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December 11, 2012

via RESS e-filing – signed original to follow by courier

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
PO Box 2319
2300 Yonge Street, 27th floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

**Re: Toronto Hydro-Electric System Limited (“THESL”)
OEB File No. EB-2012-0064 (the “Application”)
Oral Hearing Undertaking Responses**

THESL writes in respect of the above-noted matter. Please find enclosed THESL’s responses to the following undertakings from the oral hearing of phase one of the Application:

- J1.1
- J1.3
- J1.4
- J1.5
- J1.6
- J2.1

Please do not hesitate to contact me if you have any questions.

Yours truly,

[original signed by]

Amanda Klein

Director, Regulatory Affairs

Toronto Hydro-Electric System Limited

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:AK/RB

cc: Fred Cass of Aird & Berlis LLP, Counsel for THESL, by electronic mail only
Intervenors of Record for EB-2012-0064 by electronic mail only

**ORAL HEARING UNDERTAKING RESPONSE
INTERVENOR 10 – SCHOOL ENERGY COALITION**

1 **UNDERTAKING NO. J1.1:**

2 **Reference(s):**

3

4 Provide a current estimate of THESL's 2012 spending, previously forecast to be
5 approximately \$283M as of August 31, 2012.

6

7 **RESPONSE:**

8 THESL's current estimate of its 2012 spending remains approximately \$283M.

**TECHNICAL CONFERENCE UNDERTAKING RESPONSE
INTERVENOR 6 – CONSUMERS COUNCIL OF CANADA**

1 **UNDERTAKING NO. J1.3:**

2 **Reference(s):**

3

4 Confirm whether there were any formal instructions directing the stoppage of work after
5 THESL received the OEB decision in January 2012.

6

7 **RESPONSE:**

8 Please see the attached Appendix “A” to the Schedule.

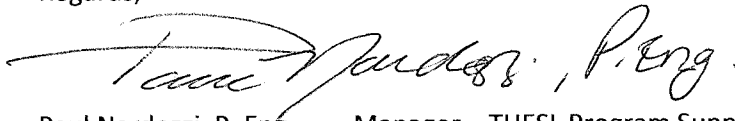
January 9, 2012

STOP Work Notice - THESL Capital Projects

On Thursday January 5, 2012 the Ontario Energy Board ("OEB") released its decision in the matter EB-2011-0144 by which it dismissed Toronto Hydro-Electric System Limited's ("THESL") application for changes to rates charged for electricity distribution for the 2012 – 2014 calendar years on a cost of service basis (full text of the decision can be found at www.oeb.gov.on.ca). This decision impacts the funding available to THESL for capital projects. THESL is evaluating the impact of the OEB's decision on its capital work program and we will be communicating the full effect of the decision at the conclusion of this analysis. In the interim, THESL requires that effective immediately you STOP design and construction work, and the incurrence of further costs, on **all** projects issued to you by the THESL **Program Support Office, Distribution Projects East, Distribution Projects West and Distribution Projects Centre** business units under any job instructions or scope assignments pursuant to the Term Contract for Civil and Electrical Design-Build Services in place with your firm until further notice. Please make all work sites safe for the public and leave work sites in a condition which would allow work to restart if required. Additional instructions will be provided in due course. I would ask for your patience during this reassessment period.

Projects which are exceptions to this stop work notice and require your continued support due to their customer impact or urgent nature will be communicated to you in writing by the Manager of the appropriate business unit on a case by case basis.

Regards,



Paul Nardozi, P. Eng Manager – THESL Program Support Office (PSO)

Copy to:

Jeff Mills , P. Eng	Manager – THESL Distributions Projects East (DPE)
Joseph Muglia, P. Eng	Manager – THESL Distribution Projects Centre (DPC)
Steve Strugar, P. Eng	Manager – THESL Distribution Projects West (DPW)
Mike Walker, P. Eng	Manager – THESL Program Management Office (PMO)
Jim Trgacheff, C.E.T	Manager – THESL Customer Offers and Sustainment (COS)
Darren Mason	Manager – THESL Power System Services East (PSS E)
John Borowitz, P. Eng	Manager – THESL Power System Services West (PSS W)
Gary Soper	Manager – THESL SDS East Distribution Services East (SDS E)
John Spina	Manager – THESL Secondary Distribution Services West (SDS W)

Note: Please note that the managers of the COS, PSS and SDS business units will issue you separate instructions regarding customer connection and reactive work.

**TECHNICAL CONFERENCE UNDERTAKING RESPONSE
INTERVENOR 6 – CONSUMERS COUNCIL OF CANADA**

1 **UNDERTAKING NO. J1.4:**

2 **Reference(s):**

3

4 Confirm whether there were there any memos or directions from senior executives
5 regarding the direction to spend above the depreciation level.

6

7 **RESPONSE:**

8 THESL has been unable to locate any written documentation that satisfies this request.

**TECHNICAL CONFERENCE UNDERTAKING RESPONSE
 INTERVENOR 1 – ONTARIO ENERGY BOARD STAFF**

1 **UNDERTAKING NO. J1.5:**

2 **Reference(s): Table 1 of OEB Staff 28**

3

4 For table 1 on OEB Staff interrogatory 28, rerun the calculations for job number one
 5 using \$3.00 and \$1.50, and then again using \$6.00 and \$3.00 as the input assumptions.

6

7 **RESPONSE:**

8 The revised Avoided Risk Cost results below have been performed for Underground
 9 Job #1 (as identified within Table 1 of THESL’s response to OEB Staff interrogatory 28)
 10 using the requested sensitivity adjustments to customer interruption costs. Please note
 11 that these adjustments reflect an extreme sensitivity, and as such, these values do not
 12 reflect the true costs associated with outages in THESL’s view.

13

14 **Table 1 – Avoided Risk Cost Results for Underground Job #1 with different inputs**

Job #	Outage Event Cost, Outage Duration Cost	Job Cost (\$M)	PV (2015 Cost of Deviating from Optimal Intervention) (\$M)	2012 Cost of Deviating from Optimal Intervention (\$M)	2012 Concurrent Intervention Benefit (\$M)	PV (2015 Net Project Benefit) (\$M)	2012 Net Project Benefit (\$M)	PV (2015 Project Net Cost) (\$M)	2012 Project Net Cost (\$M)	Three-Year Avoided Risk Cost (\$M)
1	\$3, \$1.5	\$2.90	\$5.38	\$5.57	\$2.12	\$4.27	\$5.10	\$1.11	\$0.47	\$0.64
1	\$6, \$3	\$2.90	\$8.13	\$7.67	\$2.12	\$6.77	\$8.07	\$1.37	-\$0.40	\$1.77
1	\$30, \$15	\$2.90	\$31.58	\$26.56	\$2.12	\$26.71	\$31.87	\$4.87	-\$5.31	\$10.18

15 As can be seen in Table 1 above, even including these extreme sensitivities, the Three-
 16 Year Avoided Risk Cost remains directionally aligned to the results presented in
 17 THESL’s response to OEB Staff interrogatory 28.

TECHNICAL CONFERENCE UNDERTAKING RESPONSE INTERVENOR 1 – ONTARIO ENERGY BOARD STAFF

1 **UNDERTAKING NO. J1.6:**

2 **Reference(s): OEB Staff 62B**

3

4 Provide properly labeled copies of the appendices requested in OEB Staff interrogatory
5 62B.

6

7 **RESPONSE:**

8 As THESL stated in its response to technical conference undertaking JT1.21, the correct
9 documents were filed as appendices to THESL's response to OEB Staff interrogatory 62.
10 However, the appendices were incorrectly referenced in THESL's interrogatory response.

11

12 The correct references for the appendices are as follows:

13 Appendix A – Gas and Electricity Inspection Act

14 Appendix B – IESO Market Rules

15 Appendix C – IESO Wholesale Revenue Metering Standards - Hardware

16 Appendix D – THESL's IESO-Approved Upgrade Proposal

17

18 Copies of these appendices are attached for reference.

19

20 Please note that the letter included at Appendix D comprises THESL's IESO-approved
21 upgrade proposal. THESL is reliant on Hydro One in respect of scheduling the
22 upgrading of specific meter points.



CANADA

CONSOLIDATION

CODIFICATION

Electricity and Gas Inspection Act

Loi sur l'inspection de l'électricité et du gaz

R.S.C., 1985, c. E-4

L.R.C., 1985, ch. E-4

Current to September 4, 2012

À jour au 4 septembre 2012

Last amended on November 29, 2011

Dernière modification le 29 novembre 2011

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tings or other apparatus of the contractor for the measurement or conveyance of electricity or gas supplied by him, or

(b) ascertaining the quantity or making other measurements of the electricity or gas consumed or supplied,

enter any premises belonging to or occupied by the purchaser to whom the contractor has undertaken to supply the electricity or gas.

Liability of contractor

(2) A contractor that has exercised any right of entry pursuant to subsection (1) is responsible for, and shall forthwith repair and make good, all damage caused by the entry or by any inspection, testing, installation, repair, removal or change for the purpose of which the contractor has exercised that right.

1980-81-82-83, c. 87, s. 7.

Service pressure reports

8. A contractor shall, if the regulations so require, report at prescribed intervals to the director, in respect of any gas supplied by the contractor, such particulars of the service pressures as are prescribed.

1980-81-82-83, c. 87, s. 8.

Verification

9. (1) Subject to subsections (2) and (3), where a contractor or purchaser intends to use or cause to be used a meter for the purpose of obtaining the basis of a charge for electricity or gas supplied by or to him, the meter shall not, until it has been verified and sealed in accordance with this Act and the regulations, be put into service.

Temporary dispensation

(2) The director may grant permission for the putting into service, without verification and sealing or without sealing, of any meter or any class, type or design of meter on a temporary basis under such terms and conditions and for such period as the director stipulates.

Permanent dispensation

(3) The director may grant approval for the putting into service, without verification and sealing or without sealing, of any meter or any class, type or design of meter.

Director's approval required for verification

(4) No meter shall be verified pursuant to this Act until it or the class, type or design of meter to which it belongs has received the approval of the director.

1980-81-82-83, c. 87, s. 9.

a) soit d'inspecter, d'éprouver, de poser, de réparer, d'enlever ou de changer, pourvu qu'il en ait le droit, tout compteur, fil, tuyau, appareillage ou autre appareil du fournisseur pour la mesure ou le transport de l'électricité ou du gaz fourni par lui;

b) soit de déterminer la quantité d'électricité ou de gaz consommé ou fourni ou de prendre d'autres mesures se rapportant à l'électricité ou au gaz consommé ou fourni.

Responsabilité des fournisseurs

(2) Le fournisseur est responsable des dommages occasionnés lors de l'entrée ou des opérations prévues au paragraphe (1) et doit immédiatement les réparer.

1980-81-82-83, ch. 87, art. 7.

Rapports sur les pressions du service

8. Si les règlements l'exigent, les fournisseurs font, aux intervalles prévus par les règlements, rapport au directeur sur les caractéristiques des pressions de service prévues au règlement et relatives au gaz qu'il fournit.

1980-81-82-83, ch. 87, art. 8.

METERS

COMPTEURS

Vérification

9. (1) Sous réserve des paragraphes (2) et (3), un compteur dont un fournisseur ou un consommateur prévoit l'usage aux fins d'établir le montant exigible pour l'électricité ou le gaz qu'il fournit ou qui lui est fourni, selon le cas, ne peut être mis en service que s'il a d'abord été vérifié et scellé conformément à la présente loi ou aux règlements.

Dispense temporaire

(2) Le directeur peut permettre, suivant les modalités et pour la période qu'il fixe, la mise en service temporaire, sans vérification ni scellage ou sans scellage, de tout compteur ou de toute catégorie, de tout type ou de tout modèle de compteur.

Dispense permanente

(3) Le directeur peut approuver la mise en service, sans vérification ni scellage ou sans scellage, de tout compteur ou de toute catégorie, de tout type ou de tout modèle de compteur.

Conditions préalables à la vérification

(4) La vérification d'un compteur en vertu de la présente loi est précédée de l'approbation, par le directeur, du compteur lui-même ou de la catégorie, du type ou du modèle auquel il appartient.

1980-81-82-83, ch. 87, art. 9.

