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Baseline 15 Updates

Revenue Metering Sub-Committee Meeting
March 8, 2006

Richard Zaworski

Baseline 15.0 Calendar

Milestones	Baseline 15.0
All technical interface documents relating to the next software release are posted on the Pending Changes webpage for Market Participant comment. IESO initiates an impact assessment, inviting market participants to review changed documents and provide feedback regarding implementation concerns.	17 Nov 2005
Last day for Market Participants to submit comments concerning technical interface documents.	1 Dec 2005
Updated technical interface documents, which reflect impact assessment, are posted on the Pending Changes webpage.	19 Dec 2005
New and updated market manuals and related documents are posted on the Pending Changes webpage. IESO initiates impact assessment, inviting market participants to review changed documents and provide feedback regarding implementation concerns.	18 Jan 2006
Last day to submit comments concerning market manuals and related documents.	1 Feb 2006
Revised market manuals and related documents, incorporating impact assessment, are posted on the Pending Changes webpage	16 Feb 2006
Final approved documents posted on the IESO web.	8 Mar 2006

Baseline 15.0 Updates
Metering Updates

Item	Change Description	Link	Last Updated	Comments Due	Target Implementation
IMO_FORM_1298, Declaration of Compliance of Metering Installation, ver 4.1	Changed Delivery Point ID to Meter Point ID on page 2.	PDF	17-Jan-2006	1-Feb-2006	Baseline 15.0
IMO_FORM_1304, Assigning a Metering Service Provider and a Transmitter for a Transmission Tariffs Delivery Point, ver 8.1	Removed paragraph "This FORM is optional . . " from form introduction.	PDF	17-Jan-2006	1-Feb-2006	Baseline 15.0
MDP_PRO_0012, Market Manual 3: Metering Part 3.6: Conceptual Drawing Review, ver 9.1	Table 1-1 Revised checklist to add new item #20 for generator details. Figure B-1 pg 1 & 2 Minor formatting changes to improve consistency Figure B-2 Revised SLD example to remove DMP node symbol and include requirements for embedded generator(s). Figure B-3 Minor formatting changes to improve consistency.	PDF	17-Jan-2006	1-Feb-2006	Baseline 15.0
MDP_PRO_0013, Market Manual 3: Metering Part 3.2: Meter Point Registration and Maintenance, ver 17.1	Appendix B - Revised section: Guidelines for Commissioning a Metering Installation is now Requirements for Commissioning a Metering Installation.	PDF	17-Jan-2006	1-Feb-2006	Baseline 15.0
MDP_STD_0004, Wholesale Revenue Metering Standard - Hardware, ver 5.1	Section 4.3.3e Section added to include two element metering of a generation facility. Section 6.4.6 Section 6.4.5 becomes section 6.4.6. Section 6.4.5 Section added to include single set of VTs connected to a common solid bus. Section 7.4.1 Revised wording of e & f; deleted g & h; section i,j,k & l become g, h, i & j.	PDF	17-Jan-2006	1-Feb-2006	Baseline 15.0
MDP_STD_0005, Site-Specific Loss Adjustments: Requirements for Adjustment of Meter Readings for Site-Specific Losses in the IMO-Administered Market, ver 2.1	Figure 8.1 Created new drawing image to replace image missing from previous version of document. Section 8. Corrected minor typographical error.	PDF	17-Jan-2006	1-Feb-2006	Baseline 15.0

Baseline 15.0 Updates
Market Manual 3.2 – Appendix B

- Updates based on the recommendations from the IESO/MSP Working Group (Mar. 23, 2005)
  - Ensure consistency among MSP's when commissioning metering installations
  - Eliminate possibility of a commissioning error
  - Commissioning and End to End test are two separate processes
- Appendix B is now the 'Requirements for Commissioning a Metering Installation'.
- Highlights include:
  - MSP required to retain all commissioning documentation
  - MSP shall have processes in place to ensure requirements are met
  - Confirm accuracy of IESO approved SLD
  - Confirm correct programming and configuration of meter

Baseline 15.0 Updates
Market Manual 3.2 – Appendix B

- Highlights (con't):
  - IT's must have ratiometer and polarity test
  - Details regarding IT's independent checks
  - Cross phase test includes kW/kVAR instantaneous power and energy comparisons
    - ü kW/kVAR tolerances established
    - ü Provisions to accept errors outside of limits (requires engineering support)
  - Address issue when secondary current is below 0.25A per phase
    - ü Both commissioning and end to end testing
    - ü Timelines established to complete processes
  - Requirements for the circuit analyzer are defined
    - ü Accuracy class of 0.2% or better and be used within its verified operating range
    - ü Requirement takes effect Jan. 1, 2008 and until then the requirement is 0.5 or better

