

# PROCEDURE



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## Market Manual 3: Metering

# Part 3.9: Conformance Monitoring

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**Issue 15.0**

This document provides *market participants*, *metered market participants (MMPs)*, and *metering service providers (MSPs)* with the steps required to comply with the *IESO Conformance Monitoring* process.

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<b>Document ID</b>	IMP_PRO_0058
<b>Document Name</b>	Part 3.9: Conformance Monitoring
<b>Issue</b>	Issue 15.0
<b>Reason for Issue</b>	Updated for Baseline 19.0
<b>Effective Date</b>	March 5, 2008

## Document Change History

Issue	Reason for Issue	Date
1.0	Unapproved version released for Baseline 6.0	February 27, 2001
2.0	Baseline 6.5	October 09, 2001
3.0	Baseline 6.6	Nov 26, 2001
4.0	Baseline 7.0	January 14, 2002
5.0	Incorporated changes from February <i>IMO</i> Board Meeting	March 25, 2002
6.0	Incorporated Legal Review	April 23, 2002
7.0	Baseline 8.0	August 28, 2002
8.0	Issue Released for Baseline 9.0	March 5, 2003
9.0	Issue Released for Baseline 9.1	June 4, 2003
10.0	Issue Released for Baseline 10.0	September 10, 2003
11.0	Issue Released for Baseline 12.1	December 8, 2004
12.0	Issue Released for Baseline 13.0	March 9, 2005
13.0	Issue Released for Baseline 13.1	June 1, 2005
14.0	Issue Released for Baseline 14.0	September 14, 2005
15.0	Issue Released for Baseline 19.0	March 5, 2008

## Related Documents

Document ID	Document Title
IMO_PRO_0047	Market Place Baseline and Document Maintenance Process
MDP_PRO_0032	Market Manual 5: Settlements, Part 5.2: Metering Data Processing



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## Table of Changes

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<b>Reference (Section and Paragraph)</b>	<b>Description of Change</b>
Section 1.3.2	Subsection entitled Frequency of Routine Tests and Inspections: <ul style="list-style-type: none"><li>• Revision regarding circuit load capacity updates.</li><li>• Correction to market rule reference regarding small or minor embedded generation facilities.</li></ul>



# Market Manuals

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The *market manuals* consolidate the market procedures and associated forms, standards, and policies that define certain elements relating to the operation of the *IESO-administered markets*. Market procedures provide more detailed descriptions of the requirements for various activities than is specified in the *market rules*. Where there is a discrepancy between the requirements in a document within a *market manual* and the *market rules*, the *market rules* shall prevail. Standards and policies appended to, or referenced in, these procedures provide a supporting framework.

## Market Procedures

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The “Metering Manual” is Volume 3 of the *market manuals*, where this document forms “Part 3.9: Conformance Monitoring”.

A list of the other component parts of the “Metering Manual” is provided in “Part 3.0: Metering Overview”, in Section 2, “About This Manual”.

## Structure of Market Procedures

Each market procedure is composed of the following sections:

1. **“Introduction”**, which contains general information about the procedure, including an overview, a description of the purpose and scope of the procedure, and information about roles and responsibilities of the parties involved in the procedure.
2. **“Work Flow”**, which contains a graphical representation of the steps and flow of information within the procedure.
3. **“Procedural Steps”**, which contains a table that describes each step and provides other detail related to each step.
4. **“Appendices”**, which may include such items as forms, standards, policies, and agreements.

## Conventions

The *market manual* standard conventions are as defined in the “Market Manual Overview” document.

– End of Section –



# 1. Introduction

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## 1.1 Purpose

This procedure provides *market participants*, *metered market participants* (MMPs), and *metering service providers* (MSPs) with the steps required to comply with the *IESO* Conformance Monitoring process. The Conformance Monitoring process monitors the conformance of *metering installations* and the performance of *metering service providers* within the *market rules* and *IESO* policies and standards.

## 1.2 Scope

This procedure is intended to provide *market participants*, *metered market participants*, and *metering service providers* with a summary of the steps and interfaces involved in the Conformance Monitoring process. The procedural work flows and steps described in this document serve as a roadmap for *market participants*, *metered market participants*, and *metering service providers*, and reflect the requirements set out in the *market rules* and applicable *IESO* policies and standards.

The scope of this procedure is limited to the requirements for complying with *meter*-related activities under the *market rules*. This procedure does not address:

- registering as an *metering service provider*;
- registering a *meter point*;
- requesting a *metering exemption* for registration of a *meter point*; or
- requesting a *meter* trouble report.

The overview information in Section 1.3, below, is provided for context purposes only, highlighting the main actions that comprise the procedure as illustrated in Section 2 and described in Section 3.

## 1.3 Overview

This procedure provides *metered market participants* and *metering service providers* with the steps for undergoing audits, complying with testing requirements, quarantining *meters* and managing compliance issues concerning power switching operations.