Accredited
meter verifiers

10. Subject to the regulations, any person
(a) may, on making application in prescribed manner, be accredited by the director for purposes of the verification, sealing, reverification and resealing of any meter or any class, type or design of meter and the execution of prescribed incidental functions by that person or their employee, agent or mandatar; and
(b) shall, in the event of the granting of the application under paragraph (a), be issued with a certificate of accreditation in prescribed form by the director.

R.S., 1985, c. E-4, s. 10; 2011, c. 21, s. 122.

Revocation of
permission

11. (1) A permission granted under subsection 9(2) may, by notice given in prescribed manner, be revoked by the director for failure to comply with any of the terms or conditions on which the permission was granted.

Revocation of
approval or
accreditation

(2) Any approval granted under subsection 9(3) or (4) or accreditation granted under section 10 may, by notice given in prescribed manner, be revoked by the Minister for failure to comply with any conditions to which that approval or accreditation has been made subject in accordance with the regulations.

Requirement on
revocation

(3) Where a permission under subsection 9(2) or an approval under subsection 9(3) is revoked, any meter that is in service pursuant to the permission or approval at the time of the revocation shall thereupon be taken out of service unless, in the case of revocation of an approval, the notice of revocation otherwise provides.

Right to make
representations

(4) No permission under subsection 9(2), approval under subsection 9(3) or (4) or accreditation under section 10 shall be revoked unless
(a) notice of the proposal to revoke it has been given in prescribed manner;
(b) any interested person objecting to the proposal has been afforded reasonable opportunity to make representations with respect to his objection; and
(c) the representations, if any, so made have been taken into account in deciding whether to implement such proposal.

1980-81-82-83, c. 87, s. 11.

10. Sous réserve des règlements, toute personne :

a) peut, en en faisant la demande de la façon réglementaire, être accréditée par le directeur pour la vérification et le scellage initiaux et subséquents de tout compteur ou de toute catégorie, de tout type ou de tout modèle de compteur ainsi que pour l'exercice, tant par elle-même que par son employé ou son mandataire, des fonctions réglementaires qui s'y rapportent;

b) doit, en cas d'acceptation de la demande visée à l'alinéa a), recevoir du directeur un certificat d'accréditation en la forme réglementaire.

L.R. (1985), ch. E-4, art. 10; 2011, ch. 21, art. 122.

Vérificateur
accrédité

Révocation de la
permission

11. (1) Le directeur peut, par avis donné de la façon réglementaire, révoquer la permission accordée en vertu du paragraphe 9(2) pour défaut d'observer les modalités fixées en conformité avec les règlements.

(2) Le ministre peut, par avis donné de la façon réglementaire, révoquer les approbations ou les accréditations obtenues en vertu des paragraphes 9(3) et (4) et de l'article 10, respectivement, pour défaut d'observer les modalités fixées en conformité avec les règlements.

Révocation
d'approbation
ou d'accréditation

(3) Sur révocation d'une permission ou d'une approbation obtenues en vertu des paragraphes 9(2) ou (3), respectivement, les compteurs mis en service en vertu de celles-ci sont alors mis hors service sauf si l'avis de révocation, dans le cas de la révocation d'une approbation, prévoit autre chose.

Effet de la
révocation

(4) Les permissions, approbations et accréditations visées aux paragraphes 9(2), (3) ou (4) et à l'article 10, respectivement, ne peuvent être révoquées que si les trois conditions suivantes sont remplies :

Droit d'être
entendu

a) un avis de l'intention de révoquer a été donné de la façon réglementaire;

b) les intéressés qui s'opposent à la révocation ont eu la possibilité de présenter des observations à cet égard;

c) on a tenu compte des observations, s'il en est.

1980-81-82-83, ch. 87, art. 11.

Reverification	<p>12. (1) Within</p> <p>(a) the period of eight years from verification, and the period of eight years from each reverification, of a meter used for the purpose of obtaining the basis of a charge for electricity,</p> <p>(b) the period of seven years from verification, and the period of seven years from each reverification, of a meter used for the purpose of obtaining the basis of a charge for gas, or</p> <p>(c) such other period from any or each verification or reverification of a meter as may be determined in any case or class of cases by the director,</p> <p>the meter shall be submitted to reverification, together with resealing or marking, or to cancellation of the seal or mark, as the case may require, under this Act and the regulations.</p>	<p>12. (1) Tout compteur doit être soumis à une nouvelle vérification :</p> <p>a) dans le cas d'un compteur servant à établir un montant exigible pour la fourniture d'électricité, dans les huit ans de la dernière vérification;</p> <p>b) dans le cas d'un compteur servant à établir un montant exigible pour la fourniture de gaz, dans les sept ans de la dernière vérification;</p> <p>c) dans certains cas ou dans certaines catégories de cas déterminés par le directeur, dans les délais fixés à cet égard par celui-ci.</p> <p>Le compteur fait alors l'objet d'un nouveau scellage ou d'un nouveau marquage ou d'une annulation du sceau ou de la marque, selon le cas, en conformité avec la présente loi et les règlements.</p>	Nouvelle vérification
Where shorter period determined	<p>(2) No period determined under paragraph (1)(c) for any reverification shall be shorter than the period specified therefor in paragraph (1)(a) or (b) unless the director so determines the period under paragraph (1)(c) with the approval of the Minister, in which event the director shall cause to be given, in prescribed manner and before a prescribed time prior to expiration of the period determined under paragraph (1)(c), notice that the reverification within the period so determined, instead of within the period so specified, is required.</p> <p>1980-81-82-83, c. 87, s. 12.</p>	<p>(2) La période fixée en vertu de l'alinéa (1)c) pour une nouvelle vérification ne peut être plus courte que celle dont font état les alinéas (1)a) ou b) qu'avec l'approbation du ministre; dans un tel cas, le directeur en fait donner un préavis dans les délais réglementaires et de la façon réglementaire avant l'expiration de la période fixée en vertu de l'alinéa (1)c).</p> <p>1980-81-82-83, ch. 87, art. 12.</p>	Période plus courte
Exercise of powers by inspector	<p>13. The power to deal with a meter in any manner provided or referred to in section 12 or specified or authorized pursuant to paragraph 28(1)(c) or (d) may be exercised by an inspector, on the general or special instructions of the director, whether or not the meter may be or has been so dealt with by an accredited meter verifier.</p> <p>1980-81-82-83, c. 87, s. 13.</p>	<p>13. Suite aux directives générales ou spéciales du directeur, les inspecteurs peuvent soumettre un compteur aux exigences prévues à l'article 12, ou spécifiées ou autorisées conformément aux alinéas 28(1)c) ou d), indépendamment du fait que le compteur ait été, ou puisse être soumis, aux mêmes exigences par un vérificateur accrédité.</p> <p>1980-81-82-83, ch. 87, art. 13.</p>	Exercice des pouvoirs par l'inspecteur
Certificates	<p>14. On verification or reverification of a meter by an inspector or an accredited meter verifier who is not the owner of the meter, the inspector or meter verifier shall, in prescribed manner, issue to the owner a certificate containing prescribed particulars respecting the verification or reverification.</p> <p>1980-81-82-83, c. 87, s. 14.</p>	<p>14. L'inspecteur, ou le vérificateur accrédité qui n'est pas le propriétaire du compteur, qui soumet celui-ci à une vérification, initiale ou subséquente, délivre, de la façon réglementaire, au propriétaire un certificat contenant les renseignements réglementaires à l'égard de cette vérification.</p> <p>1980-81-82-83, ch. 87, art. 14.</p>	Certificats

Persons authorized to deal with meters

15. (1) No meter shall be verified, sealed, reverified or resealed by any person other than an inspector or an accredited meter verifier, and no person,

(a) other than an inspector, shall break the seal of any verified meter the correctness of which is in dispute; or

(b) other than an inspector, an accredited meter verifier or the owner, shall, except as prescribed, break the seal of any verified meter.

15. (1) Seul un inspecteur ou un vérificateur accrédité peut vérifier, sceller, vérifier de nouveau ou sceller de nouveau un compteur, et seul :

a) un inspecteur peut briser le sceau d'un compteur vérifié dont l'exactitude est contestée;

b) un inspecteur, un vérificateur accrédité ou le propriétaire peut, sauf règlements à l'effet contraire, briser le sceau d'un compteur vérifié.

Personnes autorisées

Meter with broken seal

(2) Except as otherwise provided by or pursuant to this Act, no meter on which the seal has been broken shall be put into service or continued in use until it has been reverified and resealed.

1980-81-82-83, c. 87, s. 15.

(2) Sauf disposition contraire de la présente loi ou édictée sous son régime, aucun compteur dont le sceau a été brisé ne peut être mis en service ni continuer à servir tant qu'il n'a pas été vérifié de nouveau et scellé de nouveau.

1980-81-82-83, ch. 87, art. 15.

Sceau brisé

Owner's liability

16. (1) The owner of each verified meter that is in use shall keep it in good repair and is responsible for causing it to be dealt with from time to time in accordance with the requirements of this Act and the regulations and, subject to those requirements, the owner is liable to pay any fees chargeable for so dealing with the meter.

16. (1) Le propriétaire de chaque compteur vérifié qui est en usage le conserve en bon état et voit à ce qu'il soit soumis aux exigences de la présente loi et de ses règlements d'application; sous réserve de ces exigences, le propriétaire est responsable du paiement des droits qui y sont afférents.

Responsabilité du propriétaire

Owner's records

(2) An owner referred to in subsection (1) shall keep records containing such information related to the administration of this Act, in such form, at such place and for such period as may be prescribed.

1980-81-82-83, c. 87, s. 16.

(2) Le propriétaire visé au paragraphe (1) tient des dossiers sur l'application de la présente loi conformément aux règlements, qui prescrivent leur contenu et leur forme ainsi que l'endroit où ils sont gardés et la période pendant laquelle ils sont tenus.

1980-81-82-83, ch. 87, art. 16.

Dossiers du propriétaire

Records of accredited meter verifiers

17. Every accredited meter verifier shall keep records containing such information related to the administration of this Act, in such form, at such place and for such period as may be prescribed.

1980-81-82-83, c. 87, s. 17.

17. Les vérificateurs accrédités tiennent des dossiers sur l'application de la présente loi conformément aux règlements, qui prescrivent leur contenu et leur forme ainsi que l'endroit où ils sont gardés et la période pendant laquelle ils sont tenus.

1980-81-82-83, ch. 87, art. 17.

Dossiers du vérificateur accrédité

Examination of records

18. All records kept pursuant to sections 16 and 17 shall be open for examination by an inspector during normal business hours and the inspector may make such copies thereof or extracts therefrom as he may require.

1980-81-82-83, c. 87, s. 18.

18. Les dossiers tenus conformément aux articles 16 et 17 peuvent être examinés pendant les heures ouvrables normales par un inspecteur, qui peut en faire les copies ou les extraits qu'il juge nécessaires.

1980-81-82-83, ch. 87, art. 18.

Examen des dossiers

Contractor to provide facilities for testing

19. Every contractor shall provide free of charge,

19. Tout fournisseur est tenu de procurer gratuitement, selon qu'il s'engage à fournir de l'électricité ou du gaz :

Le fournisseur doit fournir gratuitement les installations d'épreuve

(a) where the supply of electricity is undertaken by him, electricity, equipment and all reasonable facilities, and

(b) where the supply of gas is undertaken by him, gas, equipment and all reasonable facilities,

at such place or places as the director may designate for the purpose of making such tests of the electricity or gas and of any of the meters and other apparatus relating to that supply as the director deems necessary for the purposes of this Act.

1980-81-82-83, c. 87, s. 19.

Entry by accredited meter verifier or inspector exercising powers

20. Any premises may, at all reasonable times, be entered

(a) by any inspector, where on reasonable grounds he believes the entry to be required, for the purpose of exercising any power conferred on him by section 13 or 18; or

(b) by any accredited meter verifier, where on reasonable grounds he believes the entry to be required, for the purpose of executing, in respect of a meter on or in those premises, any functions relating or incidental to its verification or reverification.

1980-81-82-83, c. 87, s. 20.

Assistance to inspector or accredited meter verifier

21. The owner or person in charge of, and every person employed in, premises entered by an inspector or an accredited meter verifier pursuant to section 20 or subsection 26(6) shall give the inspector or accredited meter verifier all reasonable assistance in his power to enable the inspector or accredited meter verifier to execute his functions pursuant to this Act and shall furnish him with such information with respect to the administration of this Act and the regulations as he may reasonably require.

