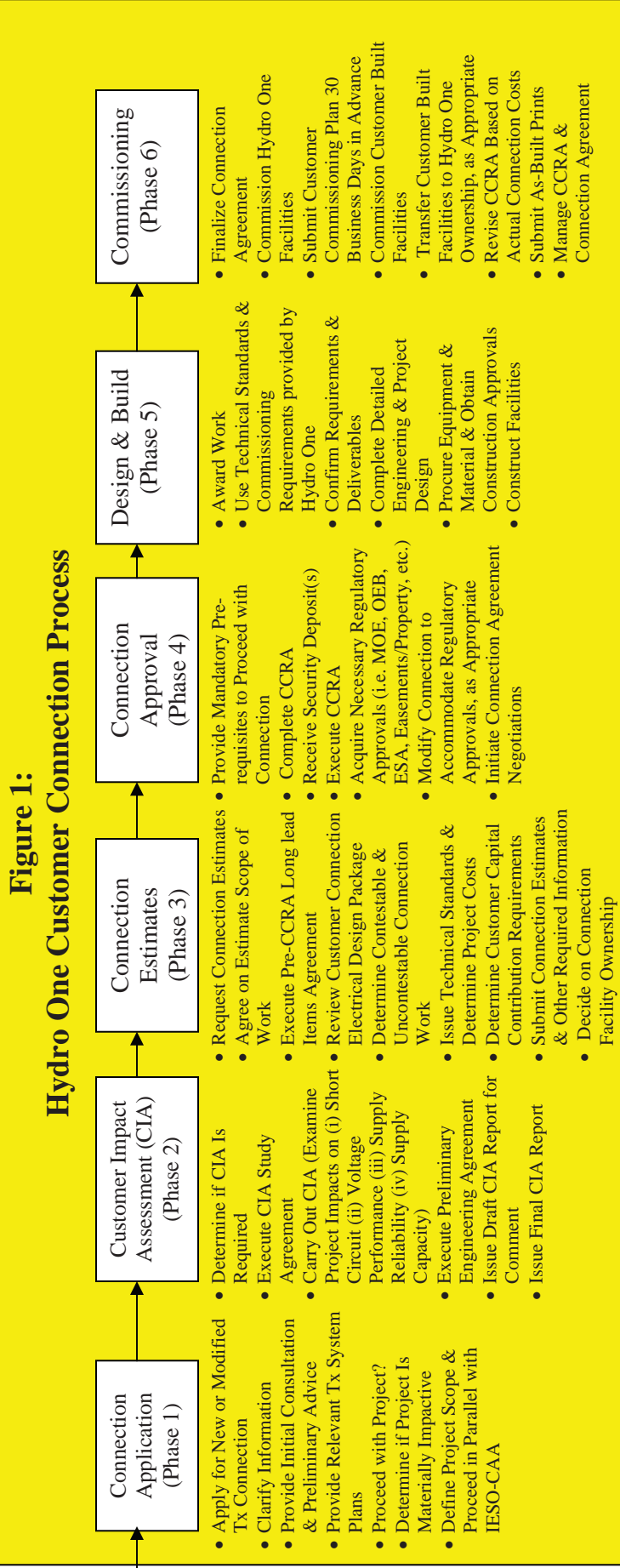
Hydro One has historically documented its transmission connection process to provide connection applicants with an outline of the steps involved for processing requests to connect to its transmission system or to modify existing connections. The process document includes a number of detailed process maps and the descriptions of the steps in the process. The detailed maps and descriptions are available on Hydro One Networks' website (www.HydroOneNetworks.com) for the information of customers or the Board.

In accordance with the Market Rules, anyone planning to establish or modify a connection to the IESO-controlled grid must obtain approval through the IESO's Connection Assessment and Approval (CAA) process. The CAA process allows the IESO to assess the impact of new or modified connections on the IESO-controlled grid. For complete details of the IESO's CAA process, refer to the IESO's "Market Administration Manuals, Part 2.10: Connection Assessment and Approval."

Hydro One's customer connection process is separate from the IESO's CAA process. However the two organizations work together with connection applicants to process applications. The customer connection process is initiated once a connection applicant requests a connection to the Hydro One transmission system. The applicant may elect to have a connection feasibility study carried out by its consultants or the IESO to identify general issues and concerns associated with a connection proposal that may affect its feasibility and to assist in defining the preferred connection alternative and arrangement of facilities at the transmission point of connection. Hydro One may also be retained, at cost, to carry out a connection feasibility study prior to initiating the customer connection process.

All connection applicants that register with the IESO for the CAA process must also register with Hydro One to estimate the cost and to schedule the resources needed to complete the connection to the Hydro One transmission system.

The customer connection process is summarized below in Figure 1.



→ **Required Path**

- - - - - **Optional Path**

Hydro One's "Customer Connection Process" and the Independent Electrical System Operator (IESO) "Connection Assessment and Approval Process" are separate processes that must both be implemented to obtain the necessary transmission system connection approvals.

Any Customer wishing to establish or modify a connection to Hydro One's transmission system must apply / register with both Hydro One and the IESO. However, Customers are strongly advised to initiate discussions with Hydro One prior to applying to the IESO for a connection assessment.

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Section 2.1

TOTAL NORMAL SUPPLY CAPACITY PROCEDURE

INTRODUCTION

Hydro One's Total Normal Supply Capacity Procedure was developed to meet the requirements of section 6.2.7 of the Transmission System Code (the Code).

Glossary

Total Normal Supply Capacity: The maximum amount of load that can be supplied by a connection facility. The total normal supply capacity at a connection facility is derived from the electrical rating of that facility. Each connection facility is classified as either a summer- or winter-peaking facility. The total normal supply capacity at a connection facility is calculated based on this classification.

Transmission connection facilities: Transmission connection facilities consist of transformation connection facilities and line connection facilities. As such, transformer stations and line taps dedicated to serving a limited group of transmission customers are considered to be transmission connection facilities. All references in the procedure apply to both transformation and line connection facilities unless otherwise noted.

PROCEDURE PHASES

Phase 1: Obtain Asset Information

The first step in the procedure is to compile a listing of all transmission connection pool facilities. Two separate lists are extracted from existing databases to identify transformation connection facilities and line connection facilities.

Phase 2: Compute Total Normal Supply Capacity

The objective of this phase is to determine the connection facility's total normal supply capacity. Total normal supply capacity is established differently for transformers and lines as outlined below, due to the inherent characteristics and configurations of each asset group. It is important to note that access to the capacity may be constrained by limits associated with the availability of other related facilities (e.g. feeder breaker positions, bus capacity, etc.) and may require an incremental capital investment. Specific details of the costs associated with utilization of this capacity will be provided by Hydro One on request.

Transformation Connection Facility

The total normal supply capacity for a transformation connection facility will be determined as follows:

- **Single transformer supply**: The total normal supply capacity will be the continuous rating of the subject transformer (i.e. the transformer nameplate rating with full cooling).
- **Dual transformer supply**: The total normal supply capacity will be the 10-day limited time rating (LTR) of the more limiting transformer (assuming loss of the larger one).

- **More than 2 transformers supplying a common bus:** The total normal supply capacity will be the sum of the 10-day LTR's of the "n -1" (i.e. the number of transformers minus 1) more limiting transformers (assuming loss of the largest one as the worst case).
- The critical season (winter or summer) would be indicated.
- The method applies to 3-phase transformers and single-phase transformers considered as three-phase transformer equivalents.
- Unless otherwise noted, a power factor of 90% is assumed.
- Hydro One may update the LTR value where new information that impacts the value becomes known.

Line Connection Facility

The total normal supply capacity for a line connection facility will be determined as follows:

- **Single circuit supply:** The total normal supply capacity will be the more limiting of the continuous rating of the subject line or the maximum load that can be supplied while meeting acceptable voltage levels as established by Hydro One.
- **Dual circuit supply:** The total normal supply capacity will be the more limiting of the continuous rating of the more limiting circuit or the maximum load that can be supplied with one critical line out of service while meeting acceptable voltage levels as established by Hydro One.
- The normal connection configuration will be used to determine total normal supply capacity.
- The critical season (winter or summer) will be indicated.
- Unless otherwise noted, a power factor of 90% is assumed.

Phase 3: Notify Customers of Total Normal Supply Capacity

The total normal supply capacity at a connection facility will be provided to customers as part of the available capacity notification (see Hydro One's Available Capacity Procedure). The information will be made available to customers for their relevant facilities in accordance with the requirements of the Code.

Customers are to confirm with Hydro One that the identified capacity for a particular facility is still valid at any particular point in time, and furthermore, that the figure is suitable to be used for that customer's particular application.

Phase 4: Maintain Data

The total normal supply capacity at each facility will be updated as required due to changes, additions and removal of facilities. The updated values will be input into Hydro One's available capacity process, which will initiate a review of the available capacities at the relevant connection facilities. Hydro One reserves the right to change the total normal supply capacity value at a connection facility at any time where new information impacting that value becomes known.

Section 2.2

AVAILABLE CAPACITY PROCEDURE

INTRODUCTION

Hydro One's Available Capacity Procedure was developed to meet the requirements of section 6.2.11 of the Transmission System Code (the Code). The procedure applies to customers that are connected and supplied directly from a transmission connection facility.

Glossary

Available Capacity: The available capacity at a connection facility is derived from the assigned capacities for all customers at that facility and the facility's total normal supply capacity. As indicated in the Total Normal Supply Capacity Procedure, each connection facility is classified as either a summer or winter peaking facility and hence the available capacity at a connection facility is also calculated based on this classification. The available capacity for a summer-peaking facility is the facility's total normal supply capacity in summer less the total assigned capacity at that facility. Similarly, the available capacity for a winter peaking facility is the facility's total normal supply capacity in winter less the facility's total assigned capacity.

Transmission connection facilities: Transmission connection facilities consist of transformation connection facilities and line connection facilities. As such, transformer stations and line taps dedicated to serving a limited group of transmission customers are considered to be transmission connection facilities. All references in the procedure apply to both transformation and line connection facilities unless otherwise noted. A transformer station will be understood to mean all transformation facilities related to one or more transformers acting together as a group to supply a common set of distribution feeders. A line connection facility may be a section of a transmission line dedicated to serving one or more transformation connection facilities or any contiguous subset of such section as determined by Hydro One.

PROCEDURE PHASES

Phase 1: Initiate Available Capacity Process

In this phase, the available capacity process is initiated either by a customer requesting Hydro One to assign available capacity to the customer (Step 1.1 below) or by Hydro One performing its own internal monitoring of the available capacity at a connection facility (Step 1.2 below).

Step 1.1: Customer application for available capacity will initiate the available capacity process.

A customer requiring additional capacity assignment at a connection facility will submit a customer application for available capacity to Hydro One. The application will be specific to a particular connection facility which will be identified in the application.

The customer's application will contain general company and contact information, as well as technical loading and capacity data, including amount of available capacity being requested, anticipated timeframe for the requested capacity, nature of the associated load and a 5-year load forecast. The load forecast will be for the customer's total peak load at the connection facility.

Step 1.2: Periodic monitoring of available capacity will initiate the available capacity process.

From time to time as required, Hydro One will initiate a review of the available capacity remaining at a connection facility to determine if the facility is approaching capacity.

Phase 2: Determine Available Capacity

In this phase, the capacity remaining at a connection facility that will be available for assignment to customers will be determined.

