APPENDIX 1

~~Form of Connection Agreement~~FORM OF CONNECTION AGREEMENT

(Note: Version A and B of Appendix 1 are published as separate documents)

Appendix 1: Version A- Form of Connection Agreement for Load Customers
Appendix 1: Version B - Form of Connection Agreement for Generator Customers

APPENDIX 2

TRANSMISSION SYSTEM CONNECTION POINT PERFORMANCE STANDARDS

Amended Proposal (June 2, 2005)

APPENDIX 2

TRANSMISSION SYSTEM CONNECTION POINT PERFORMANCE STANDARDS

Ref	Item	Requirement		
1	Voltage variations	Transmission voltages of 500 kV, 230 kV and 115 kV shall be maintained in accordance with the Market Rules. Voltages below 50 kV shall be maintained in accordance with CSA 235		
2	Fault Levels[1]	Nominal Voltage (kV)	Maximum 3-Phase Fault (kA)	Maximum SLG Fault (kA)
		500	80 **(usually limited to 63 kA)**	80 **(usually limited to 63 kA)**
		230	~~80~~63	80 **(usually limited to 63 kA)**
		115	50	50
	Higher values may exist for short times during switching	44	20	19 **(usually limited to 8 kA)**
		27.6 (4-wire)	17	12
		27.6 (3-wire)	17	0.45
		13.8	21	10
3	Circuit Breaker Interrupting and Automatic Single Shot Reclose Time	Nominal Voltage (kV)	Rated Interrupting Time (cycles)	Automatic Reclose Time (Seconds)
		500	≤2	10-15
		230	≤3	5-15
		115	≤5	3-6
		< 50	≤8	varies significantly
4	Unbalance	Voltage unbalance is limited to 2% (CAN/CSA E 1000 2-2-97)		
5	Flicker	Voltage flicker shall be limited as tabulated.		
		Magnitude (%)	Limit	
		0.5	3 per second	
		1.0	20 per minute	
		2.0	45 per hour	
		3.0	4 per day	
		A higher flicker may be acceptable for infrequent starts.		
6	Switching Surges	All equipment shall be able to withstand capacitor switching surges that transiently increase voltage to twice normal levels.		
7	Voltage Harmonics	Voltage harmonics shall respect limitations described in Table 11.1 Voltage Distortion Limits IEEE Std 519-1992		
8	Current Harmonics	Current harmonics shall respect limitations described in Tables 10.3 to 10.5 Current Distortion Limits IEEE Std 519-1992.		
9	Telephone Interference	I.T. Product balanced (in phase conductors) shall be less than 5,000 amperes I.T. Product residual (in ground return path) shall be less than 250 amperes		

[1] Maximum fault values referred to in this Appendix are symmetrical fault values.

APPENDIX 3

INFORMATION TO BE MADE AVAILABLE TO CUSTOMERS BY TRANSMITTERS

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INFORMATION TO BE MADE AVAILABLE TO CUSTOMERS BY TRANSMITTERS

A customer is only entitled to the following information to the extent that it is available, that it relates specifically to its own existing or proposed connection and that it is relevant to that connection.

1. Nominal supply voltage and insulation-class requirements.
2. Minimum time required before power is made available at the proposed location.
3. Space and other requirements for billing, metering and other equipment, and details regarding any necessary ancillary facilities.
4. Preliminary requirements for conductor spacing and line tension for the interface structure.
5. Long-term voltage variation (to select fixed taps and indicate need to provide for future voltage control).
6. Short-term voltage variation (to select ULTC or regulator range).
7. Temporary overvoltages due to faults or the operation of special protection systems.
8. Voltage dips caused by transmission system faults and the starting of motors, voltage variations caused by capacitor switching, and other transients caused by transmission system operation.
9. Short-circuit infeed from the transmission system: initial, maximum future, minimum normal, and minimum emergency.
10. Transformer connection and grounding requirements.
11. Protective relaying requirements.
12. Transmission system frequency variations at the connection point.
13. Voltage flicker at the connection point.
14. Voltage unbalance at the connection point.
15. Voltage harmonics at the connection point.
16. Operating information:
    - feeder amperes per phase;
    - bus voltage;
    - real and reactive power flow per feeder (where available; otherwise per bus level);
    - feeder breaker open/close status;
    - feeder breaker recloser blocked/not blocked status;
    - bus tie breaker open/close status;
    - capacitor bank breaker open/close status;
    - energy pulse output in kW.h and kVar.h per customer feeder;
    - energy pulse output in kW.h and kVar.h per station bus; and
    - transformer/bus breaker open/close status.