1980-81-82-83, c. 87, s. 21.

Direction to take meter out of service

22. (1) The director may, by notice in writing given in prescribed manner to the owner of any meter, require the withdrawal of the meter from service if the director, having regard to the requirements of this Act and the regulations with respect to that meter or to meters of its class, type or design, believes on reasonable grounds that the withdrawal is necessary.

a) l'électricité, l'équipement et les installations adéquates;

b) le gaz, l'équipement et les installations adéquates,

aux endroits que le directeur peut désigner, pour procéder aux épreuves portant sur l'électricité ou sur le gaz, et sur les compteurs et les autres appareils relatifs à leur approvisionnement, que le directeur juge nécessaires pour l'application de la présente loi.

1980-81-82-83, ch. 87, art. 19.

20. Peuvent entrer dans tout lieu à des heures convenables, s'ils le jugent nécessaire en se fondant sur des motifs raisonnables :

a) les inspecteurs, aux fins d'exercer les pouvoirs que leur confèrent les articles 13 ou 18;

b) les vérificateurs accrédités, aux fins d'exercer les fonctions relatives ou connexes à la vérification, initiale ou subséquente, d'un compteur qui se trouve dans ce lieu.

1980-81-82-83, ch. 87, art. 20.

Accès accordé aux vérificateurs accrédités et aux inspecteurs

21. Le propriétaire des lieux où sont entrés un inspecteur ou un vérificateur accrédité, conformément à l'article 20 ou au paragraphe 26(6), le responsable de ces lieux et chaque personne qui y travaille doivent fournir à l'inspecteur ou au vérificateur, dans la mesure du possible, l'aide dont ces derniers ont besoin pour exercer les fonctions que la présente loi et les règlements leur confèrent, ainsi que les renseignements relatifs à l'application de la présente loi et des règlements dont ils peuvent avoir besoin dans les circonstances.

1980-81-82-83, ch. 87, art. 21.

Aide fournie à l'inspecteur ou au vérificateur accrédité

22. (1) Le directeur qui a des motifs raisonnables de croire que cette mesure est nécessaire, compte tenu des exigences de la présente loi et des règlements relatives à un compteur donné ou aux compteurs de sa catégorie, de son type ou de son modèle, peut par avis écrit donné de la façon réglementaire, ordonner au propriétaire du compteur de le mettre hors service.

Ordre de mettre un compteur hors service

Compliance with direction	<p>(2) An owner to whom notice is given under subsection (1) shall forthwith take all reasonable steps to comply therewith.</p> <p>1980-81-82-83, c. 87, s. 22.</p>	<p>(2) Le propriétaire qui a reçu l'avis visé au paragraphe (1) prend alors toutes les mesures raisonnables pour s'y conformer.</p> <p>1980-81-82-83, ch. 87, art. 22.</p>	Observation de la directive
DISPUTES		CONTESTATIONS	
Dispute procedure	<p>23. (1) At the request of a contractor or purchaser who is dissatisfied with the condition or registration of any meter used in respect of electricity or gas supplied by or to him, an inspector shall proceed in prescribed manner and shall collect such payments, from such persons, at or within such times and for the provision of such services and facilities incidental to proceeding in that manner as are prescribed.</p>	<p>23. (1) Sur demande du fournisseur ou du consommateur mécontent de l'état ou de l'enregistrement d'un compteur qui est ou a été utilisé à l'égard du gaz ou de l'électricité qu'il a fourni ou qui lui a été fourni, l'inspecteur procède de la façon réglementaire et perçoit, de ces personnes, au moment ou dans les délais réglementaires, les paiements prévus par les règlements pour les services et les facilités fournis suite à son action.</p>	Façon de procéder en cas de contestation
Duties of inspector	<p>(2) Where an inspector proceeds in the matter of any request pursuant to subsection (1), he shall issue to each person directly concerned with the matter, including the owner of any meter tested by the inspector in the course of so proceeding, a certificate setting forth the inspector's findings with respect to that matter and findings so set forth shall include the result of the test, if any.</p>	<p>(2) L'inspecteur qui donne suite à la demande dont il est saisi conformément au paragraphe (1) donne aux intéressés un certificat exposant ses conclusions, lesquelles contiennent les résultats des épreuves effectuées, le cas échéant; s'il a effectué des épreuves, il donne aussi une copie du certificat au propriétaire du compteur en cause.</p>	Obligations de l'inspecteur
Reference to director for reconsideration	<p>(3) Where a person who is provided with a certificate of findings by an inspector pursuant to subsection (2) gives notice to the inspector within a prescribed time that he is dissatisfied with the findings, the inspector shall refer the matter to the director for reconsideration in prescribed manner.</p>	<p>(3) L'inspecteur avisé dans le délai réglementaire par le destinataire du certificat visé au paragraphe (2) que ce dernier n'est pas d'accord avec ses conclusions, renvoie la question au directeur pour qu'il la reconsidère de la façon réglementaire.</p>	Renvoi au directeur
Director's decision final	<p>(4) The decision of the director on a matter referred to him pursuant to subsection (3) is final and conclusive.</p> <p>1980-81-82-83, c. 87, s. 23.</p>	<p>(4) La décision du directeur sur une question qui lui est soumise conformément au paragraphe (3) est sans appel.</p> <p>1980-81-82-83, ch. 87, art. 23.</p>	La décision du directeur est sans appel
Loss by error	<p>24. (1) Subject to subsections (2) to (4), where, on a proceeding in the matter of any request pursuant to section 23, a meter is found to register with an error not permitted by the regulations, the error shall be deemed to have existed from the commencement of the period of three months before the date of the receipt of the request, or from the date on which the meter was last sealed if the sealing took place within that period.</p>	<p>24. (1) Sous réserve des paragraphes (2) à (4), dans le cas où, suite à la demande visée à l'article 23, il est constaté, dans l'enregistrement d'un compteur, un écart non autorisé par les règlements, cet écart est réputé avoir existé à partir du début de la période de trois mois précédant la date de réception de la demande, ou à compter de la date à laquelle le compteur a été scellé pour la dernière fois, si l'apposition du sceau a eu lieu pendant cette période.</p>	Écart constaté
Idem	<p>(2) Subject to subsections (3) and (4), where, on a proceeding in the matter of any request pursuant to section 23, a meter is found to register with an error not permitted by the regu-</p>	<p>(2) Sous réserve des paragraphes (3) et (4), dans le cas où, suite à la demande visée à l'article 23, il est constaté, dans l'enregistrement d'un compteur, un écart non autorisé par les rè-</p>	Idem

MARKET RULES

for the Ontario
Electricity Market

Market Rules

Chapter 6

Wholesale Metering

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1. Introduction

1.1 Application and Interpretation

1.1.1 This Chapter applies to the following:

- 1.1.1.1 the *IESO*;
- 1.1.1.2 *market participants*; and
- 1.1.1.3 *metering service providers*.

1.1.2 Nothing in this Chapter shall affect the obligation of any *market participant*, *metered market participant* or *metering service provider* to comply with all applicable *federal metering requirements* provided that, where this Chapter or a policy or standard established by the *IESO* pursuant to this Chapter prescribes a higher standard than that prescribed by *federal metering requirements*, the relevant *market participant*, *metered market participant* or *metering service provider* shall, for purposes of this Chapter, comply with such higher standard.

1.1.3 This Chapter does not apply to an *intertie metering point*.

1.1.4 This Chapter does not apply to a *metering installation* that is not used or required by these *market rules* to be used for *settlement* purposes in the *IESO-administered markets*.

1.2 Purpose

1.2.1 The purpose of this Chapter is to set out the rights and obligations of *market participants*, *metered market participants* and the *IESO*, and the rights, obligations and qualifications of *metering service providers* associated with the measurement of *energy*; the registration, provision, installation, commissioning, maintenance, repair, replacement, inspection, testing and audit of *metering installations*; and the provision, security and accuracy of *metering data* relating to the *real-time markets* or the *procurement markets*.

- 1.2.2 Nothing in this Chapter shall preclude a *metered market participant* from applying, or from permitting a *metering service provider* to apply, evolving technologies and processes relating to *metering* as they become available provided that such application is effected in accordance with section 12.1.1.

2. Requirements for Metering Installations

- 2.1.1 Subject to sections 2.1.3 and 2.1.5, the *IESO* shall not permit a person to participate in the *real-time markets* or the *procurement markets* or to cause or permit electricity to be conveyed into, through or out of the *IESO-controlled grid* in respect of a *connection point*, other than an *interconnection*, or in respect of an *embedded connection point* unless the *IESO* is satisfied that:
- 2.1.1.1 the *connection point* or *embedded connection point* has an associated *metering installation* that, subject to section 4.4, complies with the requirements of this Chapter and of any policy or standard established by the *IESO* pursuant to this Chapter. A single *metering installation* may be associated with more than one *connection point* or *embedded connection point*;
 - 2.1.1.2 if the person is or will be the *metered market participant* for the *metering installation* referred to in section 2.1.1.1:
 - a. the person has entered into an agreement under section 3.1.2.2(a) in relation to the *metering installation* or is a registered *metering service provider*; and
 - b. if the person is also an *embedded market participant*, has advised the relevant *distributor* or *transmitter* of the entering into of the agreement referred to in section 2.1.1.2(a); and
 - 2.1.1.3 either
 - a. such *metering installation* has been and continues to be registered with the *IESO* in accordance with the procedures referred to in section 6.1.2., or
 - b. such *metering installation* has been registered with the *IESO* in accordance with the procedures referred to in section 6.1.2 and the registration has expired provided that the *IESO* determines that the

continued use of the *metering installation* is necessary for the efficient operation of the *IESO-administered markets*.

- 2.1.2 Subject to section 2.1.3, the *IESO* shall refuse to permit a person to participate in the *real-time markets* or the *procurement markets* or to cause or permit electricity to be conveyed into, through or out of the *IESO-controlled grid* in respect of any *connection point*, other than an *interconnection*, or an *embedded connection point* if the conditions set forth in section 2.1.1 are not satisfied. Such refusal is a *reviewable decision*.
- 2.1.3 Section 2.1.1 and 2.1.2 shall not apply in respect of a person, other than a person that is or will be the *metered market participant* for a *metering installation*, that demonstrates to the satisfaction of the *IESO* that it will for *settlement* purposes have allocated to it *metering data* by means of *physical allocation data* submitted by a *metered market participant* in accordance with section 2.4 of Chapter 9.
- 2.1.4 This Chapter applies in respect of a *metering installation* that measures the consumption of *energy* in accordance with section 2.1A.1 of Chapter 9.

Temporary Withdrawal of Electricity without a Registered Wholesale Meter

- 2.1.5 The *IESO* may permit a *market participant* to withdraw electricity temporarily from the *IESO-controlled grid* at a *connection point* without a *metering installation* being registered with the *IESO* for that *connection point* under the conditions specified in the applicable *market manual*.