Step 2.1: Identify all customers at a connection facility.

For a given connection facility, all customers at the facility will be identified and listed. In this context, a “customer” will be understood to mean a transmission load customer, as defined in sections 2.0.18 and 2.0.40 of the Code. As such, a customer may be a local distribution company (LDC) or an industrial customer currently supplied by the connection facility. An LDC or industrial customer with facilities that are not currently connected but are intended to be connected to the connection facility is also a customer.

Step 2.2: Identify contracted capacity for each customer.

For each customer that has a signed contract (e.g. CCRA) with Hydro One for capacity at a connection facility, the customer will be recognized to have contracted capacity. The customer’s contracted capacity for a given year will be understood to mean the load identified for that year in the load forecast associated with the economic evaluation relating to the customer’s contract. The capacity will be in units of MW. Unless otherwise noted, a 90% power factor will be assumed.

The customer’s contracted capacity in future years is also included in the CCRA, which includes a summary of the results of the economic evaluation for all years covered in the economic evaluation period (see Section 2.5). The CCRA terminates at the end of the economic evaluation period. The customer will also be required to sign a Connection Agreement with Hydro One, which will continue to be in effect after the CCRA terminates.

Step 2.3: Identify historical load data for each customer.

For a customer without a signed contract with Hydro One for capacity at a connection facility, the customer’s assigned capacity will be equal to the customer’s highest rolling 3-month average peak load at that facility as per section 6.2.2 of the Code. The peak load data will be coincident with the total load for that customer at that facility only. Hydro One will compile the necessary historical load data and calculate this peak for each customer. This peak represents the customer’s assigned capacity based on historical loading.

The data used will be the customer’s historic monthly peak loads since May 1, 2002 or the most recent 60-month period, whichever is less, as per the Code. The data provided will represent the customer’s loading under normal operating conditions and exclude any anomalies such as temporary load transfers. The data will be provided in both MW and MVA. In the absence of

metering data for line connection facilities, Hydro One will determine the historic loading on a line connection facility based on historic loading data available for relevant transformation connection facilities. Where Hydro One reasonably believes that a customer is manipulating its load for the purpose of the determination of its assigned capacity, Hydro One may request that the Board review and re-determine that assigned capacity as per section 6.2.2 of the Code.

Step 2.4: Identify previous capacity assignments or capacity adjustment.

In addition to a customer's contracted capacity (where a contract exists) or the customer's assigned capacity based on historical loading (where no contract exists), any available capacity that has been assigned to a customer and that capacity has not been taken up by the customer within one year of the assignment is subject to cancellation by Hydro One, except where that capacity is part of a load forecast contained in a contract (e.g. CCRA) as per section 6.2.19 of the Code.

Step 2.5: Determine assigned capacity for each customer.

A customer's assigned capacity at a connection facility is by default the customer's assigned capacity based on historical loading (Step 2.3). However, Hydro One may apply an adjustment (Step 2.4) to the assigned capacity to arrive at an adjusted assigned capacity. The customer's final assigned capacity will be the aggregate of the customer's assigned capacity based on historical loading and any assigned capacity adjustments derived from available capacity that have been assigned to the customer and that have not been taken up by the customer or cancelled under Step 2.4. For all subsequent steps and phases, a customer's "assigned capacity" will be understood to mean the customer's final assigned capacity as determined in this step. Once capacity has been assigned to a customer, such assigned capacity will not be re-assigned without the consent of that customer, subject to the cancellation provision in Step 2.4.

Assigning capacity at a Hydro One connection facility is exclusively the role of Hydro One. A customer with assigned capacity cannot re-assign that capacity. In the event of a change of ownership of facilities from an existing customer to a new customer, Hydro One will, upon request, re-assign the capacity to reflect the change of ownership.

Step 2.6: Sum assigned capacities for all customers.

The total assigned capacity at a connection facility is calculated by summing the individual assigned capacities for all customers at that facility. Hydro One will take into account the normal size and shape of each customer's load, excluding anomalies such as temporary load transfers.

Step 2.7: Obtain total normal supply capacity of connection facility.

The total normal supply capacity of a connection facility will be obtained from the Total Normal Supply Capacity Procedure and will be in units of MW. Unless otherwise noted, a 90% power factor will be assumed.

Step 2.8: Calculate available capacity at connection facility.

The available capacity at a connection facility is calculated by subtracting the total assigned capacity at that facility from the total normal supply capacity of the facility. The available capacity will be in units of MW. Unless otherwise noted, a 90% power factor will be assumed. For transformation facilities, the available capacity reflects available transformer capacity only. Other capacity restrictions (e.g. feeder breaker positions) may limit access to the full available capacity of the transformers and will incur a cost to upgrade in order to access the transformers' full available capacity. Furthermore, the transformers' full available capacity may also be limited by feeder configurations.

Where additional feeder breakers are requested by a customer, the installation of such equipment does not constitute additional contracted capacity. The customer will have cost responsibility for the additional feeder breakers and a capital contribution is required for the full cost of installing the additional feeder breakers.

Phase 3: Assess Available Capacity

In this phase, Hydro One will assess the loading on a connection facility to determine whether the facility is approaching capacity and the need to initiate appropriate measures.

Step 3.1: Available capacity less than or equal to 25% of total normal supply capacity.

Hydro One will compare the available capacity at a connection facility with the total normal supply capacity to determine whether there is at least 25% of total normal supply capacity remaining as available capacity at that facility.

In order to conduct this assessment, Hydro One will reduce the available capacity at the facility by an amount equal to the aggregate of the capacities identified on all customer applications for available capacity at that facility. This will determine whether the available capacity at a connection facility is sufficient to meet all customer requests for additional capacity without causing the loading on the facility to approach capacity.

The loading at a facility is deemed to be approaching capacity if available capacity is less than or equal to 25% of total normal supply capacity. Where the loading at a connection facility is approaching capacity, Hydro One will conduct the steps outlined in Phase 4 of this procedure. Where loading is not approaching capacity, Hydro One will proceed based on whether any customer has applied for available capacity.

Step 3.2: Customer application for available capacity.

In the case where a customer has applied for available capacity, Hydro One will assign capacity to that customer as per Phase 5 of this procedure, based on demonstrated need and prorating of available capacity where required.

Phase 4: Implement Available Capacity Assessment

Implementation of the available capacity assessment is intended to ensure that all customers at a connection facility are informed when the loading at a facility is approaching capacity and are provided with a reasonable opportunity to make requests for any remaining available capacity. Where the loading at a facility is approaching capacity, the circumstances under which an expansion study will be initiated will also be established.

Step 4.1: Notify customers of available capacity remaining at connection facility.

Where the loading at a connection facility is approaching capacity, Hydro One will notify all customers at the facility in writing that the facility is approaching capacity and that the available capacity procedure has been triggered. Hydro One will provide this information using a Customer Notification of Available Capacity form. The form will identify the connection facility, the facility's summer/winter classification, total normal supply capacity and available capacity for the current year. Before disclosing this information, Hydro One will first obtain the consent of each customer at the connection facility to which the information pertains. Where such consent cannot be obtained, Hydro One may request guidance from the Board.

Step 4.2: Process customer applications for available capacity.

Upon notification that Hydro One's available capacity procedure has been triggered, a customer will have twenty (20) working days to decide whether or not to submit an application for available capacity. Applications received after this period will be considered separately from, and processed after the completion of, the current implementation of the available capacity procedure.

Step 4.3: Assess capacity needs of each customer applicant.

Hydro One's assessment of each applicant's capacity needs involves a review of the customer's historical loading, expansion plans, load forecast, and regulatory and other issues.

The required information for confirming customer need for available capacity is as follows.

- The customer must provide all the data specified in the Customer Application for Available Capacity. This includes the customer's forecast of future peak load demand.
- The customer's load forecast (1 - 5 years) must be in line with its historical usage. If this is not the case, the customer must provide information on specific expansions.
- The Customer must provide supporting documentation for its load forecast. Supporting documentation could be a letter from a senior manager or the customer's business plan.
- The Customer's expansion plan must be in line with its historical performance, the sector performance, and the general economic outlook for the province of Ontario.
- The Customer must identify all government and regulatory issues related to its request for available capacity.

Step 4.4: Initiate expansion study.

Where Hydro One deems necessary, customers will be requested to participate in an expansion study. Hydro One is not restricted to initiating an expansion study in this step of the process only as it may initiate a planning study anytime that it considers it necessary to ensure adequate supply to accommodate the assigned capacities of all customers at a connection facility. Where Hydro One proposes to initiate an expansion study on a connection facility, it will notify all customers at that facility and at adjacent facilities, and post on the appropriate website(s), a notice of Hydro One's proposal to initiate an expansion study at that facility and of the right of each notified customer to apply to Hydro One in writing to reconfigure any portion of its load to any new facility that may be constructed. Hydro One will review any such application and negotiate in good faith with the customer to determine the terms and conditions that would govern any such reconfiguration, in accordance with the all relevant provisions in the Code. An expansion study may lead to a customer contract (e.g. CCRA) for a modified or new connection facility. Upon completion of an expansion study, Hydro One will advise all previously notified customers of the available capacity on all relevant existing and new connection facilities before and after the expansion.

Phase 5: Implement Available Capacity Assignment

Hydro One will assign capacity to each customer based on the customer's need for available capacity unless Hydro One can demonstrate that the available capacity will not meet the customer's needs. When there are more than one customer applications, capacity will be assigned in proportion to each customer's respective needs, using Hydro One's criteria for assigning available capacity.

Step 5.1: Assign available capacity to each customer applicant.

Where there is more than one customer applying for available capacity at a connection facility, available capacity will be assigned in proportion to customers' demonstrated needs, as per Hydro One's criteria for assigning available capacity. The criteria are:

- The submission date of the customer application for available capacity.
- Customer's confirmed need for available capacity.
- Aggregate of the confirmed needs for all customers at a connection facility versus the facility's available capacity. If the total of the confirmed needs is greater than the available capacity, Hydro One will assign available capacity on a pro-rated basis taking the following into account:
 - (a) Criticality of the customer need based on the criteria for confirming customer need for available capacity.
 - (b) Timing for the confirmed need.
 - (c) Type of customer.
 - (d) Extenuating circumstances.

The capacity assignment will be for a fixed amount for a one-year period. Capacity will not be assigned for backup purposes. Assigned capacity will be in units of MW. Unless otherwise noted, a 90% power factor will be assumed.

Once capacity has been assigned to a customer, such assigned capacity will not be re-assigned without the consent of that customer, subject to the cancellation provision in Step 6.3. Where a customer provides its own connection facility to serve new load, the transmitter will not assign capacity on the relevant Hydro One owned connection facility to that customer in relation to the new load as per the Code.

Assigning capacity at a Hydro One connection facility is exclusively the role of Hydro One. A customer with assigned capacity cannot re-assign that capacity. In the event of a change of ownership of facilities from an existing customer to a new customer, Hydro One will, upon request, re-assign capacity to reflect the change of ownership. The one-year period identified in the cancellation provision in Step 6.3 continues to run regardless of any change in ownership.

Where capacity at a connection facility is assigned to Hydro One Distribution, Hydro One Brampton or any other entity that is a Hydro One affiliate, Hydro One will advise all customers at that facility of the capacity assignment. This requirement is regardless of whether such assignment causes the loading at the facility to approach capacity as per section 6.2.13 of the Code.