### 1.3.1 Audits

The *market rules* permit the *IESO* to conduct audits of *metering service provider* organizations and *metering installations* to confirm compliance with *IESO* standards and requirements. The *IESO* shall also, pursuant to a request by a *market participant*, conduct an audit to determine the consistency

between *metering data* recorded in the *metering database* and *metering data* recorded in the *metering installation*. (Chapter 6, Section 7.2.1) These audits provide substantive evidence that the *metering service provider* organization or the *metering installation* meets the applicable standards and *regulations* outlined in the *market rules*. The *IESO* may also, as prescribed in Chapter 6, Section 9.1.3 of the “Market Rules”, audit security measures applied to each registered *metering installation*.

The *IESO* is also required to conduct routine data reconciliation tests that validate the accuracy of *energy* readings at *meters*. Similarly, *metering service provider* organizations must conduct routine reconciliation tests and spot checks as part of their ongoing *metering service provider* responsibilities and forward the results of these tests and spot checks to the *IESO*. (Appendix 6.3, Section 1.1.1) The *IESO* can initiate an audit if the results suggest a potential area of non-compliance.

A *metering service provider* that fails to meet the required performance standards is subject to revocation. (Chapter 6, Section 5.3.1) The *IESO* can also implement financial sanctions against the associated *metered market participant*.

## Types of Audits

The *IESO* conducts four types of audits with respect to the *metering service provider* and its *metering installations*:

- **Metering installation audit.** This audit assesses the components of registration and the functionality and accuracy of *instrument transformers*, *revenue meters*, *data loggers*, *connection station service* estimate, alarms, and communication systems. The *market rules* require the *IESO* to conduct audits of a *metering installation* when test and inspection results submitted by the *metering service provider* suggest potential non-compliance with the *market rules*. (See Subsection 1.3.2, “Tests and Inspections” in this *market manual*.) The *market rules* also permit the *IESO* to conduct “periodic, random, and unannounced” audits of this type to validate compliance, and to make the results of these audits available to the *metered market participants* for the *metering installation* as soon as practicable. (Chapter 6, Sections 7.1.5 and 7.1.6)
- **Physical Security audit.** This audit assesses security compliance at *metering installation* sites, including the *revenue meter*, the *meter enclosure*, *instrument transformer* terminations, cabling, and security seals. The *market rules* permit the *IESO* to conduct physical security audits of each registered *metering installation* as determined appropriate by the *IESO*. (Chapter 6, Section 9.1.3)
- **Data Reconciliation audit.** This audit investigates discrepancies between *metering data* recorded at a *metering installation* and *metering data* appearing on a *settlement statement*. (Chapter 6, Section 7.2.5)
- **Systems and Procedures audit.** This audit is conducted as part of the *metering service provider* registration process and examines the *metering service provider* organization, its systems, and procedures. The *market rules* permit the *IESO* to conduct a Systems and Procedures audit as part of the *metering service provider* registration process if the *metering service provider* applicant does not have ISO 9000 certification. See “Market Manual 3: Metering, Part 3.1: Metering Service Provider (MSP) Registration, Revocation, and De-regulation” for more information about this audit. (Chapter 6, Section 5.1.6)

## Costs of Audits

The costs and expenses for *metering installation* audits, physical security audits and data reconciliation audits follow the general principle that each party pays its own costs and expense for any initial audit. Subsequent audits or follow up work due to non-compliance, however, will be the responsibility of the *metered market participant* for that installation. Specifically:

- The costs and expenses of *metering installation* and physical security audits shall be paid as follows:
  - The *IESO* shall pay all of its initial costs and expenses incurred in carrying out the audit. (Chapter 6, Section 7.3.2.1)
  - The *metered market participant* shall pay all initial costs and expenses incurred by the *metered market participant*, *metering service provider* and *facility* in carrying out the audit. (Chapter 6, Section 7.3.2.2)
  - Where, as a result of the *IESO's* audit, the *metering installation* is shown to be non-compliant with the *market rules* or any policy or standard of the *IESO*, the *metered market participant* responsible for the *metering installation* shall bear the costs of all necessary retests, or additional inspections, audits and remedial work, including all costs incurred by the *IESO*. (Chapter 6, Section 7.3.2)
- The costs and expenses of a *metering data* audit requested by a *market participant* (Chapter 6, Section 7.2.1) shall be paid as follows:
  - The *IESO* shall pay all of its initial costs and expenses incurred in carrying out the audit. (Chapter 6, Section 7.3.3.1)
  - The *market participant* who requested the audit shall pay all initial costs and expenses incurred by the *metered market participant*, *metering service provider* and *facility* owner in carrying out the audit. (Chapter 6, Section 7.3.3.2)
  - Where, as a result of the *IESO's* audit, the *metering installation* is shown to be non-compliant with the *market rules* and any policy or standard of the *IESO*, the *metered market participant* responsible for the *metering installation* shall bear the costs of all necessary retests, or additional inspections, audits and remedial work, including all costs incurred by the *market participant* who requested the *IESO* to conduct the audit. (Chapter 6, Section 7.3.3)
- The costs and expenses of the *metering data* audit for data reconciliation of non-compliant *metering installations* (Chapter 6, Section 7.2.5) shall be paid as follows:
  - The *IESO* shall pay all of its initial costs and expenses incurred in carrying out the audit. (Chapter 6, Section 7.3.4.1)
  - The *metered market participant* shall pay all initial costs and expenses incurred by the *metered market participant*, *metering service provider* and *facility* owner in carrying out the audit. (Chapter 6, Section 7.3.4.2)
  - Where the *metering installation* is shown to be non-compliant with the *market rules* and any policy or standard of the *IESO*, the *metered market participant* responsible for the *metering installation* shall bear the costs of all necessary retests, or additional inspections, audits and remedial work, including all costs incurred by the *IESO*. (Chapter 6, Section 7.3.4)