3. Metered Market Participants

3.1 General Obligations

- 3.1.1 Each *metered market participant* shall:
- 3.1.1.1 ensure that, subject to section 4.4, each *metering installation* in respect of which it is the *metered market participant* complies with the requirements set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter;
 - 3.1.1.2 comply with the obligations imposed on *metered market participants* in Appendix 6.1 and in any policy or standard established by the *IESO* pursuant to this Chapter; and

- 3.1.1.3 coordinate electronic access, by persons other than the *IESO*, to each *metering installation* in respect of which it is the *metered market participant* so as to prevent such persons from accessing the *metering installation* at a time or in a manner that may adversely affect the ability of the *IESO* to access the *metering data* in that *metering installation* in accordance with the notice given pursuant to section 8.1.7.
- 3.1.2 Each *metered market participant* shall:
- 3.1.2.1 if a registered *metering service provider*:
- a. subject to section 4.4, register, provide, install, commission, maintain, repair, replace, inspect and test each *metering installation* in respect of which it is the *metered market participant* in accordance with the provisions of this Chapter and of any policy or standard established by the *IESO* pursuant to this Chapter; and
 - b. comply with all of the obligations imposed on *metering service providers* in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter; and
 - c. provide to the *IESO* the information referred to in sections 1.2 and 1.3 of Appendix 6.5 and update such information as required to maintain such information current; and
 - d. where the *metering installation* is associated with more than one *connection point, defined meter point* or *facility*, on a timely basis review and update the information referred to in sections 1.2 and 1.3 of Appendix 6.5 and provide it to the *IESO*:
 - i. annually; and
 - ii. when material changes are made to the *IESO-controlled grid* downstream of the *metering installation* including the application by another *metered market participant* to register a different *metering installation* downstream of the *metering installation*; or
- 3.1.2.2 if not a registered *metering service provider*:
- a. enter into an agreement with a registered *metering service provider* for the registration, provision, installation, commissioning, maintenance, repair, replacement, inspection and testing by that registered *metering service provider* of each *metering installation* in respect of which it is the *metered market participant*; and

- b. ensure that its *metering service provider* provides the *IESO* with the information referred to in sections 1.2 and 1.3 of Appendix 6.5 and updates such information as required to maintain that information current; and
 - c. where the *metering installation* is associated with more than one *connection point, defined meter point* or *facility*, on a timely basis ensure that its *metering service provider* reviews and updates the information referred to in sections 1.2 and 1.3 of Appendix 6.5 and provide it to the *IESO*:
 - i. annually; and
 - ii. when material changes are made to the *IESO-controlled grid* downstream of the *metering installation* including the application by another *metered market participant* to register a different *metering installation* downstream of the *metering installation*; and
 - d. be liable to the imposition of financial penalties and other sanctions, in accordance with Chapter 3, in respect of the failure by each *metering service provider* that acts as a *metering service provider* for a *metering installation* in respect of which it is the *metered market participant* to comply with the obligations imposed on *metering service providers* in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter.
- 3.1.3 Nothing in section 3.1.2 shall prevent a *metered market participant* from entering into an agreement with one registered *metering service provider* for the provision, installation and commissioning of a *metering installation* and entering into a separate agreement with another registered *metering service provider* under which that other *metering service provider* assumes responsibility for all subsequent maintenance, repair, replacement, inspection and testing of that *metering installation*.
- 3.1.4 Each *metered market participant* shall bear all costs and expenses associated with:
- 3.1.4.1 the registration, provision, installation, commissioning, maintenance, repair, replacement and inspection of each *metering installation* for which it is the *metered market participant*;
 - 3.1.4.2 the routine testing, as described in section 7.1.1, of each *metering installation* in respect of which it is the *metered market participant*;

- 3.1.4.3 the testing, other than the routine testing referred to in section 3.1.4.2, and audit of each *metering installation* in respect of which it is the *metered market participant* where such costs and expenses are required to be borne by the *metered market participant* pursuant to section 7.3.1;
- 3.1.4.4 the security and accuracy of all *metering data* recorded in each *metering installation* for which it is the *metered market participant* and the transfer of such *metering data* to the communication interface of the *metering database*; and
- 3.1.4.5 gaining its own access to the *metering registry*, the *metering database* and the *metering data* recorded in each *metering installation* for which it is the *metered market participant*.
- 3.1.5 Nothing in section 3.1.4 shall prevent a *metered market participant* from entering into an agreement with a person pursuant to which agreement such person agrees to indemnify the *metered market participant* in respect of some or all of the costs and expenses referred to in section 3.1.4.

3.2 Transitional Arrangements

- 3.2.1 Notwithstanding any other provision of this Chapter, a person that owns a *metering installation* that is in service on the date of coming into force of this section 3.2 or that is brought into service between the date of coming into force of this section 3.2 and the *market commencement date* shall, unless an election is made by such person pursuant to section 3.2.2, apply for registration as a *metering service provider* and shall act as the *metering service provider* in respect of such *metering installation* from the *market commencement date* until the earliest expiry date of any seal period of any *meter* forming part of such *metering installation*. Once such seal period expires, the *metered market participant* for the *metering installation* shall make such alternative arrangements as may be necessary to comply with the provisions of this Chapter and of any policy or standard established by the *IESO* pursuant to this Chapter.
- 3.2.2 A person that owns a *metering installation* that is in service on the date of coming into force of this section 3.2 may elect to enter into an agreement with a registered *metering service provider* pursuant to which that *metering service provider* acts as the *metering service provider* in respect of such *metering installation*.
- 3.2.3 Notwithstanding section 3.1.2.2(c), a *metering service provider* designated as such pursuant to section 3.2.1 or 3.2.2, shall, in addition or in lieu of any liability that may be imposed on a *metered market participant* pursuant to section

3.1.2.2(c), be liable to the imposition of financial penalties and other sanctions, in accordance with the enforcement provisions of Chapter 3, in respect of a failure by the *metering service provider* to comply with the obligations imposed on *metering service providers* in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter, and for such purposes, *metering service providers* shall be deemed as *market participants*. Such *metering service providers* shall only be subject to such liability in respect of *metering installations* for which they are designated as *metering service providers* pursuant to section 3.2.1 or 3.2.2 and only until the earliest expiry date of any seal period of any *meter* forming part of the *metering installation*.

4. Metering Installation

4.1 Metering Installation Standards

- 4.1.1 Subject to sections 4.1.2, 4.4, and 4.6, each *metering installation* shall:
- 4.1.1.1 contain *meters* that are of a type that are described on the list of conforming *meters* established by the *IESO*;
 - 4.1.1.2 be comprised of two *meters*, at least one of which shall be a *revenue meter* that meets or exceeds the 0.2% accuracy class of ANSI standard C12.20;
 - 4.1.1.3 have *instrument transformers* whose current transformers and voltage transformers meet or exceed the 0.3% accuracy class of ANSI standard C57.13;
 - 4.1.1.4 meet the accuracy requirements set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter;
 - 4.1.1.5 meet the security requirements set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter;
 - 4.1.1.6 subject to section 10.3.2, be capable of collating *metering data* into *dispatch intervals*;
 - 4.1.1.7 be capable of separately registering and recording flows in each direction where bi-directional active *energy* flows may occur;

- 4.1.1.8 be capable of allowing remote access to the *metering data* contained in the *metering installation* in the manner set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter;
 - 4.1.1.9 be capable of storing *metering data* for at least 35 days; and
 - 4.1.1.10 comply with all other requirements set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter.
- 4.1.2 A *metering installation* may exceed the level of accuracy and other requirements set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter.
- 4.1.3 No *metering installation* shall be placed into service unless:
- 4.1.3.1 it has been commissioned in accordance with this Chapter and with any policy or standard established by the *IESO* pursuant to this Chapter;
 - 4.1.3.2 the communication equipment forming part of the *metering installation* has successfully passed an end-to-end test; and
 - 4.1.3.3 it has been registered with the *IESO* in accordance with the procedures described in section 6.1.2.
- 4.1.4 The *IESO* shall, upon request by a metered market participant or a metering service provider, review conceptual drawings for a metering installation proposed to be installed by the metered market participant or the metering service provider.
- 4.1.5 A *metered market participant* or a *market participant*, with the agreement of the relevant *metered market participant*, may arrange for a *metering installation* to contain features in addition to those specified in section 4.1.1 and in the requirements, policies or standards referred to in that section.
- 4.1.6 Subject to section 4.1.7, where a *metering installation* is intended to be used for a purpose in addition to the collection, recording and storage of *metering data* and the transfer of *metering data* to the *IESO*, the *metered market participant* for the *metering installation* shall:
- 4.1.6.1 ensure that such use shall not interfere with the ability of the *metering installation* to perform or function in accordance with section 4.1.1 and the requirements, policies and standards referred to in that section;

- 4.1.6.2 obtain the prior approval of the *IESO* for such use and shall co-ordinate with any person that uses the *metering installation* for such other purposes to ensure that such use does not interfere with the ability of the *metering installation* to perform or function in accordance with section 4.1.1 and with the requirements, policies and standards referred to in that section; and
 - 4.1.6.3 ensure that such use complies with all applicable *federal metering requirements*.
- 4.1.7 Each *metered market participant* shall ensure that any *instrument transformer* forming part of a *metering installation* in respect of which it is the *metered market participant* is not used for a purpose other than the measurement of *energy* for *settlement* purposes unless:
- 4.1.7.1 the *instrument transformer* is part of a main/alternate metering installation;
 - 4.1.7.2 the *instrument transformer* is not connected to the *revenue meter* that has been designated by the *metered market participant* as the main *revenue meter* as reflected in the registration information pertaining to the *main/alternate metering installation*; and
 - 4.1.7.3 the *instrument transformer* is operated within the rated burden limits for the accuracy class referred to in section 4.1.1.4.
- or
- 4.1.7.4 the *metering installation* is registered under section 4.6 and the *IESO* has approved the placing of additional loads on the *instrument transformer* under section 4.6.6.

4.1A Metering Installations for Segregated Mode of Operation

- 4.1A.1 Subject to section 4.4, no *metered market participant* may operate a *registered facility* in a *segregated mode of operation* unless the *metering installation* for that *registered facility* generates *metering data* that reads zero, or is capable of such adjustment as may be required to ensure that such *metering data* reads zero, when the *registered facility* is operating in a *segregated mode of operation*.

4.2 Defined Meter Point and Error Correction Factors

- 4.2.1 Subject to section 4.4, each *metered market participant* shall ensure, in respect of each *metering installation* for which it is the *metered market participant*, that:
- 4.2.1.1 subject to sections 4.2.2 and 4.2.2A, the *meter point* is located at the *defined meter point* for the *facility* to which the *metering installation* relates and otherwise complies with all requirements for *meter points* set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter; and
 - 4.2.1.2 any instrument *transformers* required for a *check meter* within a *main/check metering installation* are located in a position which achieves a mathematical correlation with the *metering data* from the *revenue meter*.
- 4.2.2 The *IESO* shall permit a *metering installation* to be registered in respect of a *facility* notwithstanding that the *meter point* is not located at the *defined meter point* provided that all transfers of *energy* at any points of supply or consumption for the *facility* to which the *metering installation* relates are separately *metered* in a manner satisfactory to the *IESO*.

Metering Installation Associated with More than One Defined Meter Point and/or Facility

- 4.2.2A The *IESO* shall permit a *metering installation* to be associated with more than one *facility* notwithstanding that the *meter point* is not located at the *defined meter points* for the *facilities*, provided that all transfers of *energy* at any points of supply or consumption for the *facilities* to which the *metering installation* are associated, are determined in a manner satisfactory to the *IESO*.

Where a *metered market participant* intends that such a *metering installation* is to be used for determining *settlement amounts* instead of one or more pre-existing downstream *metering installations*, the *IESO* shall not permit the use of the upstream *metering installation* for determining *settlement amounts* unless the *metered market participant* demonstrates, to the satisfaction of the *IESO* in accordance with the applicable market manual, the accuracy of the *energy transfer* measurements of the upstream *metering installation* relative to the downstream *metering installations*.

- 4.2.2B When developing the conditions of satisfaction referred to in section 4.2.2A, the *IESO* shall be guided by the principle that all *market participants* are to be held financially whole by the use of the upstream *metering installation*.

- 4.2.3 The *IESO* shall, in respect of *metering data* recorded in the *metering database* that was obtained from a *metering installation* whose *meter point* is not located at the *defined meter point* for a *facility* to which the *metering installation* relates, adjust the *metering data* on the basis of the site-specific loss adjustments referred to in section 4.2.4 or 4.2.5.1 and, where applicable, on the basis of the loss adjustments provided pursuant to section 4.2.5.2.
- 4.2.4 Where the *defined meter point* in respect of a *facility* is a *connection point* and the *meter point* of the *metering installation* for that *facility* is located other than at the *defined meter point*, the *metering service provider* for the relevant *metering installation* shall provide to the *IESO*, at the time of registration of the *metering installation*, in accordance with section 4.2.6, the parameters for site specific loss adjustments required to reflect losses between the *meter point* and the *defined meter point*.
- 4.2.5 Where the *defined meter point* in respect of a *facility* is an *embedded connection point* and the *meter point* is not located at the *defined meter point*, the *metering service provider* for the relevant *metering installation* shall provide to the *IESO*, at the time of registration of the *metering installation*:
- 4.2.5.1 the parameters for site specific loss adjustments to reflect losses between the *meter point* and the *embedded connection point*, in accordance with section 4.2.6; and
- 4.2.5.2 the loss adjustments required to reflect losses between the *defined meter point* for the *primary RWM* associated with the *facility* and the *defined meter point* for the *embedded RWM* associated with the *facility*, obtained where applicable from the relevant *transmitter* or *distributor*, as the case may be depending on the owner of the *facilities* to which the *facility* to which the *meter point* relates is connected.
- 4.2.6 The parameters for site specific loss adjustments referred to in sections 4.2.4 and 4.2.5.1 shall comply with the requirements of any site specific loss adjustment policy or standard established by the *IESO* and shall be updated by each *metering service provider* as may be required by the *IESO*.
- 4.2.7 Each *metering service provider* shall provide to the *IESO* measurement error correction factors for each *metering installation* in respect of which it acts as a *metering service provider* in accordance with this Chapter and with any policy or standard established by the *IESO* pursuant to this Chapter.