Phase 6: Implement Capacity Monitoring

In this phase, the available capacity at a connection facility is monitored on an ongoing basis. This involves monitoring the loading at the facility as well as customers' usage of their assigned capacities. Monitoring will be done on an ongoing basis and an available capacity assessment will be performed as required.

Step 6.1: Maintain records of assigned capacities and available capacity.

Hydro One will maintain a record of each customer's assigned capacity and the available capacity at a connection facility. Upon request, Hydro One will provide a customer with the customer's assigned capacity at a connection facility and the available capacity at that facility. To protect confidentiality, only a customer's own assigned capacity will be made available to the customer.

Step 6.2: Monitor usage of assigned capacity for each customer.

Hydro One will monitor each customer's monthly peak loads in MW and MVA. Hydro One will compare the customer's loading with the customer's assigned capacity as required.

Step 6.3: Extend or cancel any unused assigned capacity.

Where available capacity has been assigned to a load customer and that capacity has not been taken up by the customer within one year of the assignment, Hydro One will cancel the assignment as per section 6.2.19 of the Code. This capacity will be treated as available capacity and Hydro One will notify all other customers served by the connection facility of the cancellation of the assignment. Hydro One may, upon request, extend the capacity assignment to beyond the one-year period where circumstances warrant. This step does not apply to contracted capacity that is part of a load forecast contained in a contract.

Where unused assigned capacity is extended beyond the one-year period for Hydro One Distribution, Hydro One Brampton or any other customer that is a Hydro One affiliate, Hydro One will notify all customers at the connection facility of the extension as per section 6.2.21 of the Code.

Step 6.4: Monitor usage of assigned capacity for potential by-pass

Where Hydro One determines that a customer has transferred assigned capacity without notifying Hydro One or the OEB of its intention to by-pass an existing connection facility, Hydro One will notify the customer and the OEB of a potential by-pass situation and the revenues lost by Hydro One on the connection facility in proportion to the load transferred for the given time period. If the customer does not intend to by-pass Hydro One's facilities, the customer must notify Hydro One and the OEB within 30 days of receiving Hydro One's notification of potential by-pass, that it has no intention of by-passing Hydro One's connection facility. In addition, the customer will transfer the load back to the existing Hydro One connection facility within an agreed time period and provide Hydro One with a payment for the lost revenues, adjusted appropriately to reflect the time value of money.

Projection by Hydro One of available capacity for future years.

Hydro One may, from time to time, and depending on its own information needs and those of customers, prepare a projection of available capacity for a future year or years. The methodology for making such a projection would be similar to that described in Phase 2 above, but would by necessity be based on best available information and assumptions, some of which are described below.

- For a given connection facility, any projections would be based on estimates and assumptions regarding transmission customers who may be connected to the facility in future years, including assumptions about any customers who are not currently connected but may become connected in the future.
- For each customer that has a signed contract (e.g. CCRA) with Hydro One for capacity at a connection facility, the projection will include the contracted capacity for future years. Where information exists about customers who may in the future have such a contract, assumptions and estimates will be made about their future contracted capacity.
- For customers without a signed contract with Hydro One for capacity at a connection facility, the customer's assigned capacity in the future will be estimated based on the projected highest rolling 3-month average peak load at that facility as per section 6.2.2 of the Code (ie what would eventually become the customer's "historical loading").
- Information regarding capacity cancellations, adjustments and additional requirements will likely not be available and hence would not be reflected in such projections.
- The total assigned capacity at a connection facility would be projected by summing the individual assigned capacities for all customers at that facility.
- The total normal supply capacity of a connection facility would be projected as well, based on best available planning information. The projected future available capacity would then be estimated by subtracting the estimated future assigned capacity from the projected total normal supply capacity of the facility.

While the projection of future available capacity is intended to be helpful to Hydro One and to its customers, it must be noted that such estimates are not required under the Transmission System Code, and given the quality of the information used to prepare them, they should not be relied upon for planning purposes.

Section 2.3

SECURITY DEPOSIT PROCEDURE

INTRODUCTION

Hydro One's Security Deposit Procedure was developed to meet the requirements of section 6.3.11 of the Transmission System Code (the Code). The purpose of the security deposit is to provide Hydro One with some means to mitigate risk to transmission connection pool customers during the construction phase of a connection. Hydro One has the right under the Code to retain all or part of the Security Deposit when it has expended funds for a new connection to its transmission system or made modifications to its transmission system to accommodate a customer and the customer does not connect or fails to reimburse Hydro One for funds expended on its behalf.

Glossary

Agreement: means an agreement made between the customer and Hydro One where Hydro One is required to:

- (i) order long-lead time equipment
- (ii) perform engineering work; and/or
- (iii) construct new or modified network or connection facilities,

in relation to a connection application from the customer where new or modified network or connection facilities need to be constructed.

Material Change in Financial Risk: Consistent with the definitions in the Ontario Securities Act (R.S.O. 1990), "material change in financial risk" means a "material change" or "material fact" as defined below:

"Material change"

- (i) a change in the business, operations or capital of the connecting customer or its corporate parent (where a parental guarantee is being provided) that would reasonably be expected to have a significant effect on the market price or value of any of the securities of the connecting customer or its corporate parent, or that would be considered important by a reasonable investor.
- (ii) a decision to implement a change referred to in subclause (i) made by the board of directors or other persons acting in a similar capacity or by senior management of the connecting customer or its corporate parent who believe that confirmation of the decision by the board of directors or such other persons acting in a similar capacity is probable.

"Material fact" when used in relation to a connecting customer or its corporate parent, means a fact that would reasonably be expected to have a significant effect on the market price or value of any of its securities; ("fait important")

SECURITY DEPOSIT POLICY

Requirement for Security Deposit:

Hydro One may require each generator customer and load customer to provide a security deposit at or before the time of executing a Connection and Cost Recovery Agreement (CCRA).

Amount of Security Deposit:

A. Generator and Load Customer

Table 1 prescribes the amount of security that a Generator or Load Customer will be required to provide Hydro One with respect to new or modified connection or network facilities.

B. Customer Requiring Capacity in the Future

In accordance with section 6.3.9 of the Code, the amount of the capital contribution to be obtained from the current customer and the amount or value of the security deposit to be collected from the future customer shall be determined using the economic evaluation method approved by the Board as set out in section 6.5 of the Code, the load forecasts of both customers and the methodology for attributing that capital contribution as described in sections 6.3.14, 6.3.15 or 6.3.16 of the Code.

Form of Security Deposit:

The Customer shall provide any required security deposit in the form of cash, letter of credit or surety bond, or a combination thereof or such other form on which the customer and Hydro One may agree. If the Customer has an affiliate with a good credit rating and the affiliate is willing to provide a guarantee towards the Customer's indebtedness, Hydro One may consent to the use of the affiliate's credit information when determining the Customer's security deposit requirements, provided that if the Customer or affiliate experiences a material change in financial risk during the construction phase of the project or prior to the in-service date, the Customer must advise Hydro One within 5 business days of the change, and Hydro One shall have the right to require an additional security deposit. The additional security deposit at the Customer's option may be in the form of cash, letter of credit or surety bond, or a combination thereof. The customer shall have 5 business days to comply with Hydro One's request.

Security Deposits in the Form of Cash

The Code states in section 6.3.11 that when a customer provides all or any portion of a security deposit in the form of cash, upon returning the security deposit, Hydro One shall pay interest to the customer at the following rates:

- (a) for the period between the date on which the security deposit was provided by the customer and the date on which the security deposit is required to be returned by Hydro One, at the average over the period of the Prime Business Rate as published on the Bank of Canada website, less two percent; and
- (b) for the period after the date on which the security deposit is required to be returned by Hydro One, the Prime Business Rate as published on the Bank of Canada website, plus two percent.

Right to Retain All or Part of a Security Deposit

Hydro One may retain all or a part of a security deposit that has been given in relation to the construction or modification of connection or network facilities in any one or more of the following circumstances:

- (a) where the customer subsequently fails to connect its facilities to Hydro One's new or modified connection facilities;
- (b) where the customer terminates an Agreement or Hydro One terminates an Agreement as a result of a breach of the Agreement by the Customer;
- (c) where the customer fails to make any payment due under the terms of an Agreement;
- (d) to remedy any non-financial breach by the customer of an Agreement made by the parties in relation to the construction or modification of connection or network facilities.

Hydro One shall not otherwise retain a security deposit given in relation to the construction or modification of network facilities unless the Board has first determined under section 6.3.5 of the Code that exceptional circumstances exist so as to reasonably require the customer to make a capital contribution for the construction or modification of network facilities.

Returning Security Deposits

Hydro One shall return security deposits in any of the following circumstances:

- (a) if the security deposit is in the form of cash, Hydro One shall return the security deposit to the customer, together with interest, less the amount of any capital contribution owed by the customer, once the customer's facilities are connected to Hydro One's transmission facilities;
- (b) if the security deposit is in a form other than cash, Hydro One shall return the security deposit to the customer once the customer's facilities are connected to Hydro One's transmission facilities and any capital contribution owing has been paid;
- (c) pursuant to section 6.3.5, where a customer requests that Hydro One not commence with construction pending direction from the Board, Hydro One must promptly return to the customer any outstanding security deposit related to the construction of the new or modified connection, unless the customer and Hydro One agree otherwise, less any expenditures made or committed by Hydro One prior to the request.

For customers requiring capacity in the future included under section 2.2 (B) of this procedure, Hydro One shall return security deposits in any one or more of the following circumstances:

- (a) where the security deposit is in the form of cash, Hydro One shall return the security deposit to the future customer at the time of connection of its facilities to the connection facility, together with any interest owing, less the amount of the future customer's capital contribution;
- (b) where the security deposit is in a form other than cash, the transmitter shall return the security deposit to the future customer upon receipt of the future customer's capital contribution;
- (c) when a future customer requiring capacity provided security in relation to network costs and subsequently requests that Hydro One not commence with construction, pending direction from the Board under section 6.3.5 of the Code, unless the customer and Hydro One agree otherwise.

Additional Security Deposits

A customer may be required to provide additional security deposits at any time after Hydro One has executed an Agreement if (i) the customer is in default of a term of such an agreement and has not remedied the default within the cure period specified in the agreement or, if no cure period is specified in the agreement, a reasonable cure period; or (ii) if there is a material change in financial risk associated with a proposed new or modified connection. When a customer becomes aware of a material change in financial risk it must advise Hydro One of the change within 5 business days. Failure to do so will be considered a material breach of the agreement.

In a case where more than one customer triggers the need for a transmission upgrade, a customer may be required to provide an additional security deposit or extend the term of a security deposit after Hydro One has executed Agreements and collected initial security deposits. This would occur when a customer's proportional share of the upgrade cost increases because of other customer projects being delayed or cancelled that would have been contributors to the upgrade as originally planned and calculated in the Agreements.



Table 1:
Security Deposit Requirement During Construction for Generator and Load Customers

Credit Rating	Security Deposit Requirement	Rationale for Security Amount
AAA- and above, and LDC's with an acceptable credit rating	None	Highest credit rating. Long term stability supported by municipal tax base.
BBB- to AA+ (investment grade)	25% of MNE	Good credit rating.
BB- to BB+ (below investment grade)	50% of MNE	Fair credit rating just below investment grade, possibly caused by temporary or cyclical factors.
B+ or below, or unrated	100% of MNE	Low or no credit rating.
Future Customers (including LDC's) (Section 6.3.9 of the Code)	100% of incremental costs required to install additional capacity	Up to 5 year lead time for connection requires security deposit if customer does not connect.

