

## Appendix IV

### Metering Requirements

#### 1.3 Embedded Market Participants

An Embedded Market Participant shall be responsible for the ownership, installation and maintenance of the meter and contract the services of a registered MSP. The metering standards are prescribed in the IMO Market Rules.

#### 2.3 Embedded Distributors and Load Customers

The metering standards for Embedded Distributors and Load Customers are as defined in Section 2.3.7 of the Conditions of Service. For Embedded generation, within an embedded distributor or load customer, metering shall conform to the Market Rules, if the following points apply:

1. the required approvals for such generation are obtained after October 30, 1998; and
2. the generator unit rating is 1 MW or higher;
3. the Transmission Delivery Point through which the Generation Facility is connected to the Distribution System attracts Line Connection Service Charges or Transformation Connection Service Charges; and
4. location of metering point(s) such that deliveries and tariffs can be applied as required by Applicable Laws and the Market Rules.
5. In this case the Embedded Generator should follow section 3.0.

#### 3. Embedded Generators

##### 3.1 Scope

Section 3 of this specification covers the metering requirements for Embedded Generators, licensed by the OEB and that are connected to the Distribution System. Although there may be circumstances where Embedded Generators must comply with the Market Rules, the requirements as described in the following shall supplement the Market Rules where applicable until such time as the Market Rules no longer apply.

##### 3.2 Metering Standard

An Embedded Generator connected to the Distribution System shall install its own metering in accordance with EnWin requirements and where practical, metering shall be installed at the Point of Supply. In cases, where generation is greater than 1 MW, metering shall be installed in accordance with the Market Rules in addition to EnWin defined retail requirements where applicable.

If the Embedded Generator is a Market Participant, installation and registration of the Meter Installation with the IMO is the responsibility of a Metering Service Provider hired by the Embedded Generator. If the Embedded Generator is not a Market Participant, installation of the metering installation shall be performed by an MSP hired by the Embedded Generator and registration of the metering installation, if required, shall be performed by

EnWin. Where it is not practical to install metering at the Point of Supply, the Embedded Generator shall propose to EnWin of the alternate location of this metering, which location is subject to EnWin approval. This information shall be provided to EnWin representatives prior to actual installation. The Embedded Generator shall also provide EnWin with technical details of the Meter Installation including site-specific loss data, for the determination of loss factors, which EnWin shall apply to the generation output for settlement purposes.

The Meter Installation owned by the Embedded Generator shall comply with all federal metering requirements specifically detailed in Measurement Canada's "Electricity and Gas Inspection Act" regulations and all requirements of the Electrical Safety Authority. It shall be the responsibility of the Embedded Generator to demonstrate to EnWin that these requirements are met. The location of the Meter Installation including instrument transformers and meter(s) shall be contained in locked cabinets accessible by the Embedded Generator or its approved MSP and EnWin.

Remote interrogation of all embedded generator metering shall be established and compatible with EnWin's MV-90 meter reading system. The telecommunication facilities shall be the Embedded Generators' responsibility and EnWin's access to the Meter Installation via these communication lines shall be available at mutually agree upon times.

### **3.3 Metering Requirements**

The following shall be used to establish the type of Meter Installation to be installed based on generation capacity:

#### **Retail Metering Requirements (Embedded Generator) Chart**

<b>Category</b>	<b>Description</b>	<b>Minimum Requirement</b>
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##### **1. Less than and equal to 1000 kW**

Retail Metering (Bi-Directional four-quadrant interval metering) and telephone connection for remote meter reading

##### **2. Greater than 1000 kW**

Chapter 6 of the IMO compliant metering and Retail Metering (Bi-Directional four-quadrant interval metering) plus telephone connection for remote meter reading

### **3.4 Instrument Transformer Requirements**

Only Measurement Canada approved current and voltage transformers that meet or exceed 0.3% accuracy class of ANSI standard C57.13 and CSA CAN3-C13 – latest Issue shall be accepted.

- Access to the instrument transformers shall also be made available to EnWin
- The electrical rating of the instrument transformers shall be in accordance with established standards and the rating of

the current transformer shall meet the expected current range of the embedded generator. The instrument transformers shall be used for revenue metering purposes only and shall not be used for any other applications other than for this purpose.