Market Manual 3.2 – Appendix B Details

- Summary
  - Guidelines developed based on previous experiences with commissioning errors
    - Errors include incorrect CT ratio, incorrect polarity, catastrophic failure, etc
    - Some errors are very difficult to detect (incorrect biasing of meter, incorrect input to meter voltage coil, etc)
  - MSP must demonstrate that each step has been performed – Commissioning Checklist
  - Appendix C – 'Guidelines for Conducting End to End Testing and Meter Master File Comparison' out of step with Appendix B
    - Engineering Unit Report still requires 0.5A secondary current.
    - IESO has been accepting True Load EUReports above 0.25A with MSP qualification (Jan. 2005). This will continue.
  - Appendix C to be updated in future Baseline (Q3/Q4 2006)
    - Streamline Process - Delays due to exchange of the 'Engineering Units Report' between the MSP and IESO
    - Tolerance for acceptance is 5% kW and 15% kVAR
    - Same approach will be taken as with Appendix B – IESO/MSP Working Group

Baseline 15.0 Updates
IMO FORM 1304

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Assigning a Metering Service Provider and a Transmitter for a Transmission Tariffs Delivery Point

Submit this form by mail, courier, or fax to the following address:

The IESO
655 Bay Street, Suite 410
P.O. Box 1
Toronto, ON M5G 2K4

Attention: Wholesale Metering Group

Fax No.: 905-855-8688

Subject: Assigning a Metering Service Provider and a Transmitter for a Transmission Tariffs Delivery Point

All information submitted in this process will be used by the *IESO* solely in support of its obligations under the "Electricity Act, 1998", the "Ontario Energy Board Act, 1998", the "Market Rules" and associated policies, standards and procedures and its licence. All submitted information will be assigned the appropriate confidentiality level upon receipt.

Terms and acronyms used in this Form that are italicized have the meanings ascribed thereto in Chapter 11 of the "Market Rules".

Deleted: This FORM is optional if a relevant Energy *Delivery Point* exists for the *Facility*. The identified *Metering Service Provider* on IMO-FORM-1100 will be applied to the Network *Delivery Point* and to the Connection *Delivery Point*.¶

- This FORM is no-longer ‘optional’
  - Out of step with Market Manual 3.8, Figure 2-2 and Figure 2-4
  - MMPT completes and submits IMO FORM 1304
  - Transmitter to provide all relevant information to MMPT
    - ü Figure 2-2 Step 8B.09
    - ü Figure 2-4 Step 8D.08

Baseline 15.0 Updates
Wholesale Revenue Metering Standard
Section 4.3.3d & e

4.3.3 Considerations for Installations that do not Conform to Blondel's Theorem

Subject to specific site approval by the *IESO*, as detailed in section 4.4, the following Non-Blondel-Compliant installations will be considered for registration:

d. two-element *metering installation* located at the transformer station where the power system neutral/ground is available but not used — using two current transformers and two voltage transformers connected phase to phase and a two-element *meter*.