Maximum Net Exposure (MNE) is equal to Hydro One's estimated Connection and Network Costs, less Capital Contribution. Security deposit requirements may be reduced if cost recovery is reasonably assured through confirmation by the OPA, IESO, or OEB, or if customer credit-worthiness is established through means other than a bond rating, such as Altman-Z or Kaplan-Urwitz credit scores or other means. Any adjustments to the security deposit requirements are at Hydro One's sole discretion.

PROCESS OVERVIEW

The process for establishing security deposits integrates with the over-all customer connection process and is usually done in conjunction with the development of a Connection and Cost Recovery Agreement (CCRA). In situations where it is necessary to advance work or order equipment to meet critical in-service dates, Hydro One may consider proceeding with a letter agreement requiring a security deposit for 100% of the related costs minus any advance payments made by the customer prior to signing a CCRA. The letter agreement will include a date by which the CCRA must be signed.

Customer Application

When a customer submits a connection application to Hydro One, after the customer and Hydro One have agreed to the scope of the project and a Customer Impact Assessment has been completed, Hydro One will provide the customer with an estimated cost of the work to complete the connection. Included with the estimate will be information on whether a security deposit is required and if required, the amount of the security deposit. The amount of the security deposit will be affected by the amount of contestable work the customer elects to carry out on its own or through a third party. The customer has an opportunity subsequent to receiving this information to decide if it wants to proceed with the project or not. If the customer decides to proceed, a CCRA is negotiated between the customer and Hydro One.

Security Deposit Terms within a Connection and Cost Recovery Agreement

A CCRA contains the terms of the agreement between the customer and Hydro One for the construction and connection to a new or modified facility, including the terms of its financial repayment. It includes the scope of the project and the work each party is responsible for completing. The estimated cost of work and which group is responsible for paying those costs are identified in the Agreement.

Where costs for construction or modification of connection or network facilities can be attributed to more than one customer requiring the new connection or modification, the total shared connection and network costs will be allocated on a prorated "per MW" basis as a percentage of the total capacity between the customers requiring the new or modified connection, or on such other basis as may be agreed to by the parties. For example, assuming each requires its own dedicated connection facilities, generator A with a capacity of 200MW and generator B with a capacity of 300MW for a total of 500MW would share network costs on a basis of 40% (200/500) for generator A and 60% (300/500) for generator B.

The amount of security deposit to be paid will be stipulated in the CCRA, as well as when it will be paid and the rules concerning how and when it is returned or retained by Hydro One in accordance with this document and the Code. The security deposit will normally be paid by the time the customer signs the CCRA.

Security Deposits and Progress Payments during Project Construction

During the construction phase, costs will be incurred by Hydro One on behalf of the customer. Where there is a capital contribution required, the customer will be expected to make progress payments towards the capital contribution in accordance with an agreed payment schedule in the CCRA. The progress payment schedule will typically coincide with the costs incurred for the project. The total capital contribution payable will be deducted from Hydro One's estimate of the total of the network and connection costs for the new connection or upgrade for the purposes of calculating the Maximum Net Exposure (MNE). The MNE represents Hydro One's at-risk amount during the construction phase. For the purposes of calculating the security deposit, the MNE will be a one-time only calculation and will not be adjusted on an ongoing basis unless there is a material change in the customer's financial risk. The MNE will be calculated shortly before or when the CCRA is being drafted.

The customer will provide its credit rating, taken from any of the reputable credit rating agencies, to Hydro One, which will determine the amount of security deposit required in accordance with Table 1. The amount of security deposit required using Table 1 may be reduced if cost recovery is reasonably assured through confirmation by the OPA, IESO, or OEB, or if customer credit-worthiness is established through means other than a bond rating, such as Altman-Z or Kaplan-Urwitz credit scores or other means. Any adjustments to the security deposit requirements are at Hydro One's sole discretion.

In the event of a Material Change in the Financial Risk of a customer, for example a credit-watch or lowered credit rating, Hydro One will have the right to request an increased security deposit. The customer is required to advise Hydro One of a material change in the customer's financial risk within 5 business days.

Example of Security Deposit Calculation: This example is for a hypothetical customer with a BB+ credit rating with estimated network and connection costs of \$20M and capital contribution of \$4M. The Maximum Net Exposure (MNE) is \$16M (\$20M minus \$4M). The security deposit requirement is 50% of the MNE which amounts to \$8M. Security deposit can be provided in the form of cash, letter of credit or surety bond, as may be selected by the customer, or in such other form as the customer and the transmitter may agree.

Return of Security Deposit after Project Completion

Hydro One will return the customer's security deposit after the construction phase of the project is complete and the customer has connected its facilities to Hydro One's transmission facilities. The CCRA will provide a timeline by which the customer is expected to have its facility in-service.

Security deposits provided by future customers will be returned after their facilities are connected to Hydro One's new or modified facilities.

Section 2.4

CUSTOMER IMPACT ASSESSMENT PROCEDURE

INTRODUCTION

Hydro One's Customer Impact Assessment (CIA) Procedure was developed to meet the requirements of section 6.4.1 of the Transmission System Code (Code). As outlined in the Code, a transmitter is required to carry out CIA studies under certain circumstances and the following points are to be noted:

1. A CIA study is limited to assessing the impact of the new or modified connection on the supply at the transmission connection/delivery points to other transmission customers. It is the responsibility of other transmission customers to determine the consequential impacts and modifications on their own electrical facilities and to advise Hydro One, the IESO, the Board and the connection applicant accordingly. Hydro One will issue a draft of the CIA report to customers who may be potentially impacted by the connection and those customers are required to provide preliminary feedback. Hydro One will include the unedited version of this feedback in the final CIA report and Hydro One will not take responsibility for the contents of the other transmission customers' feedback.
2. The decision on the level of modifications at customers' facilities that can be attributed to the new or modified connection, as well as the assignment of cost responsibility for the identified modifications, are outside the scope of this procedure.

REQUIREMENT FOR A CIA STUDY

A Customer Impact Assessment study may be required for any new or modified connection to the IESO-controlled grid. Hydro One will undertake a CIA study for all cases where (i) the connection is one for which the IESO's CAA process requires a System Impact Assessment (SIA) or (ii) Hydro One determines that the connection may have a material impact on existing customers. The scope of the CIA study and report will be project-specific, depending on the complexity of the connection project and the extent of its impact on other transmission customers. For renewable energy projects awarded by OPA in accordance with O.Reg 326/09, the joint SIA/CIA phase of the process shall be completed within 150 days after the IESO and the transmitter deem the application complete for the purpose of completing SIA/CIA studies.

Where the IESO's CAA process triggers an SIA, the CIA procedure is mandatory. Where no SIA is required by the IESO, Hydro One may waive the requirement for a CIA study if the transmitter determines during its preliminary review that the new or modified connection will not materially impact other transmission customers. The transmitter may consult with the IESO prior to waiving the requirement for a CIA study. In cases where the requirement for a CIA study is waived, the transmitter will notify existing customers in the vicinity, advising them of the proposed new connection or modification and of the transmitter's decision not to carry out a CIA on the basis that no material customer impact is expected.

As a guideline, a CIA study may not be required for the following types of connection proposals:

- Like-for-like replacement of existing connection facilities where there is no connectivity change on the transmission system

- Transmission connection facilities where;
 1. no generation is being added;
 2. there is no significant change in system impedance;
 3. the load does not include significant reactive power requirements such as those associated with large motors, furnaces or other similar facilities; and
 4. there is no significant configuration change (e.g. adding in-line breakers, additional breaker diameters), particularly any such changes that may trigger other customers to modify their protections.

- Addition of feeder breakers at system voltages less than 50 kV.

STEPS FOR CONDUCTING A CIA STUDY

The following are typical steps for conducting a CIA study, and are subject to a CIA Agreement.

Step 1: Customer Connection Application & Acknowledgement

- The CIA procedure is initiated through the connection applicant submitting a Connection Application to Hydro One.
- The applicant will submit a Connection Application to Hydro One via Email, Mail, Fax or Courier.
- Hydro One will acknowledge receipt of the Connection Application by Email, Mail, Fax or Courier.

Step 2: Provision of Data and Information for CIA Study

- After confirming receipt of the Connection Application, Hydro One will review the submitted material and request the applicant to provide additional information or clarification of submitted material, if required. This may involve a meeting or conference call with the customer.
- The connection applicant will provide missing information or clarification of submitted information to Hydro One upon request.
- If specific information cannot be provided, Hydro One may propose suitable typical values to be used in the CIA study in this case. It is the responsibility of the connection applicant to ensure that facilities that are later installed have values that are acceptable to Hydro One and the IESO.

Step 3: CIA Agreement

Hydro One and the applicant will execute a CIA Agreement to cover the following:

- CIA study scope including schedule and reporting format.
- Provision of data required to conduct the CIA study.
- CIA study cost, invoicing and payment schedule and method. Hydro One will provide the cost of the study at the time of the CIA Agreement in accordance with the Schedule of

Charges & Fees or based on an estimated cost depending on the complexity of the proposed connection.

- Confidentiality and information sharing including distribution of study results & report to other parties.

Step 4: Customer Impact Assessment Prerequisites

Hydro One's CIA study will be initiated once:

- the customer has executed a CIA Agreement with Hydro One;
- the customer has provided all data required to conduct the CIA study; and
- the IESO has issued its draft System Impact Assessment (SIA) or a draft Expedited System Impact Assessment report.

Step 5: CIA Study and Report

The CIA study will determine the expected impact on the following factors, as appropriate:

- short circuit levels at the customer connection/delivery point,
- supply voltage levels at the customer connection/delivery point,
- adequacy/capacity of supply facilities at the customer connection/delivery point,
- reliability of the supply at the customer connection/delivery point,

Hydro One will use the results of the CIA study to provide all the other transmission customers affected by the proposed new or modified connection with a new available fault current level. This will allow each customer to take action, at its own expense to upgrade its facilities as may be required to accommodate the new available fault current level up to the maximum allowable fault levels as set out in the Code - Appendix 2 - Transmission System Connection Point Performance Standards.

Hydro One will prepare a report outlining the CIA study results. The report will include the relevant information used in the assessment, including Hydro One's and the connection applicant's information.

- Hydro One will issue a draft of the CIA report to the IESO and other affected customers that will outline the impact of the new or modified connection on the supply at the connection facility.
- Hydro One will accept preliminary feedback from the IESO and other affected customers on the draft report.
- Hydro One will issue a final report after the IESO and other affected customers have provided their preliminary feedback.

Hydro One will distribute the CIA report to the Electrical Safety Authority (ESA), the IESO, the connection applicant and other transmission customers in the study area.

Section 2.5

ECONOMIC EVALUATION PROCEDURE

INTRODUCTION

Hydro One's Economic Evaluation Procedure was developed to meet the requirements of section 6.5.2 of the Transmission System Code (the Code). This procedure involves performing a financial evaluation of the relevant costs and revenues for new or modified load connections. The financial evaluation is carried out according to the methodology and inputs prescribed in the Code. To perform the evaluation, Hydro One uses a discounted cash flow model. The model and its assumptions are described below.