### **3.5 Meter Requirements**

The Meter Installation(s) shall have an accuracy class that meets or exceeds 0.5% for Embedded Generator for categories 1 and 0.2 % for category 2 (reference - Metering Requirements Chart in section 3.3). In addition to these accuracy requirements, the meter(s) shall be Measurement Canada approved for revenue billing purposes. The location of Meter Installation(s) shall be as close to the instrument transformers as possible, and shall be mounted in a secured, lockable, cabinet. The meter(s) shall be accessible only to authorized EnWin staff and the Embedded Generator or the Embedded Generator's authorized representative.

The rating of the meter(s) shall be as follows:

- Transformer rated
- P-base (bottom connected)
- 120 V and 10 A
- Six digit meter display (minimum)
- 3 element (standard) on 3-phase Wye systems and 2 element may be considered depending on circumstances which do not require 3 element to be used, such as delta connected systems
- 4-quadrant metering (bi-directional) and a minimum of 4-channel mass memory capability of 15 minute data for a period of a minimum of 30 days
- Telephone modem connectivity
- MV-90 meter reading software system compatible (i.e. TIM module currently available)
- Optical port
- Preferred meter multiplier X1
- Measurement Canada approved for revenue billing purposes and Certification number to be made available to EnWin prior to installation

### **3.6 Meter Programming Requirements**

As a minimum, the following are additional Meter Installation(s) requirements:

- Main display delivered and received quantities – kWh, maximum kW and maximum kVA:
  - kWh delivered
  - maximum kW delivered
  - maximum kVA delivered
  - kWh received
  - maximum kW received
  - maximum kVA received
- The display quantities shall be displayed in secondary units (excluding any CT, VT or meter multipliers)

- The demand interval shall be 15 minute block demand and the following quantities recorded per interval (i.e. raw data with no CT, VT or meter multipliers applied):
- kWh delivered
- kWh received
- kVARh delivered
- kVARh received
- Alternate display quantities - magnitude and phase angles of voltage and current for each phase A, B & C
- Average system power factor
- Instantaneous power factor
- Number of demand resets

### **3.7 Site Specific Loss Data**

As applicable, site specific loss data shall be provided to EnWin for the purpose of determining the loss calculation that must be applied to the raw meter readings, if the meter is not located at the Point of Supply to the Distribution System. These readings plus the site-specific loss data are to be used for VEE purposes.

### **3.8 Communication (Telecommunication) Requirements**

The Embedded Generator shall have the responsibility for arranging, installing and maintaining telephone connection to the Meter Installation(s). The technical details and telephone number are to be available to EnWin prior to the Meter Installation(s) being installed and commissioned.

### **3.9 3.9 Responsibilities**

Generator shall ensure that their MSP does the following:

- 1 design approved accurate Meter Installation(s);
- 2 submit design along with single line diagram to EnWin for approval;
- 3 installation, field checks and commissioning of Meter Installation;
- 4 provide a signed letter that the Meter Installation is in accordance with Measurement Canada's requirements;
- 5 Meter Installation inspected and passed by ESA;
- 6 submit all metering information to EnWin Account Executive to set up meter billing;
- 7 field testing of Meter Installation at time when the remainder of equipment is being tested;
- 8 the Embedded Generator or its MSP must provide EnWin the opportunity to witness when requested;
- 9 request through EnWin Account Executive an end to end test from Meter Installation(s) to EnWin Billing Department;
- 10 contact EnWin Account Executive to arrange for an end to end test;
- 11 notify EnWin of any changes to its MSP, Meter Installation prior to any work being performed;
- 12 be responsible for ensuring that Measurement Canada requirements and regulations are followed with respect to maintaining a valid seal on all metering devices;

- 13 ensure that appropriate parts of the Market Manual 3: Metering are followed as required;
- 14 maintain metering data, the metering database for a period of time and archived; and
- 15 notify EnWin immediately of any emergency meter replacements or repairs and provide EnWin with necessary information for data retrieving.

EnWin shall:

1. have the right to audit Meter Installations in accordance with this specification on connection and periodically thereafter
2. when aware, issue trouble calls to the Embedded Generator or Embedded Generator's authorized Metering Service Provider and monitor the trouble call, the associated response time and resolution.

EnWin shall not be responsible for the checking or approving of the Embedded Generator's Meter Installation or the work of the Embedded Generator's MSP. It shall be the responsibility of the Embedded Generator or its authorized contractor to ensure all relevant and applicable approvals are obtained prior to any submission of information to EnWin.