- The costs and expenses for Systems and Procedures audits are included in the *metering service provider* application fee paid as part of the *metering service provider* registration. (Chapter 6, Section 5.1.3.3)
- The costs and expenses of implementing safety work practices, including training the *IESO's* auditor in the specifics of the on-site practices and accompanying the *IESO's* auditor during an audit, shall be paid by the *metered market participant* for the *metering installation*. (Chapter 6, Section 7.3.5)

### Scope of Costs and Expenses:

Costs and expenses claimed in respect of an audit must be directly related to the audit and may include the following:

- Staff costs and expenses: salary, overtime, burden, lost profit (not *IESO*), travel, accommodation, meals and work consumables.
- Equipment: trucks, cranes, test sets, tools (exempting normal hand tools expected to be part of a journeyman's trade), and safety equipment other than personnel protection.
- Administration and Engineering: any Administration and Engineering costs required as part of the audit or test not considered part of the normal operation or obligation.
- Site preparation: circuit switching or safety zone demarcation.

Costs not included are the consequential costs of any audit or test such as higher temporary losses caused by switching or the provision of backup circuits or any degradation of *reliability*.

## 1.3.2 Tests and Inspections

The *market rules* require the *IESO* and the *metering service provider* to perform the tests and inspections outlined in this subsection. The *IESO* records the results of all tests, inspections, and reconciliations in the *metering registry*.

### Data Reconciliation

Both the *IESO* and the *metering service provider* conduct this test to confirm that the *energy* being measured by a *meter* over a given period of time was accurately transmitted to the *data logger* within the *meter*. The *metering service provider* performs the reconciliation on site as part of routine maintenance by comparing dial readings for the *meter* to readings on the *data logger* according to the schedule, or as directed by the *IESO* or as requested by a *market participant*. The *metering service provider* records the test results on the "Meter Read Reconciliation Form" (IMO-FORM-1411) and emails it to the *IESO* at [reconcile@ieso.ca](mailto:reconcile@ieso.ca). The *market rules* require the *metering service provider* to provide these on-site dial readings to the *IESO* if the *meter* within the *metering installation* is not capable of transmitting the *meter* dial readings during the remote acquisition of *metering data*. (Appendix 6.3, Section 1.2.4)

The *IESO* reconciles dial readings from the *meter* in the *metering installation* to values in the *metering database*. This reconciliation confirms that the *energy* being measured by the *meter* over a given period of time was accurately transmitted to the *IESO metering database*. The *IESO* performs the reconciliation using either the dial readings from the *metering service provider's* on-site

reconciliation report or the dial readings automatically transmitted during *meter* interrogation, for *meters* that have this functionality. Where a discrepancy exists between *metering data* in the *metering database* and *metering data* at a *metering installation*, the *metering data* at the *metering installation* governs. (Chapter 6, Section 7.2.8) On-Site Reconciliation tests are performed at the frequencies specified in “Frequency of Routine Tests and Inspections”, below.

Compliant *main/alternate metering installations* are exempt from data reconciliation, as *energy* readings from these types of *meters* are automatically reconciled during the validation process following *meter* interrogation. Stand alone *metering installations*, where the *data logger* is built into the *meter*, and enclosed in a single housing, are exempt from data reconciliation providing the *IESO* can read the encoded registers during *meter* interrogation. For existing *metering installations* with *meters* that have expired seals, the replacement single main *meter* from the Conforming Meter List is exempt from data reconciliation. All other *metering installations* are subject to data reconciliation requirements. (Appendix 6.3, Section 1.2.3 and 1.5.1; Amendment MR-00228-R00)

Where the error detected during reconciliation exceeds 1 multiplier (calculated as the CT ratio x VT ratio x *meter* register multiplier), the error will be treated as a *meter* trouble report. (Chapter 6, Section 7.2.7) If the error is detected during an on-site reconciliation, the *metering service provider* must inform the *IESO* within one *business day*, and follow the applicable steps outlined in “Market Manual 5: Settlements, Part 5.2: Metering Data Processing, Section 3.2, Meter Trouble Report”. (Chapter 6, Section 11.1.2) If the error is detected during an *IESO*-executed reconciliation, the *IESO* must inform the *metering service provider* and *metered market participant* as soon as practicable. (Chapter 6, Section 11.1.3)

### Spot Checks of Metering Installations

The *metering service provider* shall compare the active and reactive *energy* readings recorded on a *meter* to those recorded by a high-accuracy test set installed in parallel. (Appendix 6.3, Section 1.3.1) If the error recorded exceeds  $\pm 0.5\%$  on kW and  $\pm 1\%$  on kVAR, the *metering service provider* is required to inform the *IESO* within one *business day*, and follow the applicable steps outlined in “Market Manual 5: Settlements, Part 5.2: Metering Data Processing, Section 3.2: Meter Trouble Reports”. (Appendix 6.3, Section 1.3.2 and Chapter 6, Section 11.1.2) Spot checks of *metering installations* are performed at the frequencies specified in “Frequency of Routine Tests and Inspections”, below.