HYDRO ONE'S DISCOUNTED CASH FLOW MODEL

Overview

Hydro One uses its discounted cash flow (DCF) model to assess project economic feasibility and determine any contribution-in-aid-of-construction required for new or modified transmission load connections. The model assesses financial impacts of new connection projects on the basis of the relevant revenues and costs. The following revenue and cost elements are included:

- the up-front capital costs for new or modified connection facilities
- on an exception basis, capital costs for new or modified network facilities required to serve the connection as per section 6.3.5 of the Code
- fully allocated overheads on capital and interest during construction (AFUDC) for work performed by Hydro One
- advancement costs only, where Hydro One has planned a new or modified connection facility and moves the planned date forward to accommodate a customer as per section 6.5.2(d) of the Code
- for connection facilities built by a 3rd party and transferred to Hydro One, the transfer price including applicable Hydro One costs and charges
- an estimate of working capital requirements associated with the new or modified connection

Over the economic evaluation period:

- relevant transmission line and/or transformation connection and/or network (on an exception basis per section 6.3.5 of the Code) tariff revenue generated by the new or modified connection
- estimated OM&A costs to operate, maintain and administer the new connection, including property and capital taxes and excluding interest, which is accounted for in the discount rate
- applicable income taxes and income tax shields

A capital contribution will be required from the customer to make up any shortfall between the present value of the costs of the connection facility and the present value of revenues, as indicated by the DCF analysis.

The methodology and assumptions of the DCF model are consistent with the Transmission System Code and specifically the requirements outlined in section 6.5.2 and Appendix 4 –

Customer Financial Risk Classification, and Appendix 5 – Methodology and Assumptions for Economic Evaluations.

Key Assumptions Used in the Model

Economic Evaluation Periods

The economic evaluation periods that are defined in section 6.5.2 (b) and Appendix 4 of the Code are as follows:

- 5 years for high-risk connections
- 10 years for medium-high-risk connections
- 15 years for medium-low-risk connections
- 25 years for low-risk connections

More information about the methodology used to determine the appropriate economic evaluation period is provided below.

Actual or Estimated Capital Costs

The economic evaluation may be calculated initially using estimated costs, provided that subsequently the evaluation is re-calculated based on actual costs. Ordinarily this recalculation will occur within 180 days after the in-service date.

Connection Revenue

Revenue for transmission related connection projects is based on project load information and OEB-approved Line Connection and Transformation Connection tariffs. Revenue is derived from that part of the load customer's new load that exceeds the normal supply capacity of any connection facility already serving that customer, and which will be served by a new or modified connection facility. Any customer's assigned capacity transferred from an existing connection facility already serving the customer will not be credited to the customer's new connection facility revenues. Line connection and transformation connection facilities are subject to separate economic evaluations. Historic revenues and sunk costs are excluded.

Operating, Maintenance and Administrative Costs

OM&A costs are system average estimates for transformation connection and/or line connection facilities as determined and updated by Hydro One.

Incremental Working Cash Requirements

Forecast incremental working cash requirements are estimated based on Hydro One's transmission lead-lag study results applied to project OM&A costs, consistent with an OEB approved working cash methodology.

Allowance for Funds Using During Construction (AFUDC)

Project capital costs include interest during construction (AFUDC) up to the in-service date. The AFUDC rate is the standard interest capitalization rate used for all Hydro One capital projects.

Income Taxes and Net Large Corporation Tax (LCT)

Income taxes, including large corporation tax and applicable surtaxes, and Ontario capital tax, are based on current or future enacted tax rates. Property taxes are based on a transmission system average rate.

After-tax Discount Rate Used for NPV Calculations

The project discount rate is based on Hydro One's prospective capital mix, debt and preference share cost rates, income taxes, and the most recent OEB approved rate of return on common equity.

Timing of Expenditures

Project cash flows are present-valued to the in-service date (time zero). Up-front capital expenditures are treated as occurring at the beginning of the period for discounting purposes. Future capital expenditures, annual connection rate revenues and annual operating and maintenance costs are treated as occurring at the mid-point of the year in which they occur.

Customer Risk Classification

The information below is consistent with Appendix 4 of the Code and is applicable to load connections.

New or Modified Connections that are not Project Financed

For a new or modified connection that is not being financed by the load customer on a "project financing" basis, Hydro One will use a bond rating provided by the customer from a known bond rating agency to determine the risk classification.

Where no bond ratings are available for the customer, Hydro One will use the appropriate Altman Z model (for public industrial companies, private industrial companies, or non-industrial companies), as the case may be, if the necessary information to complete the analysis is available. Hydro One will normally require the customer to provide a copy of its most recent 3 years of audited financial statements in order to do the Altman Z analysis. Where audited financial statements are not available, Hydro One may, at its discretion, use un-audited financial statements or other similar information. If the results of the Altman Z model appear anomalous, Hydro One will use the Kaplan-Urwitz model as a secondary methodology. See below for details on the Altman Z model and the Kaplan-Urwitz model. Also see Appendix 1 at the end of this Procedure for further information.

Where Hydro One considers that the risk classification that results from the application of the above methods produces an anomalous result, Hydro One may, with the customer's consent, assign a different risk classification to the new or proposed connection. Where the customer does not consent, Hydro One may apply to the OEB for approval to determine the customer's risk classification using an alternate methodology.

Where a load customer has not provided Hydro One with some or all of the information necessary to determine the customer's Altman-Z or Kaplan-Urwitz score, Hydro One may use estimates based on comparable information provided by similar customers. Where no such comparable information is available or where Hydro One considers that the customer's circumstances are such as to render comparisons with similar customers inappropriate, Hydro One may classify the risk associated with the proposed new or modified connection as high risk.

Where the new connection is for a project having a finite life (e.g., a new mine with 10 years of proven reserves), the economic evaluation period will be based on the life of the project or the risk rating of the customer, whichever is less.

New or Modified Connections that are Project Financed

For a new or modified connection that is being financed by the load customer on a "project financing" basis, the customer's risk classification will be determined by the type and amount of security provided. Ordinarily a parental guarantee from an entity with an acceptable credit rating will be required. With an acceptable parental guarantee, the risk classification of the project will be based on the risk of the parent, subject to the exception noted above for finite-life projects.

Where acceptable security is not provided, the project will be assigned a high-risk classification.

Risk Horizon Table

Bond ratings or Altman Z scores or Kaplan-Urwitz scores will determine the customer's risk classification according to the tables below.

**Risk Horizon Table
Bond Rating and Altman Z Score**

Bond Rating*	Altman Z – Score**			Risk Profile	Risk Horizon
	Public Industrial	Private Industrial	Private Non-Industrial		
CCC and below	<1.81	<1.23	<1.10	High Risk	5 Years
B – BB	1.81 – 2.67	1.23 – 2.59	1.10 – 2.32	Medium High Risk	10 Years
Industrial BBB – AAA Non-industrial BBB	2.68 – 2.99	2.60 – 2.90	2.33 – 2.60	Medium Low Risk	15 Years
Non-industrial A - AAA	>2.99	>2.90	>2.60	Low Risk	25 Years

* Based on DBRS rating scale. Investment grade credits qualify for risk ratings of 15 years and above. Non-investment grade credits qualify for risk ratings of less than 15 years. Equivalent ratings from other rating agencies would apply if deemed suitable by Hydro One.

** Public non-industrial companies or other entities that do not fall within the compass of one of the 3 Altman Z models will be assessed using an appropriate methodology, at Hydro One's discretion

Altman Z Public Industrial Model

The Altman Z Score is calculated as:

$$Z = 1.2 * X_1 + 1.4 * X_2 + 3.3 * X_3 + 0.6 * X_4 + 1.0 * X_5$$

Where,

- X₁=net working capital/total assets
- X₂=retained earning/total assets
- X₃=earning before interest and taxes (EBIT)/total assets
- X₄=market value of equity/ total liabilities
- X₅=sales/total assets

Altman Z Private Industrial Model

The Altman Z Score is calculated as:

$$Z' = 0.717 * X_1 + 0.847 * X_2 + 3.107 * X_3 + 0.420 * X_4 + 0.998 * X_5$$

Where,

- X₁=net working capital/total assets
- X₂=retained earning/total assets
- X₃=earning before interest and taxes (EBIT)/total assets
- X₄=book value of shareholders' equity/total liabilities
- X₅=sales/total assets

Altman Z Private Non-Industrial Model

The Altman Z Score is calculated as:

$$Z'' = 6.56 * X_1 + 3.26 * X_2 + 6.72 * X_3 + 1.05 * X_4$$

Where,

- X₁=net working capital/total assets
- X₂=retained earning/total assets
- X₃=earning before interest and taxes (EBIT)/total assets
- X₄=book value of shareholders' equity/total liabilities

Risk Horizon Table
Bond Rating and Kaplan-Urwitz Score

Bond Rating*	Kaplan-Urwitz Score	Risk Profile	Risk Horizon
CCC and below	<0**	High Risk	5 Years
B – BB	<0**	Medium High Risk	10 Years
Industrial BBB – AAA Non-industrial BBB	> 1.57 1.57 – 3.28	Medium Low Risk	15 Years
Non-industrial A – AAA	> 3.28	Low Risk	25 Years

* Based on DBRS rating scale. Investment grade credits qualify for risk ratings of 15 years and above. Non-investment grade credits qualify for risk ratings of less than 15 years. Equivalent ratings from other rating agencies would apply if deemed suitable by Hydro One.

** Kaplan-Urwitz bond rating-equivalency scores are not provided for non-investment grade entities (below BBB). Kaplan-Urwitz scores less than zero accordingly will be classified as either high-risk or medium-high risk based on a combination of Kaplan-Urwitz scores, Altman Z scores and other factors such as traditional credit analysis.

Kaplan-Urwitz Model

The Kaplan-Urwitz score is calculated as:

$$KU = 4.41 + 0.0012 * X_1 - 2.56 * X_2 - 2.72 * X_3 + 6.40 * X_4 - 0.53 * X_5 + 0.006 * X_6$$

Where,

X₁=total assets (\$000)

X₂=subordinated debt (dummy variable, 1 or 0)

X₃=long-term debt/total assets

X₄=net income/total assets

X₅=co-efficient of variation in net income over 5 years*

X₆=interest coverage (EBIT/interest expense)

* Less than 5 years' of financial statement information will be used when the information is not available.

True-Up Procedure for Load Customers

For new or modified load connection facilities, Hydro One will carry out a true-up calculation, based on actual customer load, at the following true-up points as per sections 6.5.3 to 6.5.11 of the Code:

- (a) for high risk connections, at the end of each year of operation, for five years;
- (b) for medium-high risk and medium-low risk connections, at the end of each of the third, fifth and tenth year of operation; and
- (c) for low risk connections, at the end of each of the fifth and tenth year of operation, and at the end of the fifteenth year of operation if actual load is 20% higher or lower than the initial load forecast at the end of the tenth year of operation.

For the true-up calculation, Hydro One shall use the same methodology used to carry out the initial economic evaluation, and the same inputs except for load, which will be based on the

actual load up to the true-up point and an updated load forecast for the remainder of the economic evaluation period used.

Before carrying out a true-up calculation for a load customer who did not make an initial capital contribution, Hydro One shall adjust the initial load forecast used in the initial economic evaluation to the point where the present value of connection rate revenues equals the present value of costs as per section 6.5.5 of the Code.

Where a true-up calculation shows that a load customer's actual load and updated load forecast is lower than the load in the initial load forecast, and does not generate the initial forecast connection rate revenues, Hydro One shall require the load customer to make a payment to make up the shortfall, adjusted appropriately to reflect the time value of money and net of any previous true-up payments made.