APPENDIX 4

CUSTOMER FINANCIAL RISK CLASSIFICATION

APPENDIX 4

CUSTOMER FINANCIAL RISK CLASSIFICATION

This Appendix sets out the manner in which a transmitter shall determine the risk associated with a proposed new or modified connection of a load customer for the purposes of carrying out an economic evaluation under this Code. **In accordance with section 6.6.2(b)(iv) , the manner in which a load customer's risk classification has been determined must be included in the transmitter's economic evaluation documentation.**

The risk associated with a proposed new or modified connection of a load customer shall be classified by a transmitter as falling within one of the following risk categories: high risk, medium-high risk, medium-low risk and low risk. The ~~**transmitter shall determine the appropriate**~~**economic evaluation period for the proposed new or modified connection shall be determined based on that** risk classification ~~**by determining the Altman Z-score for the load customer using the following formula:**~~

~~$Z= .717*X_1 + .847*X_2 + 3.11*X_3 + .42*X_4 + .998*X_5$~~

~~**where**~~

~~X_1 **= net working capital/total assets**~~

~~X_2 **= retained earnings/total assets**~~

~~X_3 **= earnings before interest and taxes / total assets**~~

~~X_4 **= shareholders equity/total liabilities**~~

~~X_5 **= sales/total assets**~~

~~**The intervals of the Altman Z-score and the corresponding risk classification are set out in the table below:**~~

~~**Altman Z-score**~~**as follows:**

Risk Classification	~~**< 1.20**~~**Economic Evaluation Period**
High risk	~~**1.20 - 2.05**~~**5 years**
Medium-~~**H**~~high risk	~~**2.05 - 2.9**~~**10 years**
Medium-~~**L**~~low risk	~~**> 2.9**~~**15 years**
Low risk	**25 years**

In accordance with section 6.5.2(a), the transmitter must include its risk classification methodology in its economic evaluation procedure. That methodology must meet the following criteria: transparency, analytic rigour and relative ease of implementation. It must also meet the requirements set out below and, where applicable, be consistent with the recommendations contained in a report to the Board dated March 30, 2000, prepared by PHB Hagler Bailly and entitled "Risk Assessment Methodology Options" (the "Report"). The report is available from the Board's website at www.oeb.gov.on.ca.

The risk classification methodology to be used by the transmitter shall depend on whether the new or modified connection is being financed on a "project finance" basis or is being financed by other means.

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, the transmitter must use bond ratings applicable to the customer where these are available. The transmitter will determine the risk classification based on the bond ratings in accordance with the Report.

Where no bond ratings are available for the customer, the transmitter shall use either of the two other methodologies set out in the Report; namely, the Altman Z-score Model or the Kaplan-Urwitz Model, if the necessary information is available to the transmitter. The transmitter's methodology must indicate the circumstances in which it may choose to use one Model rather than the other. The transmitter will determine the risk classification based on the customer's Altman Z-score or Kaplan-Urtwiz score in accordance with the Report. The transmitter shall ensure that it uses the most recent version of the Model in question, and shall include the most recent version of the Model in its economic evaluation procedure referred to in section 6.5.2. 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.

Where the transmitter considers that the risk classification that results from the application of the bond rating or Altman Z-score/Kaplan-Urtwiz score methodology produces an anomalous result, the transmitter may with the consent of the customer assign a different risk classification to the new or proposed connection. Where the customer does not consent, the transmitter may apply to the Board for approval to determine the customer's risk classification using an alternate methodology.

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

New or Modified Connections that are Project Financed

The transmitter shall outline in the risk classification methodology that forms part of its economic evaluation procedure the general approach or guiding principles that the transmitter will use in determining the risk classification for new or modified connections that are being financed by the customer on a "project financing" basis. The transmitter shall determine the risk classification for such new or modified connections based on that general approach or guiding principles, using information that the transmitter considers reasonable in the circumstances. The transmitter shall disclose to the customer in question the methodology and information used to determine the risk classification in such cases.