4.3 Use of Metering Data and Metering Data Collection

- 4.3.1 *Metering data* shall be used by the *IESO* for *settlement* purposes following completion of the validation and, where applicable, substitution and estimation processes, in the manner set forth in Chapter 9.
- 4.3.2 Each metering installation shall:
- 4.3.2.1 have a communication link to the relevant telecommunication network, and, where required, isolation equipment approved under applicable telecommunications laws and regulations; and
 - 4.3.2.2 be capable of remote communication by electronic means from the site of the *metering installation* to the communication interface of the *metering database*.
- 4.3.3 Each *metered market participant* shall ensure that all *metering data* contained in each *metering installation* for which it is the *metered market participant* is made available and transferred to the communication interface of the *metering database* in accordance with the requirements set forth in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter. The *IESO* may use *data collection systems* operated by meter data management agencies for the purpose of the transfer of *metering data* to the *metering database*.
- 4.3.4 Each *metered market participant* shall ensure that all *metering data* in each *metering installation* for which it is the *metered market participant* is transferred to the communication interface of the *metering database* in a manner that preserves the security from access and the accuracy of such *metering data* as described in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter.
- 4.3.5 The *IESO* shall ensure that all *metering data* that has been transferred to the communication interface of the *metering database* is transferred from such communication interface to the *metering database* in a manner that preserves the security of access and the accuracy of such *metering data* as described in this Chapter and in any policy or standard established by the *IESO* pursuant to this Chapter.
- 4.3.6 No *metered market participant* shall use a protocol or data format in respect of the transfer of *metering data* from a *metering installation* to a *data collection system* unless that protocol or data format has been approved by the *IESO*.
- 4.3.7 Each *metered market participant* shall ensure that *metering data* recorded in a *metering installation* in respect of which it is the *metered market participant* that

is transferred to the communication interface of the *metering database* is in a data format that is compatible with the data format used by the *IESO* for the retrieval of *metering data* from such communication interface.

4.4 Alternative Metering Installation Standards

Obligations of Metered Market Participants

- 4.4.1 A *metered market participant* with a *metering installation* registered under section 4.4.3, shall ensure that the *metering installation* meets the requirements set forth in the alternative standards specified in Appendix 6.2.

Registration Under the Alternative Metering Installation Standard

- 4.4.2 A *metering service provider* applying to register a *metering installation* under the alternative standards specified in Appendix 6.2 shall submit to the *IESO*:
- 4.4.2.1 an application for registration specifying the alternative *metering installation* standard(s) for which registration is sought;
 - 4.4.2.2 applicable supporting information as specified in Appendix 6.2; and
 - 4.4.2.3 information otherwise required by Chapter 6 or the applicable *market manual*.
- 4.4.3 The *IESO* shall register the *metering installation* provided that, in the opinion of the *IESO*, the *metering service provider* meets the requirements of section 4.4.2. Where the *IESO* is not satisfied that the requirements of section 4.4.2 have been met, it shall refuse to register the *metering installation*. The *IESO* shall so notify the applicant, together with the reasons for refusal. Such a refusal is a *reviewable decision*.

Expiry and Revocation of Registration

- 4.4.4 Registration granted under section 4.4.3, in respect of a particular alternative standard, shall expire on the earlier of:
- 4.4.4.1 the date specified in Appendix 6.2 for that alternative standard; and
 - 4.4.4.2 the date on which registration is revoked by the *IESO* under section 4.4.6.
- 4.4.5 Subject to section 4.4.8, prior to the expiry of registration of a *metering installation* under the alternative standard, the *metered market participant* for that

metering installation shall ensure that the *metering installation* is brought into full compliance with the applicable requirements set forth in this Chapter and in any policy or standard established by the *IESO* under this Chapter.

- 4.4.6 The *IESO* may revoke registration granted under section 4.4.3 in the circumstances described in Appendix 6.2.
- 4.4.7 If the *IESO* revokes the registration for a *metering installation* under section 4.4.6, the *metered market participant* for that *metering installation* shall ensure that the *metering installation* is brought into full compliance with the applicable requirements of this Chapter within the time specified in Appendix 6.2 and shall so notify the *IESO*.

Retaining Registration Under the Alternative Standard

- 4.4.8 Prior to the expiry of registration of a *metering installation* under the alternative standards specified in sections 1.2, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12, and 1.13 of Appendix 6.2, the *metered market participant* may apply to the *IESO* to retain registration under those sections. The *IESO* shall grant the *metered market participant* the right to retain registration if, in the opinion of the *IESO*, the changes required for the *metering installation* meet the criteria specified in the applicable *market manual*. The *IESO* shall recover the cost of processing the application from the *metered market participant* in accordance with the applicable *market manual*.

Estimation of Metering Data for Settlement Purposes

- 4.4.9 Where a *metered market participant* fails to comply with section 4.4.5 or 4.4.7, the *IESO* shall take such action with respect to the estimation of *metering data* for *settlement* purposes as specified in section 1.14 of Appendix 6.2.

4.5 Alternative Metering Installation Standards for Embedded Generation Facilities

- 4.5.1 A *transmission customer* that has an *embedded generation facility* that:
- 4.5.1.1 registers that *generation facility* for the purpose of determining transmission charges;
 - 4.5.1.2 is rated less than 20 MW; and
 - 4.5.1.3 meets the applicable Ontario Uniform Transmission Rate Schedule requirements with respect to the transmission *delivery point* through

which the *generation facility* is connected to the *transmission system* and attracts Line or Transformation Connection Service charges;

4.5.1.4 [Intentionally left blank – section deleted]

shall either comply with the *metering installation* standards specified elsewhere in this Chapter 6 or with the alternative *metering installation* standards specified in this section 4.5 for that *embedded generation facility*.

4.5.2 A *transmission customer* that chooses to meet the alternative *metering installation* standards of this section 4.5 for an *embedded generation facility* shall, in accordance with the applicable *market manual*, have their *metering service provider*:

4.5.2.1 register with the *IESO* a *metering point* for that *embedded generation facility*.

4.5.2.2 [Intentionally left blank – section deleted]

4.5.3 Within three months of the calendar year end, the *transmission customer* shall, for each *embedded generation facility* for which a *metering point* has been registered under the alternative *metering installation standards* of this section 4.5, in the manner specified in the applicable *market manual*:

4.5.3.1 determine the annual adjustment dollar value for the applicable *transmission service charges* based on the impact of the actual output of the *embedded generation facility*;

4.5.3.2 obtain agreement of the *transmitter* as to this adjustment amount; and

4.5.3.3 submit this information to the *IESO*.

4.5.4 In the event that the *IESO* does not receive the information specified in section 4.5.3 within the time specified in section 4.5.3, the *IESO* shall use the *maximum continuous rating* for the *embedded generation facility*, provided to the *IESO* at the time of the *meter point* registration referred to in section 4.5.2.

4.5.5 The *IESO* shall adjust the applicable *transmission service charge settlement amounts* by any such amount, submitted in accordance with section 4.5.3 or by the amount determined under section 4.5.4, for the *transmission customer* and the *transmitter*. The *IESO* shall make this adjustment on the applicable *settlement statement* for the last day of the month in which the adjustment information is received or the last day of the month in which the *IESO* determines the adjustment amount, whichever is applicable.

4.6 Metering Installation Standards for Embedded Generation Facilities Under 2 MVA or Injecting Less than 17 GWh Per Annum

- 4.6.1 A *market participant* that has a registered *minor generation facility* embedded within a *distribution system* and which either injects less than 17 gigaWatt-hours per annum or has a nameplate rating less than 2 MVA shall be eligible to register with the *IESO* a *metering installation* for that *generation facility* comprised of a standalone *meter*.
- 4.6.2 The standalone *meter* shall be either a main *meter* or an alternate *meter* from the *IESO's* conforming *meter* list.
- 4.6.3 The *meter service provider* for the *metering installation* registered under section 4.6.1 shall not be required to submit an emergency *instrument transformer* restoration plan otherwise required under section 1.3.2.17 of Appendix 6.5.
- 4.6.4 If there is a failure of an *instrument transformer* at a *metering installation* registered in accordance with this section, the *IESO* shall estimate the *metering data* from the *metering installation* for *settlement* purposes in accordance with section 11.1.4A of Chapter 6 for the duration of the failure.
- 4.6.5 The *metered market participant* for a *meter* registered in accordance with this section shall not be required to meet the testing requirements specified in section 1.2 of Appendix 6.3.
- 4.6.6 The *metered market participant* for a *metering installation* registered in accordance with this section shall, subject to *IESO* approval, be permitted to place additional loads on its *instrument transformer*.
- 4.6.7 Within three months from the date of notification by the *IESO*, a *metered market participant* shall make a *metering installation* fully compliant with the *metering installation* standards specified elsewhere in Chapter 6 if the *energy* threshold recorded by the standalone *meter* exceeds 17 gigaWatt-hours per annum.

5. Metering Service Providers

5.1 Registration

- 5.1.1 No person may perform the activities required by this Chapter or by any policy or standard established by the *IESO* pursuant to this Chapter to be performed by a *metering service provider* unless that person has been registered by the *IESO* as a *metering service provider*.
- 5.1.2 No person shall be registered by the *IESO* as a *metering service provider* unless the person demonstrates to the satisfaction of the *IESO* that the person has the qualifications described in Appendix 6.4.
- 5.1.3 Any person including, but not limited to, a *market participant* or a *metered market participant*, that wishes to be registered by the *IESO* as a *metering service provider* shall file with the *IESO*:
- 5.1.3.1 a completed application for registration as a *metering service provider* in such form as shall be established by the *IESO*;
 - 5.1.3.2 an executed agreement, in such form as shall be established by the *IESO*, pursuant to which the person agrees, among other matters, to be bound by and comply with the provisions of the *market rules* applicable to *metering service providers*; and
 - 5.1.3.3 the application fee established from time to time by the *IESO*, and approved by the *OEB*, to defray the costs of processing the application, conducting the systems and procedures tests and audits referred to in section 5.1.6 and conducting the review referred to in section 5.1.13.
- 5.1.4 The *IESO* shall, within ten *business days* of receiving an application for registration as a *metering service provider* or within such longer period of time as may be agreed between the *IESO* and the applicant, notify the applicant of any further information or clarification that is required in support of its application if, in the *IESO*'s opinion, the application is:
- 5.1.4.1 incomplete; or
 - 5.1.4.2 contains information with respect to which the *IESO* requires clarification.

- 5.1.5 If the further information or clarification which is requested by the *IESO* pursuant to section 5.1.4 is not provided to the *IESO*'s satisfaction within fifteen *business days* of the request or within such longer period of time as may be agreed between the *IESO* and the applicant, the applicant shall be deemed to have withdrawn its application for registration as a *metering service provider*.
- 5.1.6 The *IESO* may, if the applicant does not have ISO 9000 certification, conduct such audits or tests of the applicant's systems and procedures as the *IESO* determines appropriate.
- 5.1.7 The *IESO* shall, within twenty *business days* of:
- 5.1.7.1 receipt of the application for registration as a *metering service provider*;
 - 5.1.7.2 receipt of the further information or clarification requested under section 5.1.4; or
 - 5.1.7.3 the conduct of any audits or tests referred to in section 5.1.6,
- whichever is the later, or within such longer period of time as may be agreed between the *IESO* and the applicant, notify the applicant that the *IESO* intends to register the person as a *metering service provider* upon completion of the review referred to in section 5.1.13, on such terms and conditions as the *IESO* considers appropriate, if the applicant has demonstrated to the *IESO*'s satisfaction that it has the qualifications set forth in Appendix 6.4. If the applicant has ISO 9000 certification, the *IESO* shall, together with the notice of intention to register the applicant, refund that portion of the application fee referred to in section 5.1.3.3 that is attributable to the costs of conducting the systems and procedures tests and audits referred to in section 5.1.6.
- 5.1.8 If the *IESO* is not satisfied that the applicant has demonstrated that it has the qualifications set forth in Appendix 6.4, the *IESO* shall, within twenty *business days* of receipt of the application for registration as a *metering service provider*, of receipt of the further information or clarification requested under section 5.1.4 or of any audits or tests referred to in section 5.1.6, whichever is the later, or within such longer period of time as may be agreed between the *IESO* and the applicant, notify the applicant that the *IESO* intends to deny its application for registration as a *metering service provider*. Such notice shall identify the deficiency in the applicant's qualifications that formed the grounds for the issuance of the notice.
- 5.1.9 An applicant to whom a notice is issued in accordance with section 5.1.8 shall have 20 *business days* from the date of receipt of such notice, or such longer

period of time as may be agreed between the *IESO* and the applicant, in which to rectify the deficiency in its qualifications identified in such notice and to notify the *IESO* of such rectification.