Where the error exceeds those values stipulated, the *meter* shall be bench tested by an accredited *meter* verifier. The results of the test shall be provided to the *IESO*, the *metered market participant* for the *metering installation* and to the *distributor* or *transmitter* to whose system the *facility* to which the *metering installation* relates is connected. (Appendix 6.3, Section 1.3.3) The *meter* shall be quarantined in accordance with 1.3.3 below.

Compliant *main/alternate metering installations* are exempt from spot checks. For existing *metering installations* with *meters* that have expired seals, the replacement single main *meter* from the Conforming Meter List are subject to *metering installation* spot checks. (Appendix 6.3, Section 1.5.1; Amendment MR-00228-R00)

The *metering service provider* submits the test results on the “Instrument Transformer and Spot Checks” tab on the “IMO-FORM-1411: Meter Read Reconciliation Form & Instrument Transformer Spot Check Form” and emails it to the *IESO* at [reconcile@ieso.ca](mailto:reconcile@ieso.ca).

## Instrument Transformer Checks

The *metering service provider* shall test the currents and voltages applied to a *meter* supported by independent confirmation of primary current and voltage. (Appendix 6.3, Section 1.4.1) The test normally consists of a phase plot verifying the magnitude and phase angle of each voltage and current. The *metering service provider* can perform this check remotely if the *meter* is capable of transmitting the applied currents and voltages and if the primary current and voltage can be independently confirmed by remote access. (Appendix 6.3, Section 1.4.2) *Instrument transformer* checks are performed by the *metering service provider* in a 6 year cycle or at specific events such as commissioning of a new *metering installation*, or the manufacturer's recommended schedule, or at seal expiry of the *meter*, or where the *IESO* has sufficient evidence that the IT's accuracy has been compromised (Amendment MR-00258-R00).

Compliant *main/alternate metering installations* are included in these *instrument transformer* checks (Amendment MR-00258-R00). For existing *metering installations* with *meters* that have expired seals, the replacement single main *meter* from the Conforming Meter List are subject to *instrument transformer* checks. (Appendix 6.3, Section 1.5.1; Amendment MR-00228-R00)

The *metering service provider* submits the test results on the "Instrument Transformer and Spot Checks" tab on the "IMO-FORM-1411: Meter Read Reconciliation" and emails it to the *IESO* at [reconcile@ieso.ca](mailto:reconcile@ieso.ca).

## Non-routine Tests

The *metered market participant* shall ensure that non-routine tests, as deemed appropriate by the *metered market participant* or its *metering service provider* or as required by the *IESO*, are conducted from time to time for the purpose of determining *instrument transformer* burden and error correction, ratiometer, megger, and oil analyses, and partial discharge and dielectric tests. (Appendix 6.3, Section 1.6.1)

## Frequency of Routine Tests and Inspections

The *Market Rules*, Chapter 6, Section 7.2.5, specify the frequency at which routine tests must be conducted by the *metering service provider*, as described below.

### Circuit Capacity Less Than an Average Annual Maximum Monthly Load of 10 MW (Appendix 6.3, Section 1.5.1)

For all *metering installations* that have a circuit capacity of less than an average annual maximum monthly load of 10 MW based on the previous calendar year, *metering service providers* must adhere to the following testing schedule, as applicable:

- **On-Site Reconciliation:** These reconciliation *meter* readings shall be recorded and submitted to the *IESO* at least once every six-month period following the date of registration of the *metering installation*.

The data reconciliation shall require all *meter* readings to be recorded within a time period no later than 180 days from the preceding reading date and subsequently, submitted to the *IESO* within this time period as well.

- **Meter Spot checks:** These *meter* spot checks shall be performed and the results submitted to the *IESO* at least once every twelve-month period following the date of registration of the *metering installation*.

The *meter* spot checks shall require all test results to be obtained within a time period no later than 360 days from the preceding test date and subsequently, submitted to the *IESO* within this time period as well. *Meter* spot check test results may be obtained simultaneously with the reconciliation readings.

- **Instrument transformer checks:** At least once per six-year period following the date of registration of the *metering installation* unless otherwise triggered to specific events such as the following:
  - Commissioning of any new *metering installation*;
  - At the earliest of the manufacturers' recommended maintenance cycle;
  - Seal expiry;
  - Any other evidence that the IT's accuracy has been compromised in the opinion of the *IESO*.

### Circuit Capacity Equal to or Greater Than an Average Annual Maximum Monthly Load of 10 MW (Appendix 6.3, Section 1.5.2)

For all *metering installations* that have a circuit capacity equal to or greater than an average annual maximum monthly load of 10 MW based on the previous calendar year, *metering service providers* must adhere to the following testing schedule, as applicable:

- **On-Site Reconciliation:** These reconciliation *meter* readings shall be recorded and submitted to the *IESO* at least once every three-month period following the date of registration of the *metering installation*.