APPENDIX 5

METHODOLOGY AND ASSUMPTIONS FOR ECONOMIC EVALUATIONS

APPENDIX 5

METHODOLOGY AND ASSUMPTIONS FOR ECONOMIC EVALUATIONS

A transmitter shall use the methodology set out in this Appendix to conduct any economic evaluation under this Code. This methodology consists of a discounted cash flow (DCF) calculation for the connection of load customer's new or modified facilities using the methodology set out below. As required by section 6.5.2, separate economic evaluations must be conducted for transformation connection facilities and line connection facilities.

Net Present Value ("NPV")		=	Present Value ("PV") of Operating Cash Flow + PV of Capital Cost Allowance ("CCA") Tax Shield - PV of Capital, calculated over the economic evaluation period.
1.	PV of Operating Cash Flow	=	~~P V~~PV of Net Operating Cash (before taxes) - ~~P V~~PV of Taxes
	a) PV of Net Operating Cash	=	PV of (Annual Connection Revenue - Annual Connection Operating Maintenance & Administration ("OM&A") Costs).
	Annual Connection Revenue	=	The relevant annual connection rates revenue derived from that part of the customer's new load that exceeds the total normal operating capacity of any connection facility already serving that customer and which will be served by a new connection facility or modification
	Annual Connection OM&A Costs	=	The relevant annual administrative costs associated with supply of the customer plus the relevant annual operating and maintenance costs associated with new or modified connection facilities of the transmitter.
	b)PV of Taxes	=	PV of Municipal Taxes + PV of Capital Taxes + PV of Income Taxes (before Interest tax shield)
	Annual Municipal Taxes	=	(Municipal Tax Rate)* (Assessed Value of Relevant Property)
	Annual Capital Taxes	=	(Capital Tax Rate) * (Relevant Closing Undepreciated Capital Cost Balance)
	Relevant Closing Undepreciated Capital Cost Balance	=	That portion of the transmitter's Closing Undepreciated Capital Cost Balance attributed to the new or enhanced connection assets associated with the specific connection.
	Annual Income Taxes	=	(Income Tax Rate) * (Net Annual Operating Cash - Annual Municipal Taxes - Annual Capital Taxes)
	Net Annual Operating Cash	=	(Annual Connection Revenue - Annual Connection OM&A)
2.	PV of CCA Tax Shield	=	[(Income Tax Rate) * (CCA Rate) * (Total Annual Capital Expenditure)] / [CCA Rate + Discount Rate]
	–CCA Rate	=	Capital Cost Allowance Rate
	–Total- Annual Capital— Expenditure	=	Sum of the total relevant Annual Capital Expenditures of the transmitter.

~~3.~~ 3. PV of Capital	=	~~P V~~PV of Annual Capital Expenditures
-Annual Capital Expenditures	=	The relevant annual capital expenditures of the transmitter based on fully allocated costing principles including capital for new connection facilities and/or modified connection facilities to accommodate the proposed new or upgraded customer connection and any transfer price paid to a customer for any facilities built under an alternative bid option and transferred to the transmitter.

Notes:

The Capital Tax Rate is a combination of the Federal Large Corporation Tax Rate and the Provincial Capital Tax Rate.

The Income Tax Rate is a combination of the Federal Income Tax Rate and the Provincial Income Tax Rate.

Land is not eligible for CCA.

The PV of CCA Tax Shield can also be calculated annually and present valued in the PV of Taxes calculation. An adjustment is needed to account for the ½ year CCA rule.

For purposes of the calculations above, a transmitter shall ensure that the most up-to-date current and **known** future federal and provincial tax rates are being used.

Assumptions

1. The economic evaluation period shall be determined as follows based on the risk classification of the proposed new or modified connection as determined by the transmitter in accordance with Appendix 4:

Risk Classification	Economic Evaluation Period
High Risk	5 years
Medium-High Risk	10 years
Medium-Low Risk	15 years
Low Risk	25 years

2. The discount rate to be used in the DCF calculation shall be based on the transmitter's current deemed debt-to-equity ratio, debt and preference share costs and Board-approved rate of return on equity. Up-front capital expenditures will be discounted at the beginning of the project year and capital expended throughout the year will be mid-year discounted. The same approach to discounting will be used for revenues and OM&A expenditures.

3. Capital costs shall be based on the minimum standard design required to supply the forecasted customer load except where the new or modified facility was previously planned by the transmitter, in which case the capital costs shall be limited to the cost of advancement as required by section 6.5.2.