Where analysis shows that the customer has transferred assigned capacity from an existing Hydro One owned connection facility already serving the customer to the new connection facility, which is the subject of the economic evaluation, the customer's actual load for true-up purposes will be reduced in proportion to the amount transferred. The updated load forecast will also be reduced to eliminate any transferred load. If there is a shortfall, Hydro One will then require the customer to remit a payment to make up the shortfall, adjusted appropriately to reflect the time value of money and net of any previous true-up payments made.

Where a true-up calculation shows that a load customer's actual load and updated load forecast is higher than the load in the initial load forecast, and generates more than the initial forecast connection rate revenues, Hydro One will post the excess revenue as a credit to the customer in a notional account, net of any previous true-up credits. Hydro One will apply the net credit against any shortfall in subsequent true-up calculations. Hydro One will rebate to the load customer any credit balance that remains when the last true-up calculation is carried out, adjusted appropriately to reflect the time value of money and applicable income and other tax impacts. The rebate shall not exceed any capital contribution, adjusted to reflect the time value of money, previously paid by the load customer.

When carrying out a true-up calculation for a distributor, Hydro One:

- (a) shall add to the actual load the amount of any embedded generation (determined in accordance with section 11.1 of the Code) that was installed during the true-up period; and
- (b) shall not reduce the updated load forecast as a result of any embedded generation (determined in accordance with section 11.1 of the Code) that was installed during the true-up period.

When carrying out a true-up calculation for a load customer other than a distributor, Hydro One:

- (c) shall add to the actual load the amount of any embedded generation (determined in accordance with section 11.1 of the Code) of 1 MW or less per unit, or any embedded renewable generation of 2 MW or less per unit, that was installed during the true-up period; and

- (d) shall not reduce the updated load forecast as a result of any embedded generation (determined in accordance with section 11.1 of the Code) of 1 MW or less per unit, or any embedded renewable generation of 2 MW or less per unit, that was installed during the true-up period.

When carrying out a true-up calculation for any load customer, Hydro One:

- (e) shall add to the actual load the amount of any reduction in the customer's load that the customer has demonstrated to the reasonable satisfaction of Hydro One (such as by means of an energy study or audit or annual or quarterly reports from an OEB approved CDM program) has resulted from energy conservation, energy efficiency, load management or renewable energy activities that occurred during the true-up period; and
- (f) shall not reduce the updated load forecast as a result of any reduction in the customer's load that the customer has demonstrated to the reasonable satisfaction of Hydro One (such as by means of an energy study or audit or annual or quarterly reports from an OEB approved CDM program) has resulted from energy conservation, energy efficiency, load management or renewable energy activities that occurred during the true-up period.

Where a load customer voluntarily and permanently disconnects its facilities from a transmitter's facilities prior to the last true-up point, Hydro One shall, at the time of disconnection, carry out a final true-up calculation in accordance with the rules set out above. Where the true-up calculation shows that the load customer's load to the date of disconnection has not generated the initial forecast connection rate revenues, the transmitter shall require the load customer to make a payment to make up the shortfall, adjusted appropriately to reflect the time value of money and net of any previous true-up payments. Where a true-up calculation shows that the load customer's load to the date of disconnection has generated more than the initial forecast connection rate revenues, Hydro One shall rebate to the load customer any excess, adjusted appropriately to reflect the time value of money and applicable income and other tax impacts.

Transfer Price

Where Hydro One pays a transfer price for a connection facility constructed by a load customer, Hydro One will reflect the transfer price plus applicable charges and costs in the capital contribution that is to be paid by the customer. The amount to be reflected in the capital contribution is determined as follows:

Capital cost* = Transfer price + Hydro One project-specific costs +

- (a) make-ready costs on transferred assets including inspection, testing, commissioning and any other costs of incorporation +
- (b) capital costs of any Hydro One Uncontestable Work +
- (c) full direct and indirect capitalized overheads on capital costs in (a)+(b).

** The above is a general definition only. Capital and operating costs for individual projects will be based on the estimated costs of those projects. Some of the cost elements listed above could be capital or operating costs, and not all cost elements may be applicable for each project.*

APPENDIX I

Further information regarding the Altman Z and Kaplan-Urwitz models, per Hydro One's response to OEB Staff Interrogatory #20 in EB-2006-0189

Ontario Energy Board (Board Staff) INTERROGATORY #20

Interrogatory

- Ref.(a) H1N-CCP/ Section 2.5 Economic Evaluation/ Load Connection Applicant Without Bond Rating/ pp.33 – 35
 Ref.(b) SC/Appendix 4
 Ref.(c) TSC/Appendix 4/ "Report" to the Board dated March 30, 2000 referenced in Appendix 4, authored by PHB Hagler Bailly and entitled "Risk Assessment Methodology Options". The report is available from the Board's website at www.oeb.gov.on.ca.

Preamble

- The directions to the transmitter are spelled out in In Ref. (b)- Appendix 4 of the TSC, as well as in Ref.(c), covering various aspects including use of two financial Models (the Altman Z-score Model and the Kaplan-Urwitz Model) for evaluating financial risks of companies, where no bond ratings are available. The use of the two models requires certain information be available to the transmitter.
- In Ref. (b) the Board indicated that a revision to the transmitter's economic evaluation procedure to update a Model shall not constitute a material amendment to the transmitter's connection procedures for the purposes of section 6.1.5 and therefore does not require the approval of the Board.
- However, this is the first opportunity for the Board to review and compare the details of the two models (Altman Z-score and the Kaplan-Urwitz Model) outlined in Ref. (a) with the corresponding Models in the original Report [Ref.(c)]. Therefore responses to various clarifications and questions listed below are needed.

Questions/Clarification

In Ref. (a), page 34, Hydro One added two new Altman Z –score Models in addition to the Model listed in the "Report" [Ref.(c)]; the first new Model is for "Public Industrial Companies" and the second new Model is for "Private Non-Industrial Companies".

Re: Altman Z-score Model

- (i) Please provide the name of the entity that publishes the Altman Z-score Models, its address and a contact person's telephone and e-mail address;
- (ii) when were the two new Models developed? and how often the three Models are updated [the original listed in Ref.(C) and the two new ones in Ref. (a)]?
- (iii) The two bullets below compare the two tables in the two indicated references:
 - In page 4 of Ref.(c), the table depicts three levels of "Projected Credit Risk", and the corresponding Altman Z-score which corresponds to the "Private Industrial" Model as follows:

If Altman Z-Score is:	Projected Credit Risk is
< 1.2	High
1.2-1.9	Meduim
>2.9	Low

- In page 33 of Ref. (a), The corresponding Table for the Altman Z-score covering three types of industrial companies as follows:

Bond Rating*	Altman Z – Score**			Risk Profile	Risk Horizon
	Public Industrial	Private Industrial	Private Non-Industrial		
CCC and below	<1.81	<1.23	<1.10	High Risk	5 Years
B – BB	1.81 – 2.67	1.23 – 2.59	1.10 – 2.32	Medium High Risk	10 Years
Industrial BBB – AAA Non-industrial BBB	2.68 – 2.99	2.60 – 2.90	2.33 – 2.60	Medium Low Risk	15 Years
Non-industrial A – AAA	>2.99	>2.90	>2.60	Low Risk	25 Years

With regard to the two above tables:

- (a) Please provide full explanation and justification on how the score range of (1.2 – 2.9) of the Altman Z-score corresponding to “Medium Risk” of Ref. (c), was apportioned in Ref.(a) between “Medium High Risk” with Z-score range = 1.23 – 2.59, and “Medium Low Risk” with Z-score range = 2.6 – 2.9.

Note: that the mid point on linear basis between the two ranges, would lead to a range in the Z-score of 1.23 – 2.1 for “Medium High Risk” and 2.2 – 2.59, for “Medium Low Risk”

- (b) Please provide details and justification for selection of the ranges depicted for the Altman Z-score vis a vis the four risk categories (High, Medium High, Medium Low, and Low) for the two new Models corresponding to the Models for Public Industrial Companies and for the Private Non-industrial companies.

Re: Kaplan-Urwitz Model

(iv) The Model proposed for the Kaplan-Urwitz model in page 35 of Ref.(a), is identical to the Kaplan-Urwitz Model shown in page 6 of Ref.(c) except for the use of an additional term $(- 2.56 * X_2)$ where X_2 is a “dummy” or “categorization” variable which is assigned a value $X_2 = 1$ if the debt is subordinated, and a value of $X_2 = 0$ if the debt is not subordinated.

- (a) Please indicate whether this term $(- 2.56 * X_2)$ is the original term in the Model which according to Ref. (c)/ page 6/ foot note 3, was published in April, 1979;
- (b) Please indicate whether this Model is revised by the authors, or by any other entity in the financial industry? if so, please indicate by who and when was the last time it was revised;
- (c) Please provide explanation and justification for the range chosen for the Kaplan-Urwitz score for the “Industrial” class where it appears that regardless of how high a company can score, it cannot exceed “Medium Low Risk”.

Response

(i,ii) Hydro One is not aware of an official entity that publishes the Altman Z models. The financial literature contains numerous references to versions of the Altman Z model. The 3 versions that were included in the company’s filed procedures were obtained from a 1995 CPA Journal extract found on the web, “Z scores – a guide to failure prediction” by Gregory J. Eidleman. The CPA Journal is a refereed publication published by

the New York State CPA Society. This article appeared to be the most concise source of information regarding the 3 Altman Z models.

Hydro One also reviewed other sources including an article by Prof. Edward Altman, the Z-model's developer ("Predicting the Financial Distress of Companies: Revisiting the Z-score and Zeta models", July 2000) also found on the web. This article provided background on the development of the 3 models and their strengths and weaknesses. As the article discusses, the first Altman Z model was developed in the late 1960's based on a sample of public manufacturing company data (the "public industrial" model included in Hydro One's filing). That model was later adapted by Altman (the article does not indicate when) for private manufacturing companies (the "private industrial" model included in Hydro One's filing). This is the model that was included in the PHB Hagler Bailly report (reference (C) of Staff's interrogatory). The final adaptation by Altman was to extend the model for use with respect to non-manufacturing companies (the "private non-industrial" model included in Hydro One's filing). This latter model is also cited occasionally in the literature as the "generalized" model and appears to be considered by some as applicable across industry-types.

Hydro One is not aware how often (if at all) the various versions of the Altman Z model are updated. Hydro One included all of the models in its connection procedure in order to provide as wide a basis as possible for assessing new connections and allow for a matching of the appropriate model with a given set of circumstances.

(iii)

- (a) The PHB Hagler-Bailly report (ref. C) provided a breakdown of Altman Z-scores into 3 categories (High, Medium, Low). In order to provide a 4-category breakdown consistent with the risk-classifications established by the Board (High, Medium-high, Medium-low, Low), transmitters were required to split PHB's "medium" category into 2 sub-categories. As noted above, the version of the Altman Z model provided in the PHB report was the private manufacturing model (using Prof. Altman's terminology), and this is the version referenced in Staff's Interrogatory above. Intermediate cut-off points between the high and low values that allowed for splitting the "medium" risk category into 2 sub-categories were not available in the literature for this model, nor for the private non-industrial model. Intermediate cut-offs were, however, provided by Prof. Altman in the article referenced above for the public industrial model. The splitting of the medium category for the private industrial and private non-industrial models in Hydro One's filing was accordingly based on scaling their intermediate cut-off points using the corresponding scale from the public industrial model. The formula for the private industrial model intermediate cut-off point is as follows:

$$2.59 = 2.90 \times 2.67 / 2.99$$

The formula for the private non-industrial intermediate cut-off point is:

$$2.32 = 2.6 \times 2.67 / 2.99$$

- (b) The high and low values for the two "new" Altman-Z models (Public Industrial and Private Non-industrial) included in Hydro One's connection procedure were taken from the CPA Journal article referenced above. See part (a) above for an explanation of the derivation of their intermediate cut-off points.