The data reconciliation shall require all *meter* readings to be recorded within a time period no later than 90 days from the preceding reading date and subsequently, submitted to the *IESO* within this time period as well.

- **Meter Spot checks:** These *meter* spot checks shall be performed and the results submitted to the *IESO* at least once every six-month period following the date of registration of the *metering installation*.

The *meter* spot checks shall require all test results to be obtained within a time period no later than 180 days from the preceding test date and subsequently, submitted to the *IESO* within this time period as well. *Meter* spot check test results may be obtained simultaneously with the reconciliation readings.

- **Instrument transformer checks:** At least once per six-year period following the date of registration of the *metering installation* unless otherwise triggered to specific events such as the following:
  - Commissioning of any new *metering installation*;
  - At the earliest of the manufacturers' recommended maintenance cycle;
  - Seal expiry;
  - Any other evidence that the IT's accuracy has been compromised in the opinion of the *IESO*.

## Small or Minor Embedded Generation Facilities Registered under Chapter 6, Section 4.6 (Appendix 6.3, Sections 1.5.3 & 1.5.4)

For all *metering installations* that are registered under section 4.6 of Chapter 6, *metering service providers* must adhere to the following testing schedule:

- **Meter Spot checks:** These *meter* spot checks shall be performed and the results submitted to the *IESO* at least once every 36 month period following the date of registration of the *metering installation*.

The *meter* spot checks shall require all test results to be obtained within a time period no later than 1,080 days from the preceding test date and subsequently submitted to the *IESO* within this time period as well.

For *metering installations* that are comprised of a stand-alone alternate *meter*, the *metering service providers* shall verify that the magnitude and phase angle of each voltage and current input applied to the *meter* are within acceptable limits. This verification is to be performed once every six month period following the date of registration of the *metering installation* and may be conducted by remote means provided that the *meter* is capable of transmitting the required information. Where the results of the test identify an error within the *metering installation*, the *metering service provider* is required to inform the *IESO* within one *business day*, and follow the applicable steps outline in “Market Manual 5: Settlements, Part 5.2: Metering Data Processing, Section 3.2: Meter Trouble Reports”. The *metering service provider* shall retain records of all tests and as part of the *IESO* site audit, the *metered market participant* may be requested to provide the records to demonstrate that these tests were routinely performed. For *metering installations* comprised of a standalone main *meter*, verification testing of the voltage and current inputs is not required.

- **Instrument transformer checks:** At least once per six-year period following the date of registration of the *metering installation* unless otherwise triggered to specific events such as the following:
  - Commissioning of any new *metering installation*;
  - At the earliest of the manufacturers’ recommended maintenance cycle;
  - Seal expiry; or
  - Any other evidence that the IT’s accuracy has been compromised in the opinion of the *IESO*.

### 1.3.3 Quarantining Metering Installations

Any *metering installation* which the *IESO* or the *metering service provider* has reason to believe is inaccurate shall be quarantined. Regulations for quarantining a *meter* are directed from the “Consolidation of the Electricity and Gas Inspection Act”. Quarantining applies to the *meter*, recorders and *instrument transformers* or any equipment as directed by the *IESO*.

Where the *meter* exceeds the errors as stipulated under “Spot Checks of Metering Installations” in Appendix 6.3, Section 1.3.2 of the “Market Rules”, it shall be quarantined.

Any *metering installation* that is the subject of a dispute between the *IESO* and a *metered market participant* shall be quarantined.

### 1.3.4 Outcomes and Timelines

The *IESO* requires all *meters* to be held in quarantine until two *business days* after the deadline to register a *notice of dispute*, as indicated in the *market schedule*, or as directed by the *IESO*. This timeframe allows for the all processes to be completed before notification is sent to release the suspect *meter* from quarantine.

#### Quarantine Conditions

While in quarantine, the *meter* must comply with the following conditions:

- the *meter* must be kept separate from all other *meters* or be readily identifiable as quarantined to the satisfaction of the *IESO*,
- have potential applied to control power circuit to reduce the burden on internal battery; and,
- the *meter* must be stored in a secure location. Typically, this means that the storage is locked with an individually keyed lock, and access to the quarantine area is limited to authorized persons.

Authorized persons must log entry and exit in the log book inside the quarantine area, and pick up and return the key to the quarantine area in the access control system or equivalent management of an access control system to the satisfaction of the *IESO*. (Hardware Standard)

The quarantined *meter* is tagged with the following information:

- *Metered market participant*;
- *defined meter point*;
- *Metering service provider ID/person who removed the meter*;
- date of removal;
- reason for removal;
- *meter* readings at time of removal;
- earliest date that the *meter* can be returned to service if not the subject of a dispute; and
- expiry date of quarantine period if the *IESO* requests *meter* testing by an accredited *meter* verifier.

The seal on the *meter* shall remain unbroken. Testing by an accredited *meter* verifier shall be carried out on the sealed *meter*. Where it is not possible to complete the testing without breaking the seal, approval to break the seal shall be specifically obtained from the *IESO* prior to test commencement.