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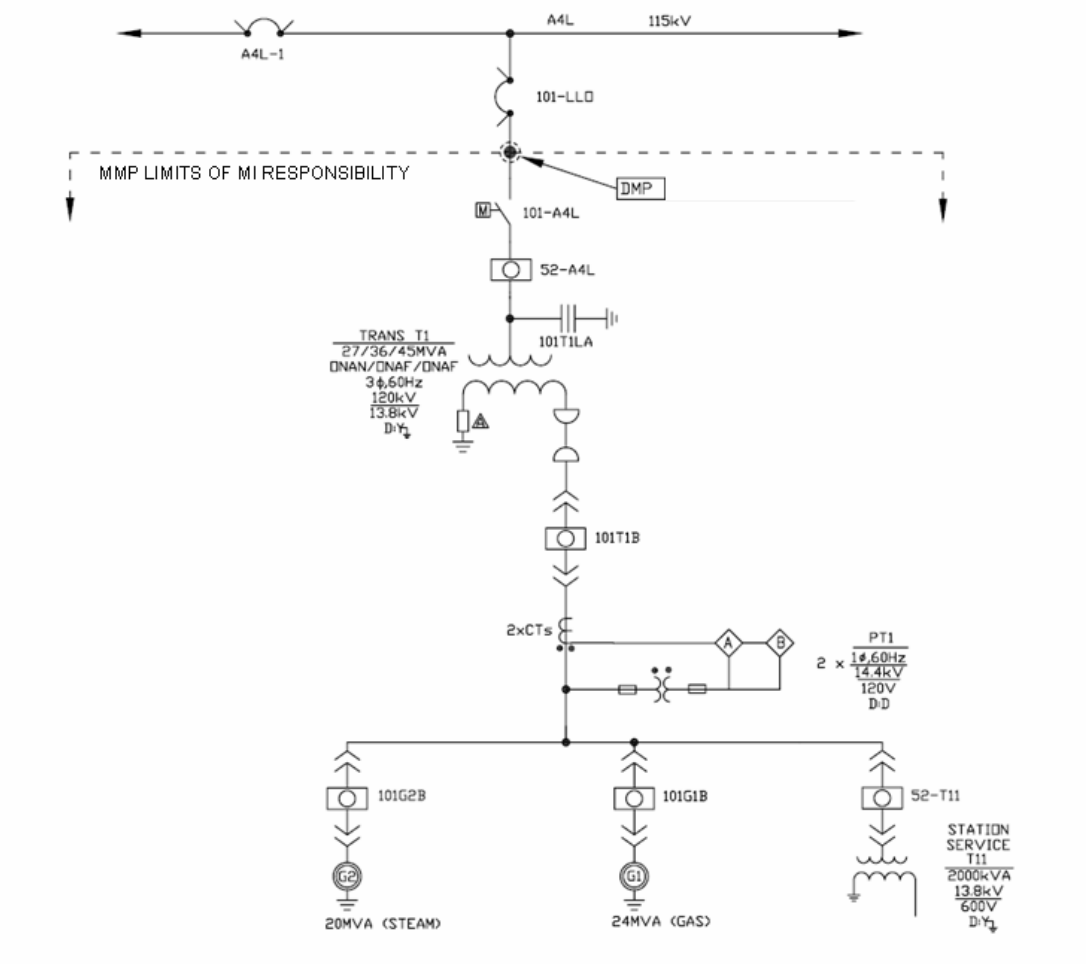
e. two element metering of a generation facility where a grounded generator is connected to a grounded winding of the step up power transformer. The metering installation is located between the generator and the step up power transformer. All load connections between the generator and the metering installation are delta connected – using two current transformers and two voltage transformers connected phase to phase and a two element meter.

- Section 4.3.3d
  - Syntax
- Section 4.3.3e
  - Added provisions to include 2 element metering of a generation facility
  - Accepted by RMSC Aug. 26, 2005

Wholesale Revenue Metering Standard
Section 4.3.3 e



Baseline 15.0 Updates
Wholesale Revenue Metering Standard
Section 6.4.5 & 6.4.6

6.4 Primary Connection Point – Loads

6.4.5 Connection to Common Solid Bus

Where a *metered market participant* has two supply circuits connected to a common solid bus (ie no tie-breaker between the two supply circuits), the metering installations for the two supply circuits may utilize a single set of VTs which are connected to the common solid bus.

6.4.6 Constant Correction Factor

Where the maximum error introduced by any physical separation of the primaries of the voltage transformer and current transformer exceeds 0.02%, for either active or reactive power flow, a constant correction factor shall be provided by the *metering service provider*.

- 6.4.5 becomes 6.4.6
- Added section 6.4.5 - Connection to Common Solid Bus
  - Accepted by RMSC May 13, 2004