(iv)

- (a) Hydro One is not aware whether the subordinated-debt term referenced in footnote 3 of the PHB report was included in the original Kaplan-Urwitz model; the footnote in the PHB report indicates that it was included in the "formal" model. Hydro One included the subordinated-debt term in the model filed in its connection procedure in order to provide a version of the model able to accommodate situations in which subordinated debt was present.
- (b) Hydro One is not aware whether the Kaplan-Urwitz model is or has been revised by the authors or by any other entity. A web search did not provide any information in this regard.

- (c) The industrial category in the Kaplan-Urwitz model is treated in a manner consistent with the methodology used for industrials in the Altman Z model and bond ratings (i.e., industrial customers are eligible for a maximum 15-year risk horizon under all approaches). This is due to the inherent riskiness of industrial companies. The 15-year maximum reflects 2 key concerns:
- Intense competition in industrial markets due to the impact of globalization, currency swings and commodity price fluctuations, among other factors. These factors expose industrial companies in particular to quickening rates of change and hence higher risk.
 - The lack of liquidity in a transmission investment compared with a financial instrument such as a bond. Bond ratings are based partly on the liquidity of the instrument being rated. Accordingly, a bond rating is not a perfect tool to use in measuring the long-term risks to the transmission pool arising from an illiquid new connection. This suggests that some element of judgment is in order when using bond ratings for risk assessment purposes with respect to transmission investments.

Recognizing these concerns (increasing rates of change affecting industrial companies in particular, and the imprecise nature of bond ratings as a risk assessment tool), a 15-year maximum risk horizon for industrial companies is considered prudent in managing the risks to the transmission pool.

Section 2.6

CONTESTABILITY PROCEDURE

INTRODUCTION

Hydro One's Contestability Procedure has been developed to meet the requirements of section 6.6.2 of the Transmission System Code (the Code). The Contestability Procedure allows Hydro One to identify to connection applicants the estimated cost of the transmission assets required to facilitate the proposed connection and to identify which transmission connection assets are contestable and can be built by the connection applicant. The customer can then elect one of three options regarding the construction and ownership of the new connection facilities:

- 1) The connection applicant can elect to have Hydro One construct and own all new connection facilities.
- 2) The connection applicant can elect to construct all of the new connection facilities identified as contestable work and transfer ownership of specific elements to Hydro One. (Transfer of non-dedicated contestable connection facilities is a requirement, not an option.)
- 3) If the new connection facilities are dedicated connection facilities, the connection applicant can elect to construct and own the new facilities.

Data provided by Hydro One and the connecting customer, together with the specific construction and ownership options elected by the connecting customer, form the basis for a Connection and Cost Recovery Agreement (CCRA) to be made between the two parties.

Glossary

Contestable Work

New connection facilities that are for the sole benefit of the connecting customer(s) that do not involve:

- (a) The modification of or expansion of the transmitter's existing assets, or,
- (b) The utilization of an existing station site or an existing right-of-way over which the transmitter has ownership, easement or other land rights.

The transmitter may permit the connecting customer to terminate their lines at Hydro One's assets.

Dedicated Connection Facilities

Transmission connection facilities devoted to serving a single Customer.

Detailed Estimate

Based on the completion of additional design work at the connecting customer's expense, this is an estimate prepared by Hydro One based on the specific costs included in a project and for the labour required to design, construct and manage the project. Such an estimate is summarized into the following basic groupings: Engineering, Construction, Materials, Commissioning, Project Management, Risk/Contingencies, Interest and Overheads. Estimate accuracy is usually

plus or minus 10% and it will typically take 90 days to prepare. The detailed estimate and any other estimates other than the Initial Estimate is at the customer's cost.

Initial Estimate

The Initial Estimate is the preliminary capital cost estimate prepared by Hydro One derived from the assembly of components and actual costs from previous projects that is provided to a connection applicant at Hydro One's expense. It does not include detailed costs of items but comprises estimated costs for major components and areas of work. Costs will be summarized in the following areas: Engineering, Construction, Materials, Commissioning, Project Management, Risk/Contingencies, Interest and Overheads. Estimate accuracy is usually plus or minus 20% and it will typically take 45 days to prepare.

Non-Dedicated Connection Facilities

Connection facilities supplying more than one customer (load customer or generator customer).

Sole Benefit

Connection facilities that are required now and in the foreseeable future strictly for the connection of the connecting customer(s).

Transmitter's Reasonable Cost

The most accurate estimate available of the cost for the transmitter to construct the contestable work. It is the initial estimate value if agreed by both parties or the detailed estimate if one was prepared by Hydro One. Costs incurred to create a detailed estimate are recoverable from the connecting customer.

Uncontestable Work

All connection facilities that are not for the sole benefit of the connecting customer and all additions, modifications and physical connection work which involves:

- (a) The modification or expansion of Hydro One's existing assets; or,
- (b) The utilization of an existing station site or an existing right-of-way over which Hydro One has ownership or easement or other land rights.

CONTESTABILITY PROCEDURE

Connecting Customer Requires a New Connection Facility

The Contestability Procedure is initiated when a connection applicant has submitted a formal Connection Application to Hydro One and the Customer Impact Assessment, if required, has been completed.

Hydro One Provides the Preliminary Estimate and Supporting Information

Hydro One provides the connecting customer with the following required information, at no cost:

- (a) A description of the contestable work and the uncontestable work;
- (b) A description of the labour and materials required for each of the contestable work and the uncontestable work;
- (c) An initial estimate of the capital cost of each of the contestable work and the uncontestable work based on Hydro One's design, construction, operation & maintenance standards, together with an indication of the degree of accuracy of the estimate;
- (d) The calculation used to determine any capital contribution to be paid by the connecting customer if Hydro One constructs the connection facilities, even if no capital contribution is required;
- (e) The information set out in Appendix 3 of the Code and enough information in sufficient detail to allow the connecting customer to design and construct connection facilities that will meet the transmitter's system requirements. Hydro One's connection requirements will have to be met if the connecting customer is to ultimately own and operate the facility; and,
- (f) Hydro One's design, construction, operation and maintenance standards applicable to the contestable work to allow the connecting customer to proceed with detailed engineering. These requirements will have to be met if the connecting customer is to build the facilities and transfer them back to Hydro One to maintain and operate.

Hydro One will provide revisions to the above information at the connecting customer's expense, if the customer requires additional information as a result of changes to the customer's plans or wishes to obtain additional design work in order to enhance Hydro One's initial estimate.

Connection Facility Ownership Decision

Where a connecting customer requires new connection facilities and those facilities are identified by Hydro One as contestable, the customer can elect either to construct its own connection facilities or to require Hydro One to construct them. The customer must also determine if the new connection facilities will be customer-owned or owned by Hydro One as a transmission connection asset.

If the connection facility includes uncontestable work, that portion of the work can only be constructed and owned by Hydro One. The customer cannot construct or own such a connection facility. Where the connection facility includes contestable work, the connecting customer does have the right to either provide this part of the connection facility itself or to require Hydro One to provide it. Where the customer chooses to carry out the contestable work, it must carry out all of the contestable work.

At this stage, the connecting customer must also decide whether it will transfer dedicated connection facilities that it builds to Hydro One following successful construction and commissioning.

If the customer elects to have Hydro One build the connection facilities, proceed to Option 1 below.

If the customer elects to build the connection facilities to transfer to Hydro One, proceed to Option 2. (The customer may choose to transfer all or part of the contestable work.)

If the connection facility will be customer built and owned, proceed to Option 3.

Option 1: Hydro One Builds and Owns the Connection Facility

The parties will enter into a Connection and Cost Recovery Agreement (CCRA) describing the terms and conditions relating to the project scope and cost responsibilities. Once signed, this agreement will be binding and Hydro One will undertake the work and own the connection facility. A capital contribution may be required to the extent that the cost of the connection facility is not recoverable in connection rate revenues. (See section 6.5.2 of the Code and Hydro One's Economic Evaluation Procedure).

Hydro One undertakes the work including the design, construction, testing, inspection and commissioning of the connection facility. Upon completion of the connection facility, Hydro One recalculates the capital contribution requirement based on Hydro One's actual cost of construction including direct and indirect capitalized overheads.

Following completion of these steps, the Contestability Procedure ends.

Option 2: Customer Builds Connection Facility to Transfer to Hydro One

The parties will enter into a CCRA which includes terms and conditions applicable to the contestable work. Once the CCRA is executed by both parties, the CCRA will be binding and Hydro One will own the connecting facility when built by the customer in accordance with the terms of the CCRA and after it is transferred to Hydro One. The CCRA will describe the terms and conditions with respect to any work that Hydro One is performing related to the connection facility and any work that Hydro One performs on its transmission system to accommodate the connection of the facility as well as the terms and conditions necessary for Hydro One to take ownership. A capital contribution may be required to the extent that the cost of the connection facility transferred to Hydro One is not recoverable in connection rate revenues. (See section 6.5.2 of the Code and Hydro One's Economic Evaluation Procedure).

Where a connecting customer proposes to, or is obliged to, transfer any connection facilities it constructs to Hydro One, Hydro One will provide, upon request and at cost as per section 6.6.2 (f) of the Code, a detailed design to allow the customer to carry out the contestable work and provide Hydro One's Design, Construction, Operation and Maintenance Standards that must be met in constructing the connection facility.

The connecting customer will undertake all inspection, testing and commissioning activities. Hydro One shall have the right to participate in all or any part of the inspection, commissioning, testing and witnessing at the customer's expense as per section 4.3.3 and section 6.6.2 (d) of the Code. The customer must submit a commissioning program in writing to Hydro One 30 business days prior to the planned commissioning tests. Hydro One must indicate to the customer within 15 business days of receiving the program if it agrees with the proposed commissioning program and test procedures or if it requires changes in the interest of safety or maintaining the reliability

of the transmission system as outlined in Appendix 1, Schedule E, Section 1.7 of the Code. The connecting customer will transfer the connection facility to Hydro One after construction and commissioning are complete and the customer is in compliance with the CCRA.

Hydro One will pay the customer a transfer price that is the lower of the actual cost to the connecting customer or Hydro One's reasonable cost to do the same work, including direct and indirect capitalized overheads, as per section 6.6.2 (g) of the Code. Hydro One will recalculate the capital contribution requirement based on the capital cost as described below, and update the CCRA accordingly.

The capital cost* is calculated as the sum of the Transfer price + Hydro One project-specific costs +

- a) make-ready costs on transferred assets including inspection, testing, commissioning and any other costs of incorporation +
- b) capital costs of any Hydro One Uncontestable Work +
- c) full direct and indirect capitalized overheads on capital costs in (a)+(b).

** The above is a general definition only. Capital and operating costs for individual projects will be based on the estimated costs of those projects. Some of the cost elements listed above could be capital or operating costs, and not all cost elements may be applicable for each project.*

Following completion of these steps the Contestability Procedure ends.