The *IESO* authorizes the *metering service provider* to release the quarantined *meter* when the matter is resolved.

### 1.3.5 Power Switching (PS) Operations

The operation of power switching (PS) devices at *facilities* with non-compliant *metering installations* (MI) may affect the accuracy and integrity of *metering data*. Possible causes include the following:

- Electrical separation of the Voltage Transformers (VTs) and Current Transformers (CTs) that are part of a *metering installation*, causing the affected *meter* to read incorrect values as the VT no longer measures the voltage at the CT *connection point*; and
- By-passing of VTs while the CTs remain in service, and vice versa.

If not properly addressed, the above situations may result in metering errors and the issuance of unnecessary *meter* trouble reports.

In order to ensure a minimum impact on the accuracy and integrity of *metering data* during power switching operations, the *market rules* require the following:

1. The *metering service provider* is required to submit a power switching plan that identifies all power switching devices that may affect the integrity and accuracy of *metering data*, and provide an alternate source of *metering data* and any previously-approved adjustment required to correct the affected data, including previously-approved loss adjustment factors. (See the “Market Rules”, Appendix 6.2, Subsections 1.6.1–1.6.3 and 1.1.1.2)
2. The *metering service provider* is required to inform the *IESO* of any power switching operations no later than 24 hours after the operation has taken place. (Appendix 6.2, Section 1.6.3.1)
3. The *metering service provider* submits the power switching information on “IMO-FORM-1464: Notification of Power Switching Form” and emails it to the *IESO* at [power.switching@ieso.ca](mailto:power.switching@ieso.ca).
4. Where power switching operations that affect *metering data* occur more than twice in any 12 month period, the *metered market participant* shall bring the installation into compliance within 8 weeks of notification by the *IESO*. (Appendix 6.2, Section 1.6.3.2)

### 1.3.6 Conforming Meter List

*Metering installations* will not be placed into service unless the *metering installation* conforms with the metering standards prescribed by the *market rules* and has been registered in accordance with the *market rules*. (Chapter 6, Section 2.1.1 and 4.1.1.1) Manufacturers and resellers must successfully complete this sub-procedure before the *IESO* will permit a *market participant* to use their *meter* for purposes of wholesale revenue transactions. *Meters* determined to conform to *IESO* requirements are placed on the “Conforming Meter List”, which is made available to all participants in the *IESO-administered markets* through the *IESO* Web site.

After all requested documentation and clarifications have been received by the *IESO*, and the *IESO* is satisfied with the documents, the *IESO* conducts a Dynamic Bench Test of the *meter* in conjunction with the applicant.

This test demonstrates proper *meter* measurement and status flagging in accordance with the *IESO* test scenarios, and that the *meter* can properly communicate with the *IESO meter* interrogation

system. *Meters* capable of daisy-chains are also tested in this configuration. A complete description of the Dynamic Bench Test appears in Appendix B.

The *IESO* reserves the right to remove *meters* from the list which no longer conform to its requirements, or to request further modifications to *meters*, in response to the change(s), or to revise the capabilities posted for a *meter*.

The *IESO* reserves the right to request modifications to a *meter* on the “Conforming Meter List” when new requirements are identified and incorporated into its standards.

As part of the testing process for conforming *meters*, the *IESO* determines if the *meter* meets *IESO* standards for simultaneous communication, if this feature is available. *Meters* that meet *IESO* requirements for this functionality will be identified as such on the “Conforming Meter List”. Only these *meters* can be used by *market participants* for simultaneous communication functions at a *metering installation*.

### 1.3.7 Performance Standards and Measures for Metering Service Providers (MSP)

#### A. Performance Standards - General

In accordance with the “Market Rules” Chapter 6, Section 5.2.3, each *metering service provider* shall meet all performance standards as set forth by the *IESO*. This section of the manual covers the standards to which the *metering service providers* must comply as per the *market rules*, additional measures that will be tracked and the results to be supplied to the *metering service providers* by the *IESO* as part of the continuous improvement of the *IESO-administered markets*.

#### B. Performance Standards for Metering Service Providers

##### I. Communication:

- a) Percentage of attempts by the *IESO* to access *metering data* that are successful on the first attempt. Required result is greater than or equal to 95% daily, reported as follows:
  - i) monthly report based on the average daily result; and
  - ii) monthly report based on cumulative year-to-date results.

##### II. Metering Data

- a) Percentage of *metering data* available to the *IESO* on the next *business day*. Required result is greater than or equal to 95% daily, reported as follows:
  - i) monthly report based on the average of the daily result; and
  - ii) monthly report based on cumulative year-to-date results.

##### III. Meter Trouble Reports (MTRs)

- a) Percentage of *meter* trouble reports issued. Required result is that the monthly average of the daily results is less than or equal to 5%, reported as follows:
  - i) monthly report based on the average daily result; and
  - ii) monthly report based on cumulative year-to-date results.