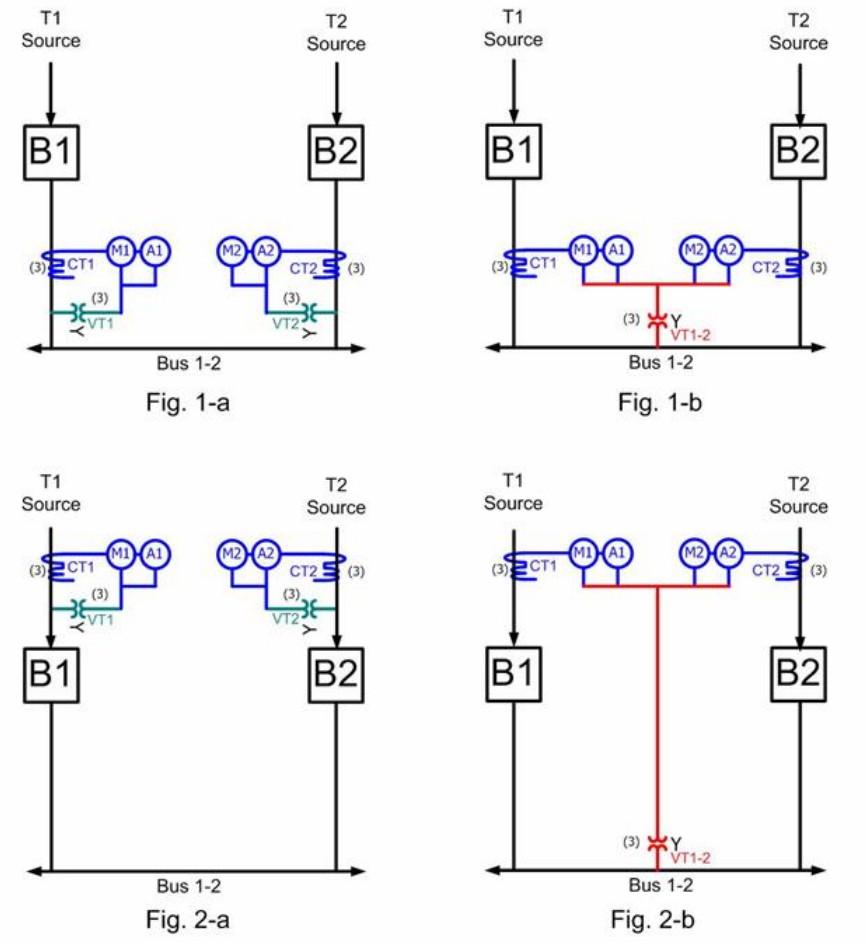


Fig. 1-a

Fig. 1-b

Fig. 2-a

Fig. 2-b

Baseline 15.0 Updates
Wholesale Revenue Metering Standard
Section 7.4.1e & f

7.4 Additional Requirements – New Instrument Transformers

7.4.1 Codes and Conditions

Instrument transformer secondary cabling and cabling accessories shall comply with the following codes and conditions:

e. voltage transformers with more than one secondary winding shall have one winding dedicated to the main *meter* and the other winding to the alternate *meter*. The other winding containing the alternate *meter* may be used for other purpose provided that the voltage transformer operates within the rated burden limits for the 0.3 ANSI accuracy class and meet all other requirements such as VEE. Devices shall be installed inside the *meter* enclosure;

f. for a dual *Main/Alternate metering installation*, the alternate *instrument transformers* may be used for purposes other than wholesale metering provided that they operate within the rated burden limits for the 0.3 ANSI accuracy class and meet all other requirements such as VEE. Devices shall be installed inside the *meter* enclosure;

becomes

e. voltage transformers with two secondary windings may be used for purposes other than wholesale metering. The *metering installation* shall comply with the following:

- the main meter is connected to one dedicated winding,
- the alternate meter and all other devices are connected to the other winding,
- the voltage transformers operate within the rated burden limits for the 0.3 ANSI accuracy class and meets all other requirements such as VEE,
- all devices connected to the voltage transformers shall be installed inside the *meter* enclosure.

f. for a dual *Main/Alternate metering installation*, the alternate *instrument transformers* may be used for purposes other than wholesale metering. The *metering installation* shall comply with the following:

- the alternate *instrument transformers* operate within the rated burden limits for the 0.3 ANSI accuracy class and meets all other requirements such as VEE,
- all devices connected to the alternate *instrument transformers* shall be installed inside the *meter* enclosure.

Wholesale Revenue Metering Standard Section 7.4.1

- Revised wording of e & f
- Deleted section g & h (redundant – covered in MEC standard)

g. where the voltage transformer primary winding is shared among more than one secondary winding, burdens on the non-dedicated secondary winding causing an error in measurement at the main *meter* (of less than 0.02%) shall not be subject to a correction factor;

h. where the error introduced by the burdens on the non-dedicated secondary winding exceeds 0.02% for either active or reactive power, error correction factors based on factory or on-site testing shall be submitted to the *IESO*;

- Section i, j, k and l become g, h, i and j.