5.1.10 Where the *IESO* is satisfied that, with the rectification described in section 5.1.9, the applicant has demonstrated that it meets the qualifications set forth in Appendix 6.4, the *IESO* shall notify the applicant that the *IESO* intends to register the person as a *metering service provider* upon completion of the review referred to in section 5.1.13, on such terms and conditions as the *IESO* considers appropriate.

5.1.11 Where:

5.1.11.1 an applicant to whom a notice is issued in accordance with section 5.1.8 fails to rectify the deficiency in its qualifications within the time specified in that section; or

5.1.11.2 the rectification described in section 5.1.9 is not such as to satisfy the *IESO* that the applicant meets the qualifications set forth in Appendix 6.6,

the *IESO* shall:

5.1.11.3 notify the applicant in writing that its application for registration as a *metering service provider* has been denied;

5.1.11.4 if the *IESO* has not conducted the systems and procedures tests and audits referred to in section 5.1.6, return to the applicant that portion of the application fee referred to in section 5.1.3.3 that is attributable to the costs of conducting such tests and audits; and

5.1.11.5 return to the applicant that portion of the application fee referred to in section 5.1.3.3 that is attributable to the costs of conducting the review described in section 5.1.13.

5.1.12 Denial by the *IESO* of an application for registration as a *metering service provider* is a *reviewable decision*.

5.1.13 The *IESO* shall review with each applicant referred to in sections 5.1.7 and 5.1.10:

5.1.13.1 the procedures for the registration of *metering installations* described in this Chapter and in the procedures established by the *IESO* pursuant to section 6.1.2 of this Chapter; and

- 5.1.13.2 the performance standards for *metering service providers* set forth in the applicable *market manual*.
- 5.1.14 The *IESO* shall, within five *business days* of completion of the review referred to in section 5.1.13, register the person as a *metering service provider*, on such terms and conditions as the *IESO* considers appropriate, and shall notify the applicant accordingly.
- 5.1.15 Each applicant for registration as a *metering service provider* and each *metering service provider* shall forthwith notify the *IESO* of any circumstances that result or are likely to result in a change in the information provided in the person's application for registration as a *metering service provider* or any updates thereto.
- 5.1.16 The *IESO* shall establish, maintain, update and *publish*:
- 5.1.16.1 a list of all persons that have been registered as *metering service providers*; and
- 5.1.16.2 a list of each *metering service provider* whose registration as a *metering service provider* has been revoked pursuant to section 5.3.

5.2 Activities and Standards for Metering Service Providers

- 5.2.1 The activities described in section 1.3 of Appendix 6.1 shall be performed by a *metering service provider*.
- 5.2.2 Each *metering service provider* shall comply with all of the obligations imposed on *metering service providers* in Appendix 6.1 and in any policy or standard established by the *IESO* pursuant to this Chapter.
- 5.2.3 Each *metering service provider* shall meet all performance standards as set forth in the applicable *market manual*.
- 5.2.4 Where the provision of written meter-related materials or of post-registration familiarization and competency updating or upgrading to a *metering service provider* imposes a significant expense on the *IESO*, such documentation, assistance or training may be provided upon payment by the *metering service provider* of a reasonable fee.

5.3 Revocation of Registration of Metering Service Providers

- 5.3.1 The *IESO* may revoke the registration of a *metering service provider* where the *metering service provider*:
- 5.3.1.1 has been found to be in breach of the *market rules* applicable to *metering service providers* on a persistent basis;
 - 5.3.1.2 fails to meet the performance standards set forth in the applicable *market manual* on a consistent basis;
 - 5.3.1.3 has been found to be in breach of a material provision of the agreement referred to in section 5.1.3.2; or
 - 5.3.1.4 ceases to satisfy any material qualification for registration as a *metering service provider* or any material requirement imposed upon it as a condition of registration as a *metering service provider*.
- 5.3.2 Where the *IESO* intends to revoke the registration of a *metering service provider*, the *IESO* shall give notice to the *metering service provider* and to all *metered market participants* for whom the *metering service provider* is, to the *IESO*'s knowledge, acting as *metering service provider*. The notice shall specify:
- 5.3.2.1 the grounds upon which the *metering service provider*'s registration is proposed to be revoked and details of any evidence on which the *IESO* is relying in support of its intention to revoke such registration;
 - 5.3.2.2 that the *metering service provider* may within 10 *business days* make written representations as to why its registration should not be revoked; and
 - 5.3.2.3 the right of the *metering service provider* to request a hearing before the *IESO Board* or a committee of the *IESO Board* established for such purpose to show cause why its registration should not be revoked.
- 5.3.3 Following expiry of the time noted in section 5.3.2.2, and after consideration of any representations made by the *metering service provider* pursuant to that section, the *IESO* may:
- 5.3.3.1 subject to section 5.3.4, revoke the *metering service provider*'s registration; or

- 5.3.3.2 make such order as the *IESO* determines appropriate, including but not limited to an order:
- a. directing the *metering service provider* to do, within a specified period, such things as may be necessary to comply with the *market rules* applicable to *metering service providers*;
 - b. directing the *metering service provider* to cease, within a specified period, the act, activity or practice constituting a breach of the *market rules* or a breach of a material provision of the agreement referred to in section 5.1.3.2; and
 - c. imposing additional or more stringent terms and conditions in respect of the continued registration of the *metering service provider*.
- 5.3.4 Where the *metering service provider* has requested a hearing pursuant to section 5.3.2.3, the *IESO Board* or a committee of the *IESO Board* established for such purpose shall conduct a hearing providing the *metering service provider* with a reasonable opportunity to show cause as to why its registration should not be revoked by the *IESO*. In such case, the *IESO* shall not revoke the *metering service provider's* registration under section 5.3.3.1 until such hearing has been held.
- 5.3.5 All rights of a *metered service provider* to perform the activities of a *metering service provider* under this Chapter shall be terminated upon revocation of the *metering service provider's* registration.
- 5.3.6 The *IESO* shall, immediately upon revoking the registration of a *metering service provider*, notify each *metered market participant* for whom the *metering service provider* was, to the *IESO's* knowledge, acting as *metering service provider* at the time of revocation, of the revocation of the *metering service provider's* registration.
- 5.3.7 A *metering service provider* whose registration has been revoked by the *IESO* remains subject to and liable for all of its liabilities and financial obligations as a *metering service provider* which were incurred or arose under the *market rules* prior to the date on which it's registration is revoked regardless of the date on which any claim relating thereto may be made.
- 5.3.8 A *metering service provider* whose registration has been revoked and that wishes to be re-registered a *metering service provider* shall be required to re-apply for registration in accordance with section 5.1. The *IESO* may impose such terms and conditions on the registration of the *metering service provider* as the *IESO* determines appropriate in the circumstances, whether or not such terms and conditions are otherwise applicable to other *metering service providers*.

- 5.3.9 A decision by the *IESO* to revoke the registration of a *metering service provider* is a *reviewable decision* and shall be without prejudice to the right of the *IESO* to impose upon the *metered market participant* for whom the *metering service provider* is acting as *metering service provider* sanctions or financial penalties in accordance with Chapter 3 in respect of any breach of the *market rules* that formed the grounds for revocation of the *metering service provider's* registration.

6. Registration of Metering Installations and Metering Registry

6.1 Registration of Metering Installations

- 6.1.1 Subject to section 6.1.1A, no person shall use a *metering installation* for the measurement of *energy* for *settlement* purposes relating to the *real-time markets* or the *procurement markets* unless the *metering installation* has been registered by the *IESO* in accordance with this section 6.1 and that registration has not expired.
- 6.1.1.A A person may only use a *metering installation* for the measurement of *energy* for *settlement* purposes relating to the *real-time markets* or the *procurement markets* if the *metering installation* has been registered by the *IESO* in accordance with this section 6.1 and the registration has expired provided that the *IESO* determines that the continued use of the *metering installation* is necessary for the efficient operation of the *IESO-administered markets*.
- 6.1.2 The *IESO* shall establish in the applicable *market manual* the procedures to be followed by *metering service providers* for the registration of *metering installations*. Such procedures shall include, but not be limited to, an identification of:
- 6.1.2.1 the information and documentation required to be submitted by a *metering service provider* in support of the registration of a *metering installation* including, but not limited to, the information described in sections 1.2, 1.3 and, where applicable, 1.3A of Appendix 6.5; and
 - 6.1.2.2 the tests required to be conducted in respect of a *metering installation* prior to registration.

- 6.1.2A Each *metered market participant* for a *metering installation* that will be used for the purpose of the calculation and collection by the *IESO* of charges for *transmission service* shall, request the *metering service provider* for that *metering installation* to submit the *meter point* documentation for that *metering installation* and any updates thereto, to the *transmitter* identified by the *metered market participant* for the purpose of soliciting the written confirmation of that *transmitter's* approval referred to in section 1.3A of Appendix 6.5.
- 6.1.2B Each *metering service provider* to whom a request has been made pursuant to section 6.1.2A shall as soon as practicable submit the relevant *meter point* documentation or update referred to in that section to each *transmitter* identified in such request.
- 6.1.3 The *IESO* shall refuse to register a *metering installation*:
- 6.1.3.1 where the *metering installation* does not comply with the requirements set forth in this Chapter or in any policy or standard established by the *IESO* pursuant to this Chapter; or
- 6.1.3.2 where the *metering installation* will be used for the calculation and collection of charges for *transmission service*, the relevant portion of the *meter point* documentation submitted in support of the application to register the *metering installation* is not accompanied by such confirmation of each applicable *transmitter* referred to in section 1.3A of Appendix 6.5.
- 6.1.4 Where the *IESO* refuses to register a *metering installation* pursuant to section 6.1.3, the *IESO* shall so notify the *metering service provider*, together with reasons for the refusal.
- 6.1.5 Refusal by the *IESO* to register a *metering installation* is a *reviewable decision*.
- 6.1.6 Each *metering service provider* shall, at the request of the *metered market participant* for a *metering installation*, provide that *metered market participant* with copies of all information, including but not limited to *meter point* documentation and data, submitted by the *metering service provider* in support of the application to register the *metering installation*, and of all updates to such information submitted to the *IESO* by the *metering service provider*.
- 6.1.7 Each *metering service provider* shall, at the request of a *transmitter* that has given confirmation of its approval of a portion of the applicable *meter point* documentation or any update thereto referred to in section 1.3A of Appendix 6.5, as may be applicable, provide that *transmitter* with copies of such *meter point* documentation submitted by the *metering service provider* in support of the

application to register the *metering installation* and of all updates thereto submitted to the *IESO* by the *metering service provider*.

- 6.1.8 No *metering service provider* to whom a request has been made pursuant to section 6.1.2A has been made shall submit to the *IESO* any updates to any *meter point* documentation for a *metering installation* that will be used for the purpose of the calculation and collection by the *IESO* of charges for *transmission service* unless such updates are accompanied by the confirmation of the approval of each applicable *transmitter* referred to in section 1.3A of Appendix 6.5.