- b) Percentage of *meter* trouble reports for which a response is received by the *IESO* within two *business days*. Required result is that the monthly average of the daily results is greater than or equal to 90%, reported as follows:
  - i) monthly report based on the response result; and
  - ii) monthly report based on cumulative year-to-date results.
- c) Number of *meter* trouble reports where the *IESO* imposes the estimates described in Chapter 6, Section 11.1.4A of the “Market Rules”. Required result is 0.3% or less per month, reported as follows:
  - i) monthly report based on the percentage, and
  - ii) monthly report based on cumulative year-to-date results.

#### IV. Market Rules, IESO Policy & Procedures

- a) Number of registration errors found per *metering installation* registered. Required result is a monthly average of not more than one registration error per five *metering installations*, reported as follows:
  - i) monthly report based on the total number of registration errors per *metering installation* registered, and
  - ii) monthly report based on cumulative year-to-date results.
- b) Number of non-compliance infractions. Required result is not more than one per month, reported as follows:
  - i) monthly report based on the total number of non-compliance infractions; and
  - ii) monthly report based on cumulative year-to-date results.
- c) Number of procedural errors found in respect of a *metering installation* that affects *metering data* accuracy. Required result is 0 per month, reported as follows:
  - i) monthly report based on the total number of procedural errors, and
  - ii) monthly report based on cumulative year-to-date results.

#### V. Audits

- a) Percentage of *metering installations* requiring remedial action where *metering data* is affected. Required result is 2% or less, reported as follows:
  - i) monthly report based on the total number of instances requiring remedial action; and
  - ii) monthly report based on cumulative year-to-date results.
- b) Number of non-compliance infractions. Required result is not more than one per month, reported as follows:
  - i) monthly report based on the total number of non-compliance infractions; and
  - ii) monthly report based on cumulative year-to-date results.

**Note:** Year-to-date results are for trending purposes only and these results will not form part of the *Metering Service Provider Performance Standards*.

## C. Notes on Metering Service Provider Performance Standards

If an *exemption* has been granted that affects a *metering service provider's* ability to meet, or relieves a *metering service provider* from the obligation to meet certain requirements of the *market rules* or any *market manual*, policy or guideline, this fact will be taken into account when measuring the *metering service provider's* compliance with the *Metering Service Provider Performance Standards*. For example, where an *exemption* has been granted from *market rule* and *market manual* requirements relating to the provision of measurement error correction (MEC) factors, the *metering service provider's* non-compliance with these requirements will not be considered for the purpose of measuring the *metering service provider's* compliance with the *Metering Service Provider Performance Standards*.

### I. Communication

- a) The multiple tries by the *IESO* shall be confined to the *IESO's* normal calling cycle (i.e. between 12:00 a.m. and 6:00 a.m. EST).
- b) The measure is a measure of whether the *IESO* communicates with the *metering installation* or not. It does not differentiate between main and alternate *meters*. If either the main or an alternate *meter* is reached, the performance measure is deemed to be met.
- c) For each *metering service provider*, the measure is the ratio of the number of *metering installations* successfully communicated with by the *IESO*, to the total number of *metering installations* registered by the *metering service provider*.
- d) If the *metering service provider* can communicate with the *meter* but the *IESO* cannot, it is considered a failed communication.
- e) The measure is dependent on whether the *IESO* ensures sufficient diversity in its calling strategy to allow a reasonable probability of connecting. This is implicit in the measure and the *IESO* agrees to take this into account when applying the results of this measure. This accounting for the calling strategy, however, is at the sole discretion of the *IESO*.

### II. Metering Data

- a) Valid *metering data* is *metering data* (defined as actual *metering data*) that has passed the *IESO* validation process as per Validation, Estimation, and Editing (VEE) described in "Market Manual 5: Settlements, Part 5.2: Metering Data Processing Section 3.1, Metering Data Validation, Estimation and Editing". Substitution of an alternate *meter* for the main *meter* is acceptable.
- b) For each *metering service provider*, the measure is the ratio of the number of *metering installations* for which all data successfully passes the validation process, to the total number of *metering installations* successfully communicated with by the *IESO* (as discussed in the communication section above).
- c) The measure is dependent on whether the *IESO* includes main/alternate *energy* comparisons under conditions of ramping, register rollover, voltage and current presence. Inclusion is at the sole discretion of the *IESO*.

**III. Meter Trouble Reports - Percentage of MTRs issued**

- a) *Meter* trouble reports are those issued to *metering service providers* by the *IESO* using its trouble report system.
- b) For each *metering service provider*, the measure is the ratio of the total number of *meter* trouble reports issued, to the total number of *metering installations* registered by the *metering service provider*.
- c) The measure has elements of communication and validation in it, so comments made in those sections relate to this measure.

**IV. Meter Trouble Reports - Number of MTRs for which a response is received by the IESO within two business days.**

- a) *Meter* trouble reports issued are those issued to *metering service provider* by the *IESO* using its trouble report system.
- b) For each *metering service provider*, the measure is the ratio of the total number of *meter* trouble reports for which a response is received by the *IESO's* trouble report system within two *business days*, to the total number of *meter* trouble reports issued over the calendar month.
- c) The “two *business days*” period starts when the *meter* trouble report is issued by the *IESO's* trouble report system and ends at the same time two *business days* later.
- d) *Meter* trouble report responses that are closed by the *IESO* will be counted. Responses that are not closed by the *IESO* and are rejected as unsatisfactory will have failed this measure.