Option 3: Customer Builds and Owns the Connection Facility

When the customer decides to design, build, own and maintain its own connection facility, the connection facility is to be designed and built in accordance with Hydro One's system requirements. The parties will enter into a CCRA describing the terms and conditions relating to the project scope and cost responsibilities. Once signed, this agreement will be binding and the connecting customer will undertake the work and own the connection facility.

Hydro One, as the transmitter, shall have the right to participate, at the connecting customer's expense, in the witnessing, commissioning, inspecting or testing of the customer-owned facility as these facilities can have an impact on Hydro One's transmission system as per section 4.3.3 and Section 6.6.2 (d) of the Code.

Following completion of these steps the Contestability Procedure ends.

Section 2.7

RECONNECTION PROCEDURE

INTRODUCTION

Hydro One's Reconnection Procedure has been developed to meet the requirements of section 6.10.3 of the Transmission System Code (the Code). The Reconnection Procedure applies following voluntary and involuntary disconnection (excluding planned and unplanned outages).

PROCESS STEPS

Transmission customers are required to follow the reconnection procedure when they request to be reconnected following a voluntary or involuntary disconnection. Any cost incurred by Hydro One including Customer Impact Assessment (CIA) studies or system assessment studies are to be borne by the customer.

Step 1:

The customer will complete an Application for Reconnection to initiate the reconnection process providing the reason for disconnection and any measures taken to rectify any connection issues if required.

Step 2:

Customer submits the application to Hydro One and the IESO.

Step 3:

Hydro One will review the reason for disconnection of the customer's facilities and any actions taken. Hydro One will provide the customer with the results of the review and shall request any additional information required by Hydro One to assess the changes made at the customer site.

Step 4:

The customer will provide any additional information required by Hydro One to assess the changes made at the customer site.

Step 5:

The IESO will identify any reconnection requirements it deems necessary and provide a copy to Hydro One and the customer.

Step 6:

Hydro One will determine if a CIA study is required due to any changes at the customer's site or Hydro One's facilities. A CIA study will only be required if it is deemed necessary to ensure system integrity or if a System Impact Assessment (SIA) is required by the IESO. If a CIA study is needed the customer will be required to enter into a Study Agreement with Hydro One.

Step 7:

If a CIA study is not required, Hydro One will direct the customer to the Equipment Compliance Process if applicable.

Step 8:

Once Hydro One is satisfied that reconnection of the customer's facilities will not cause any adverse effects on the transmission system, the customer will be advised in writing when reconnection can take place. Hydro One shall have the right to participate in all or any part of inspection, testing and commissioning activities that may be required by Hydro One, at the customer's cost.

Section 2.8

DISPUTE RESOLUTION PROCEDURE

INTRODUCTION

Hydro One's Dispute Resolution Procedure has been developed to meet the requirements of section 12.1.1 of the Transmission System Code (the Code). Hydro One is required to implement the dispute resolution procedure in the event of a dispute with a customer regarding Hydro One's obligations under the *Electricity Act*, the Code or Hydro One's transmission licence. This procedure includes provisions that:

- a) provide for fair, timely and effective resolution of disputes;
- b) set out specific steps for completion of the Dispute Resolution Procedure; and
- c) establish the right of Hydro One or the customer to bring a dispute to the OEB for resolution, if it has not been resolved by the parties within 30 days.

EXCEPTIONS

This Dispute Resolution Procedure shall not apply to disputes that arise between a transmitter and a customer that are:

- a) governed by the Dispute Resolution Procedure contained in their Connection Agreement, or
- b) related to the terms and conditions of a contractual arrangement that is under negotiation between Hydro One and the Customer, except where one party alleges that the other party is:
 - seeking to impose a term or condition that is inconsistent with or contrary to the OEB Act, the Electricity Act, a party's license, the Code or any of Hydro One's connection procedures.
 - refusing to include a term or condition that is required to give effect to the Code or any of Hydro One's connection procedures.

NOTIFICATION OF DISPUTE

A customer or Hydro One can notify the other party of a formal complaint by completing the Customer Dispute Notification form available on Hydro One's website. Hydro One will log the date the complaint is received/initiated and track the progress of the dispute to resolution. Hydro One will appoint a representative to give the customer a single point of contact within the company.

ACKNOWLEDGEMENT OF DISPUTE

Hydro One shall confirm receipt of the Customer Dispute Notification form within 3 business days. An acknowledgement letter will provide the name and contact information of the Hydro One representative and request a meeting to review the background information related to the dispute.

DISCOVERY OF FACTS

Hydro One's representative will meet with the customer in person or by teleconference within 10 calendar days of receipt of the Customer Dispute Notification form, or within a time mutually agreeable to both parties to:

- a) review the issues and information related to the customer's position in relation to the Dispute.
- b) discuss applicable legislation, licence provisions, the Code and Hydro One's OEB approved connection procedures related to the Dispute.
- c) determine if the Dispute may be settled informally at this stage to the mutual satisfaction of both parties.

The Hydro One representative will document the customer's position and the customer's supporting information in the form of Minutes of Meeting to be completed within 2 business days of the meeting. The Hydro One representative will obtain concurrence on the contents of the Minutes from the customer and agreement on a date on which it will provide a formal offer to settle the dispute. Hydro One will prepare a formal offer to settle and forward it to the customer in accordance with the timeline agreed by the parties.

If the parties agree on terms of a formal settlement at the meeting, Hydro One will prepare a Settlement Agreement for the customer to review and both parties to sign.

NEGOTIATE SETTLEMENT

If the customer accepts Hydro One's offer to settle, Hydro One will prepare a Settlement Agreement for the customer to review and both parties to sign.

If the customer rejects Hydro One's offer to settle, the customer or Hydro One may request a meeting or teleconference to review the offer and each others position to determine if a settlement is possible.

If the Customer and Hydro One cannot reach a settlement at this point, the parties may choose to:

- (a) jointly suspend negotiations for a mutually agreeable time to review their respective positions.
- (b) jointly agree to follow the Dispute Resolution Procedure contained within Section 17 of the Transmission Connection Agreement (TCA) applicable to the parties. In accordance with sections 17.5.7 and 17.5.12 of the TCA, a copy of the decision of the arbitrator(s) and minutes

setting out the terms of settlement, from which all Confidential Information (as defined in the TCA) has been expunged, will be made available to the public by Hydro One.

(c) jointly or individually bring the dispute to the OEB for resolution.

SIGN-OFF SETTLEMENT

Where a customer has accepted Hydro One's offer to settle or the two parties have agreed on an alternate settlement, Hydro One will prepare a Settlement Agreement for the customer to review and both parties to sign. The Settlement Agreement is to be executed by the parties within 7 business days of reaching the Settlement or within a timeframe mutually agreed to by the parties.

FAILURE TO HONOUR SETTLEMENT AGREEMENT

Where a party fails to comply with the terms of the Settlement Agreement, the other party shall have the right to:

- 1) exercise any right that it may have in the Settlement Agreement
- 2) exercise any right in law, or
- 3) have the right to take the matter to the OEB for resolution

Notwithstanding the foregoing, neither party may take the matter to the OEB where the parties have jointly agreed to follow the Dispute Resolution Procedure contained within Section 17 of the TCA applicable to the parties. Section 17.5.11 of the TCA specifies that where a party fails to comply with the terms of a settlement agreement reached during the course of arbitration, the other party may submit the matter to arbitration if the settlement has not been recorded in the form of an award under the *Arbitration Act, 1991*.

SUMMARY OF DISPUTE

Hydro One will prepare a summary of the dispute and related issues. Documentation related to the dispute will be retained by Hydro One and filed with the executed copy of the Settlement Agreement. If requested by the Board, Hydro one will file the records relating to the resolution of the dispute. Where warranted, those records may be filed with a request that they be held in confidence in accordance with the Board's "Practice Direction on Confidential Filings."

3.0 TRANSMISSION PLANS

Hydro One develops and refines plans on an ongoing basis to address load growth and maintain the reliability and integrity of its transmission system. Upon request from a customer, Hydro One will provide the customer with the relevant and most recent version of such plans that cover the applicable portions of its transmission system.

The general rule is that a transmission customer must pay for new or modified transmission connection facilities that are intended to provide benefit to that customer. A capital contribution towards those connection facilities may be required to the extent that the costs associated with those facilities are not recoverable in connection rate revenues.

However, section 6.3.6 of the Transmission System Code provides the following exception to the above cost responsibility rule: “The transmitter shall not require a customer to make a capital contribution for a connection facility that was otherwise planned by the transmitter, except for advancement costs.” Therefore, a customer is not required to make a capital contribution in situations where the new or modified connection facilities were otherwise planned by Hydro One, substantially independent of the customer, to address system needs, except for advancement costs.

4.0 SCHEDULE OF CHARGES & FEES

HYDRO ONE CUSTOMER CONNECTION PROCESS SCHEDULE OF CHARGES & FEES FOR TRANSMISSION CUSTOMERS

<u>ACTIVITY</u>	<u>COST</u>
Inspection, Testing and Commissioning Activities	Actual Costs
Engineering and Design Activities	Actual Costs
<u>STUDIES</u>	<u>COST PER STUDY</u>
Standard Customer Impact Assessment (CIA) Study	\$15,000
Complex CIA Study	Actual Costs
Detailed Connection Estimate Studies	Actual Costs
Feasibility Studies	Actual Costs
Preliminary Engineering Agreement (PEA)	Actual Costs
Pre-CCRA Letter Agreement for Purchase of Long Lead Items	Actual Costs

In all cases the customer will enter into a Study Agreement with Hydro One.

For Standard CIA studies the scope of activities includes data acquisition and confirmation, load flow modeling & studies, short circuit modeling & studies, customer consultation and report preparation as outlined in the Study Agreement.

For CIA studies that are deemed “complex” by Hydro One and are undertaken for larger or more complex generator and load customer connections, the scope of work, deliverables, expected timelines and payment schedule will be determined on a case-by-case basis and specified in the Study Agreement.

For Detailed Connection Estimate Studies and Feasibility Studies, the scope of work, deliverables, expected timelines and payment schedule will be determined on a case-by-case basis and specified in the Study Agreement.



5.0 TIMELINES FOR CONNECTION PROCESS

Hydro One Customer Connection Process Timelines

	Timeline “On Best Efforts Basis”	Trigger
Phase 1 - Connection Application	1-2 months	From initial contact to date of completed Customer Joint (SIA/CIA) Application Form
Phase 2 – Customer Impact Assessment (CIA) ¹	3-5 months	From Date of IESO Issuing Draft System Impact Assessment (SIA)
Phase 3 – Connection Estimates	4-8 months	From Date Estimate Agreement Executed
Phase 4 – Connection Approval	1 month or longer if regulatory approvals, expropriation and permits are required	From Date of Issuing Draft Connection Cost Recovery Agreement (CCRA) for Customer Signature
Phase 5 – Design & Build	Project Specific (normally 12 to 24 months) To be negotiated with customers as per CCRA terms.	Execution of CCRA
Phase 6 - Commissioning	1-2 months	Signing of Connection Agreement ²

Notes:

1. For renewable generators, the timeline for combined SIA/CIA process is 150 days (5months) from the completion of the application as per OREG 326/09
2. Customer must submit a commissioning plan to Hydro One 30 days before proposed commissioning tests.