6.2 Metering Registry

- 6.2.1 The *IESO* shall establish and maintain a *metering registry* containing the information specified in Appendix 6.5 in respect of each *metering installation* that provides *metering data* used by the *IESO* for *settlement* purposes.
- 6.2.2 The *IESO* shall record in the *metering registry* the results of all tests provided to it pursuant to section 7.1.2, the results of any tests conducted pursuant to section 7.2.5 and any changes confirmed to it pursuant to section 9.3.1.3.
- 6.2.3 The data recorded in the *metering registry* in respect of a registered *metering installation* shall be available to:
- 6.2.3.1 the metered market participant for that metering installation and an authorized agent of such metered market participant;
 - 6.2.3.2 the metering service provider for that metering installation;
 - 6.2.3.3 any *market participant* whose *settlement statement* is determined on the basis of the *metering data* recorded in that *metering installation* and an authorized agent of such *market participant*; and
 - 6.2.3.4 any *transmitter* or *distributor* to whose system a *facility* in respect of the *metering installation* relates is connected.
- 6.2.4 Data recorded in the *metering registry* is *confidential information* and the *IESO* shall ensure that such data is not accessible by or disclosed by the *IESO* to any person other than the *IESO* and the persons referred to in sections 6.2.3.1 to 6.2.3.4 or as otherwise permitted by section 5 of Chapter 3 or any policy of the *IESO* established pursuant to that section.

PUBLIC

Toronto Hydro-Electric System Limited
EB-2012-0064
Tab 8
Schedule 1-6
Appendix C
Filed: 2012 Dec 11
(9 pages)

MDP_STD_0004



Power to Ontario.
On Demand.

STANDARDS

Wholesale Revenue Metering Standard - Hardware

Issue 9.0

This standard provides the principles, accountabilities, and requirements for *metering installations* used for *settlement* in the IESO-administered wholesale market.

Public

5. Meters

5.1 Accuracy Requirements for Main Meters – New Meters

5.1.1 Requirements

Accuracy requirements shall apply to all new main *meters*. The requirements for main *meters* are:

- a. *meters* shall be approved by Measurement Canada prior to deployment in the *IESO-administered market*;
- b. *meters* shall meet or exceed the 0.2 accuracy class of ANSI standard C12.20;
- c. the pulse resolution of the *energy* transferred shall be within $\pm 0.05\%$ (at full load kW) of the *energy* measured by the *meter*;
- d. Measurement Canada test points shall be used;
- e. tolerance for all tests shall be 0.2% at unity power factor and 0.3% at 0.5 power factor; and
- f. *meters* shall be listed on the Conforming Meter List.

5.1.2 Meters Sealed by Meter Service Organization

The population of *meters* sealed by a *meter* service organization for application in the *IESO-administered market* shall be randomly distributed to *metered market participants*; so as to disperse the error associated with the accuracy of the *meter* calibration.

5.2 Accuracy Requirements for Alternate Meters – New Meters

5.2.1 Requirements

Accuracy requirements shall apply to all new alternate *meters*. The requirements for alternate *meters* are:

- a. *meters* shall be approved by Measurement Canada prior to deployment in the *IESO-administered market*;
- b. *meters* shall meet or exceed the 0.5 accuracy class of ANSI standard C12.20; and
- c. the pulse resolution of the *energy* transferred shall be within $\pm 0.05\%$ (at full load kW) of the *energy* measured by the *meter*.
- d. Measurement Canada test points shall be used;
- e. tolerance for all tests shall be 0.5% at unity power factor and 0.6% at 0.5 power factor; and
- f. the *meters* shall be listed on the Conforming Meter List.

5.2.2 Meters Sealed by Meter Service Organization

The population of *meters* sealed by a *meter* service organization for application in the *IESO-administered market* shall be randomly distributed to *metered market participants*; so as to disperse the error associated with the accuracy of the *meter* calibration.

5.3 Accuracy Requirement for Meters – Existing Meters

5.3.1 Conditions of Use

A *meter* installed before the *Market Rules* came into effect, and that does not comply with the requirement of section 5.1.1.b for main *meters*, and section 5.2.1.b for alternate *meters*, will be permitted by the *IESO* to remain in service subject to the following conditions:

- a. Measurement Canada has granted approval of type for the specific *meter*;
- b. an accredited *meter* service organization or Measurement Canada has verified and sealed the *meter*; and
- c. the seal has not expired.

5.3.2 Replacement

All *meters* shall be replaced at the seal expiration date:

- a. with *meters* conforming to section 5.1 for main *meters* and 5.2 for alternate *meters*; or
- b. with *meters* conforming to section 5.1 for main *meters*.

5.4 Functional Requirements – New Meters

5.4.1 Use of Instrument Transformers

Instrument transformers supplying the main *meter* shall be used solely for the purposes of revenue metering and not for any other purposes, including, but not limited to, the attachment of other devices.

5.4.2 Requirements for Main and Alternate Meters

Meters installed as the main or alternate *meter*, shall meet the minimum requirements listed below and accepted on the Conforming Meter List:

Item	Main Meter	Alternate Meter
Quadrants	4 Quadrant: - Wh/Varh DEL - Wh/Varh REC	4 Quadrant: - Wh/Varh DEL - Wh/Varh REC

Item	Main Meter	Alternate Meter
------	------------	-----------------

Item	Main Meter	Alternate Meter
Interval Data	Wh, Varh for <i>settlement</i> of market transactions. Four channels are required for recording Wh/Varh DEL and Wh/Varh REC. V^2h , I^2h per phase for loss adjustment and data validation ³ .	Wh, Varh for <i>settlement</i> of market transactions. Four channels are required for recording Wh/Varh DEL and Wh/Varh REC.
Time Synchronization	The internal clock shall be capable of being reset set by the data collection software during normal collection operations.	The internal clock shall be capable of being reset set by the data collection software during normal collection operations.
Data Storage	35 days of 5-minute time-stamped interval data. 100 event log readable by MV90.	10 days of 5-minute time-stamped interval data. Flags readable by MV90.
Data Collection Protocol	Compatible with MV90.	Compatible with MV90.
Encoded Registers	Date- and time-stamped readings of the cumulative <i>energy</i> register for each active or reactive <i>energy</i> measured and to be read remotely.	Date- and time-stamped readings of the cumulative <i>energy</i> register for each active or reactive <i>energy</i> measured and to be read remotely.
Password Protection	Two or more levels. One for each: <i>Meter</i> data collection agency: full access to set time functions; read-only access to interval data, event log and meteorological quantities.	Two or more levels. One for each: <i>Meter</i> data collection agency: full access to set time functions; read-only access to interval data, event log and meteorological quantities.
Built-in Battery Backup	In the event of power outage or depressed voltage, the <i>meter</i> maintains the interval data, event log and clock time for 35 days. Clock time shall drift less than 1 minute per month.	In the event of power outage or depressed voltage, the <i>meter</i> maintains the interval data, event log and clock time for 10 days. Clock time shall drift less than 1 minute per month.
Self Power ⁴		Not the same source as the main <i>meter</i> .
Power Switching	From an external source.	Connected to phase power.

³ The time integral of voltage or current squared over a *metering interval* recorded as if it were another energy measurement in a normal data channel, the quantity may be displayed as a *demand* (V^2 or I^2) by MV90.

⁴ In cases where the *facility* is disconnected from the source and kept off potential for an extended period of time, the auxiliary power configuration must be such that both the Main and Alternate meters are powered at all times. Use of an auto transfer scheme for auxiliary power to the Alternate Meter is subject to IESO approval.

Item	Main Meter	Alternate Meter
Self Monitoring	Condition monitoring to record, in the event log or channel status, critical errors such as failure of the measuring system or pulse overrun. The <i>IESO</i> must be able to upload and detect the critical error.	
<i>Instrument Transformer</i> Monitoring	Condition monitoring capable of detecting loss of voltage and/or current and recording of the event, date and time in the event log. The <i>IESO</i> must be able to upload and detect faulty equipment condition.	
Optical Interface	To enable local downloading of metered data.	To enable local downloading of metered data.
Modem	Either internal or external: 9.6 Kb/s minimum.	Either internal or external: 2.4 Kb/s minimum.

5.4.3 Data Channel Assignments for Main and Alternate Meters

Main *meters* will provide the following data channels.

Data from the Main Meter

	Interval Data	Channel
1.	kWh delivered	1
2.	kVARh delivered	2
3.	kWh received	3
4.	kVARh received	4
5.	V ² H per phase	5, 6, 7
6.	I ² h per phase	8, 9, 10

Table 5.1: Data Channels for Main Meters

The channels numbers shown shall be the assignment for the wholesale market.

Meters installed in delta power systems may have two current transformers and two voltage transformers instead of three as shown above. In this case, channel 5 and channel 6 is V²h per phase and channel 7 and channel 8 is I²h per phase.

Since MV90 has the capability to record up to 16 channels, channels 11 to 16 for a three element *meter* or channels 9 to 16 for a two element *meter* shall be set to unconnected (code 42) and flagged to omitted on upload.

Data from the Alternate Meter

Alternate *meters* will provide the following data channels:

	Interval Data	Channel
1.	kWh delivered	1
2.	kVARh delivered	2
3.	kWh received	3
4.	kVARh received	4

Table 5.2: Data Channels for Alternate Meters

Since MV90 has the capability to record up to 16 channels, channel 5 to 16 must be set to unconnected (code 42) and flagged to omit on upload.

6.8.6 Metering Installations

Where power system switching affects the metering more than twice per annum, additional *metering installations* shall be installed to cover this contingency.

6.9 Instrument Transformer Ratios – New Instrument Transformers

6.9.1 Selection of Current Transformer Ratios

Current transformer ratios shall be selected according to the following factors:

- a. the maximum sustained primary current in a current transformer shall not exceed the primary tap multiplied by the continuous current Rating Factor (RF) of the current transformer; and
- b. the minimum sustained primary current during normal operation shall not be less than 10% of the primary tap, for ANSI 0.3 accuracy class; or
- c. the minimum sustained primary current during normal operation shall not be less than 5% of the primary tap, for the defined standard of ANSI 0.15 accuracy class; and
- d. the minimum sustained current during normal operation shall not be less than 1% of primary tap, for the defined standard of ANSI 0.15S accuracy class.

6.9.2 Selection of Voltage Transformer Ratios

Voltage transformer ratios shall be selected such that operation at the minimum or maximum sustained secondary voltage shall not affect *meter* accuracy or *meter* function.

6.10 Accuracy Requirements – New Instrument Transformers

6.10.1 Current Transformers

Current transformers shall conform to the IEEE ANSI C57.13 -2008 for 0.3 metering accuracy class or the Canadian Standards Association CAN/CSA-C60044-1:07 for 0.3 metering accuracy class. High accuracy current transformers shall conform to the IEEE ANSI C57.13.6 for 0.15 and 0.15S metering accuracy class or the Canadian Standards Association CAN/CSA-C60044-1:07 for 0.15 and 0.15S metering accuracy class.

6.10.2 Voltage Transformers

Voltage transformers shall conform to the IEEE ANSI C57.13 - 2008 for 0.3 metering accuracy class or the respective Canadian Standards Association CAN/CSA-C60044-2:07, CAN/CSA-C60044-3:07, or CAN/CSA-C60044-5:07 for 0.3 metering accuracy class.

6.10.3 Electronic Current Transformers

Electronic current transformers shall conform to the respective IEEE ANSI C57.13 – 2008 and IEEE ANSI C57.13.6 for 0.3, 0.15 and 0.15S metering accuracy class or the respective Canadian Standards Association CAN/CSA-C60044-1:07 and CAN/CSA-C60044-8:07 for 0.3, 0.15 and 0.15S metering accuracy class. Electronic current transformers shall have 5 Amp rated secondary output for the *IESO-administered market*.

6.10.4 Electronic Voltage Transformers

Electronic voltage transformers shall conform to the respective IEEE ANSI C57.13 – 2008 and IEEE ANSI C57.13.6 for 0.3 and 0.15 metering accuracy class or the respective Canadian Standards Association CAN/CSA-C60044-1:07 and CAN/CSA-C60044-7:07 for 0.3 and 0.15 metering accuracy class.

6.10.5 Monitoring Requirements – New Electronic Instrument Transformers

Where the installation has an electronic *instrument transformer*, it shall have a mechanism for real-time monitoring of alarm statuses and events associated with optical sensors, transmitting systems and secondary converters. Within 24 hours of any metering alarm affecting the normal metering operation, the *IESO* shall be notified of the alarm event and the consequences to the *revenue* metering. An alarm event log shall be in place and maintained for *IESO* audit purposes. The installation shall be subject to *IESO* approval.

6.11 Safety Requirements – New Instrument Transformers

6.11.1 Requirements

The installation shall conform to the requirements of:

- a. Measurement Canada Standard Drawings;
- b. the Ontario Electrical Safety Code; and
- c. the ANSI/IEEE C57.13-1983 IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases.

6.12 Instrument Transformers – Existing Installations

6.12.1 Continued Use of Existing Instrument Transformers

Approval of the *IESO* shall be required for continued use of existing *instrument transformers* in the wholesale market.

6.12.2 Approval

Instrument transformers shall be approved for use by Measurement Canada, or shall have special dispensation/temporary permission from Measurement Canada.

6.12.3 Dispensation After Market Rules Come Into Effect

Should further dispensation/temporary permission be required after the *Market Rules* come into effect, the *metered market participant* shall seek dispensation/temporary permission from Measurement Canada, and maintain records of the equipment granted dispensation.

6.12.4 Accuracy

Instrument transformers shall meet the requirements of ANSI 0.3 accuracy, or correction factors shall be applied.

6.12.5 Proof of Accuracy Compliance

Proof of compliance with 0.3 ANSI accuracy class shall be provided as follows:

- a. in the form of factory test cards complete with serial numbers;
- b. provide verifiable nameplate data, where the nameplate contains the required ANSI accuracy information and is affixed to the *instrument transformers*; and
- c. Measurement Canada-type approval information, where such approval contains the required ANSI accuracy information.

6.12.6 Accuracy Requirements

Where accuracy tests are required, they shall comply with the following requirements:

- a. tests shall be carried out by a third-party testing agency using equipment traceable to Canadian national standards;
- b. tests shall be conducted with the existing burden connected to each current transformer;
- c. additional tests shall be conducted at other suitable burdens if the existing burden is expected to change in the future;
- d. tests shall include on-site ratio and phase-angle error tests;
- e. on-site ratio- and phase-angle tests of current transformers shall be measured over a range of secondary current from not more than 0.1 ampere to not less than the rating factor;
- f. where the secondary current is less than 0.1 ampere, an additional test point shall be provided at the minimum load current; and
- g. test results shall provide correction factors to be applied to both active and reactive power at each test point.

6.12.7 Other Identical Units

Where an *instrument transformer* is identical to another unit tested on-site, as described in section 6.12.7, the *instrument transformer* shall be considered as having met the requirements listed there provided that:

Toronto Hydro-Electric System Limited
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M2M 3T3 www.torontohydro.com



August 11, 2009

Independent Electricity System Operator
Market Assessment & Compliance Division (MACD)

Subject: Toronto Hydro's Wholesale Metering Proposal

Dear MACD,

Over the past three (3) years, Toronto Hydro has worked with Hydro One and the IESO'S Revenue Metering Standing Committee to implement the High Voltage Metering Proposal. The intent of this proposal was to achieve full compliance with the IESO Market Rules in the shortest possible time.

Another advantage included potential short-term savings, as the cost of completing conventional upgrades at the existing metering installations was initially estimated at \$40-\$45 million. The alternative cost of installing HV Metering was initially estimated at \$17 million.

Due to the insurmountable challenges, we have decided to abandon the High Voltage Metering Proposal.

During the approval process, some changes occurred that make High Voltage metering less attractive, and not as beneficial as initially planned. This includes the following:

- **Rising Costs** – The latest cost provided by Hydro One to implement HV metering is \$18.7 million. This cost does not include real-estate legal fees and land acquisition costs.
- **Schedule delays** - Based on Hydro One's construction schedule, HV Metering will not be in place until May 2012, when the new HV Metering points at Sheppard TS are in-service.
- **Risk** – Toronto Hydro and Hydro One have not reached an agreement on the Diversity Factor and true-up methodology
- **MC Approval** – Toronto Hydro has yet to receive written approval from Measurement Canada for the use of check meters for periodic true-up

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- **Capital Spending** – The availability of new compact instrument transformers will make retrofits at the many of indoor stations possible. In addition, Toronto Hydro is committed to an aggressive switchgear replacement plan, supported by our EDR Rate filing – Upgrades can be “phased-in” with our REBUILD Program, with minimal impact to budget.

We will be working diligently with Hydro One to include the upgrade of all meter points in Hydro One work schedules. We are committed to meet with Hydro One staff on a regular basis.

Sincerely,

David Grant, P. Eng.
Manager, Meter Operations

ORAL HEARING UNDERTAKING RESPONSE INTERVENOR 10 – SCHOOL ENERGY COALITION

1 **UNDERTAKING NO. J2.1:**

2 **Reference(s):**

3

4 Using the Summary of Capital Program for the capital expenditure by segment, THESL
5 to provide the In-Service Addition (ISA) for each of the respective years.

6

7 **RESPONSE:**

8 Please see Table 1 in attached Appendix A, for details on ISAs.

9

10 THESL had \$177.01 million of expenditures not in-service from previous years. This
11 amount was for jobs not completed in full from previous years, mainly from 2011. There
12 are a number of reasons for these jobs not being completed, including:

- 13 • For operational efficiency, jobs must be scheduled throughout a calendar year,
14 such that some jobs naturally span the end of one year and the start of the next.
- 15 • Jobs often span more than one calendar year from the beginning of design to the
16 completion of construction.
- 17 • Many jobs, while substantially complete, still require final work such as pole
18 removals and site restoration which delay final completion into the next year,
19 once winter has passed and this work can be done.

20

21 THESL is projecting for the end of 2012 to have lower than typical in-service
22 expenditures. This is due to the stoppage of the capital program in January 2012
23 following the OEB decision in EB-2011-0144, and the operational factors associated with
24 the ramp-up in work. This ramp-up pushed much of the capital work into the latter half
25 of the year, and especially the last quarter, which has led to a greater amount of work

ORAL HEARING UNDERTAKING RESPONSE INTERVENOR 10 – SCHOOL ENERGY COALITION

1 than usual carrying into 2013. THESL's projection of ISA for 2012 includes the
2 following:

- 3 • \$67.0M – pre-2012 CWIP
- 4 • \$116.3M – 41% of 2012 capital expenditures
- 5 • **\$183.3M** total ISA

6

7 For 2013, THESL expects to have approximately 49% of the overall capital expenditures
8 in-service by year-end. Excluding the Bremner Transformer Station and Hydro One
9 capital contributions, THESL forecasts to have approximately 61% of 2013 capital
10 expenditures to be in-service by year-end, which is more consistent with years prior to
11 2012. THESL's projection of ISA for 2013 includes the following estimates:

- 12 • \$45.5M – pre-2012 CWIP
- 13 • \$140.6M – 50% of 2012 capital expenditures
- 14 • \$283.8M – 49% of 2013 capital expenditures
- 15 • **\$469.8M** total 2013 ISA

16

17 For 2014, THESL expects to have the residual 2013 capital expenditures to be in-service,
18 as well as the Bremner Transformer Station and Hydro One capital contributions from the
19 two preceding years. THESL's projection of ISA for 2014 includes the following
20 estimates:

- 21 • \$32.3M – pre-2012 CWIP
- 22 • \$26.1M – 9% of 2012 capital expenditures (Bremner & Hydro One capital
23 contributions)
- 24 • \$295.3M – 51% of 2013 capital expenditures (inclusive of Bremner &
25 Hydro One capital contributions)
- 26 • **\$353.7M** total 2014 ISA (not including 2014 capital expenditures)

In-Service Summary of Capital Program

Schedule Number	Projects	Segments	2012 Cost Estimates (\$M)					2013 Cost Estimates (\$M)					
			2012 Forecast	2012 Additions (In-Service)	2012 Additions (Not In-Service)	Forecast 2013 In-Service for 2012 Carryforward	Forecast 2014 In-Service for 2012 Carryforward	2013 Budget	2013 Additions (In-Service)	2013 Additions (Not In-Service)	Forecast 2014 In-Service for 2013 Carryforward		
B1	Underground Infrastructure and Cable	Underground Infrastructure	28.75	12.74	44%	16.01	16.01	-	58.94	35.87	61%	23.07	23.07
B2		Paper Insulated Lead Covered Cable - Piece Outs and Leakers	0.08	0.04		0.05	0.05	-	5.42	3.30		2.12	2.12
B3		Handwell Replacement	13.65	6.05		7.60	7.60	-	16.65	10.13		6.52	6.52
B4	Overhead Infrastructure and Equipment	Overhead Infrastructure	9.07	4.02		5.05	5.05	-	55.88	34.01		21.87	21.87
B5		Box Construction	0.58	0.26		0.32	0.32	-	23.04	14.02		9.02	9.02
B6		Rear Lot Construction	16.36	7.25		9.11	9.11	-	29.43	17.91		11.52	11.52
B7		Polymer SMD-20 Switches	-	-		-	-	-	1.53	0.93		0.60	0.60
B8		SCADA-Mate R1 Switches	-	-		-	-	-	1.43	0.87		0.56	0.56
B9	Network Infrastructure and Equipment	Network Vault & Roofs	2.84	1.26		1.58	1.58	-	18.76	11.42		7.34	7.34
B10		Fibertop Network Units	1.48	0.65		0.82	0.82	-	7.71	4.69		3.02	3.02
B11		Automatic Transfer Switches (ATS) & Reverse Power Breakers (RPB)	-	-		-	-	-	3.26	1.99		1.28	1.28
B12		Stations Power Transformers	0.38	0.17		0.21	0.21	-	3.48	2.12		1.36	1.36
B13.1 & 13.2	Station Infrastructure and Equipment	Stations Switchgear - Muncipal and Transformer Stations	1.73	0.77		0.96	0.96	-	21.81	13.28		8.54	8.54
B14		Stations Circuit Breakers	0.76	0.34	0.42	0.42	-	0.55	0.34	0.22	0.22		
B15		Stations Control & Communicaton Systems	0.14	0.06	0.08	0.08	-	1.00	0.61	0.39	0.39		
B16		Downtown Station Load Transfers	0.68	0.30	0.38	0.38	-	2.14	1.30	0.84	0.84		
B17	Bremner TS	Bremner Transformer Station	8.50	-	0%	8.50	8.50	81.00	-	0%	81.00	81.00	
B18	Hydro One Capital Contributions	Hydro One Capital Contributions	22.98	3.69	16%	19.28	1.68	17.60	48.12	9.02	19%	39.10	39.10
B19	Feeder Automation	Feeder Automation	2.30	1.02	44%	1.28	1.28	-	20.66	12.58	61%	8.09	8.09
B20	Metering	Metering	4.74	2.10		2.64	2.64	-	8.40	5.11		3.29	3.29
B21	Plant Relocations	Externally-Initiated Plant Relocations and Expansions	10.16	4.50		5.66	5.66	-	24.84	15.12		9.72	9.72
B22	Grid Solutions	Grid Solutions	-	-		-	-	-	-	-		-	-
BXX	Engineering Capital	ICM Understatement of Capitalized Labour	8.32	3.69		4.63	4.63	-	-	-		-	-
C1	Operations Portfolio Capital		120.51	53.95	47%	66.56	66.56	-	121.63	77.44	54%	44.20	44.20
C2	Information Technology Capital		22.00	9.25		12.75	12.75	-	15.00	8.72		6.28	6.28
C3	Fleet Capital		0.80	0.29		0.51	0.51	-	2.00	0.25		1.75	1.75
C4	Buildings and Facilities Capital		5.00	3.76		1.24	1.24	-	5.00	1.65		3.35	3.35
	Allowance for Funds Used During Construction		1.20	0.15	1.05	1.05	-	1.40	1.09	0.31	0.31		
Total			283.00	116.31		166.69	140.59	26.10	579.09	283.76		295.33	295.33
Percentage In-Service Additions				41%			50%	9%		49%			51%

	2012 Forecast	2013 Budget
Cost Estimates (\$M)	283.00	579.09
In-Service Additions	116.31	283.76
Total	41.1%	49.0%

Total	2012 ISA	2013 ISA	2014 ISA	2015 ISA	Total
2012 Capital Expenditure	116.31	140.59	26.10		283.00
2013 Capital Expenditure		283.76	295.33		579.09
pre-2012 CWIP	67.00	45.46	32.28	32.28	177.01
Total	183.30	469.81	353.71	32.28	-