**V. Meter Trouble Report - Number of estimates applied under Chapter 6, Section 11 of the Market Rules**

- a) Where a *metering service provider* fails to respond to a *metering installation* out of service, the *IESO* may, under Chapter 6, Section 11 of the “Market Rules” apply market favourable estimates to the *metered market participant*. Such estimates are only applied where the *meter* trouble report remains open and where the *IESO* considers there is impact on one or more *market participants*.
- b) For each *metering service provider*, the measure is the percentage of *meter* trouble reports that has such estimates applied by the *IESO* within a calendar month, based on their total number of *metering installations*.

**VI. Market Rules, IESO Policy & Procedures**

- a) Registration errors include all errors found by the *IESO*, the *metering service provider* or the *metered market participant*.
- b) For each *metering service provider*, the measure is the total number of errors found by the *IESO* in the registration information provided by the *metering service provider*. To be included, such errors have to directly affect *metering data* or are significant in the sole opinion of the *IESO*. Errors may be identified by the *IESO* during registration or after the *metering installation* is fully registered.
- c) Any single error that affects more than one registration document or an aspect of registration will count as a single error.

**VII. Non-compliance infractions**

- a) A non-compliance infraction involves a violation of a *metering*-related obligation under the *market rules* by a *metered market participant* or a *metering service provider*.
- b) For purposes of this measure, the *IESO's* sole opinion whether a non-compliance infraction has occurred will prevail.
- c) For each *metering service provider*, the measure is the total number of non-compliance infractions that have occurred within the calendar month.
- d) Where an *exemption* has been obtained to the relevant *metering*-related obligation a non-compliance infraction will not be included in the *total*.

**VIII. Audits**

- a) *Metering data* is affected when such data, as collected by the *IESO* as part of its normal operations, has to be changed as a result of an audit finding.
- b) Work by the *metering service provider* on the *metering installation* to correct any deficiency that has affected *metering data* is considered remedial action in the sole opinion of the *IESO*.
- c) For each *metering service provider*, this measure shall be the ratio of remedial actions, to the number of *metering installations* registered.
- d) Audit errors under this measure shall not be double-counted as part of registration errors.
- e) It is recognized that for the measure to be significant, a minimum number of audits per *metering service provider* should be completed.

**D. Metering Service Provider Continuous Improvement Measures**

As part of the overall improvement of metering in the *IESO-administered markets* and at the discretion of the *metering service provider*, the *IESO* will provide additional non-performance measures. These measures will not form part of the *metering service provider* performance, but will be provided to individual *metering service providers* to manage and improve their operations.

No target values are given at this time. Acceptable targets will be developed eventually, as experience with these measures is gained.

**I. Communication**

- Number of failed communications per *meter*, reported and averaged monthly. The main and alternate *meters* will be reported separately.

**II. VEE**

- Number of validation errors per cause per *meter* reported and averaged monthly. The main and alternate *meters* will be reported separately.

**III. Meter Trouble Reports**

- Percentage of *meter* trouble reports issued per *metering installation*, reported and averaged monthly.

#### IV. Meter Trouble Reports that reach the estimates provided in Chapter 6, Section 11 of the Market Rules

- Number of *meter* trouble reports that reach these estimates, reported and average monthly. The measure will show all *meter* trouble reports that reach the estimates in timing, whether they are significant to the market or not, and whether or not the *IESO* proceeds to apply the estimate.

#### V. Audits

- Percentage of *metering installations* not requiring remedial action, reported and averaged monthly.

### 1.3.8 Eligibility for Small or Minor Embedded Generation Facilities Registered under Chapter 6, Section 4.6

Small or minor embedded *generation facilities* which inject less than 17 GWh per annum are eligible for registration under section 4.6 of Chapter 6.

For all *metering installations* registered under section 4.6 of Chapter 6, the *IESO* shall, on an annual basis, determine the total energy injected and identify all *metering installations* which exceed the 17 GWh per annum threshold. The *IESO* will provide a notice in writing to the *metered market participant* and within 3 months of notification, the *metered market participant* shall ensure that the *metering installation* is upgraded in accordance with Chapter 6, section 4.6.7.

For the purpose of determining eligibility, the total energy injected shall be based on the *meter* reading data without the application of losses or measurement error correction.

## 1.4 Roles and Responsibilities

Responsibility for carrying out the Conformance Monitoring procedure is shared among:

- ***Metered market participants (MMPs)***, who are responsible for:
  - providing the *IESO* auditor with unrestricted access to its *metering installation* during both announced and unannounced audits;
  - making results of all *metering service provider*-conducted tests (routine and non-routine), and *IESO*-conducted accuracy audits available to the *distributor* or *transmitter* connected to its *metering installation*;
  - ensuring its *metering service provider* provides the results of all routine and non-routine tests performed to the *IESO*;
  - notifying the *IESO* upon discovery of a measurement error at a *metering installation*, if desired; and
- ***Metering service providers (MSPs)***, who are responsible for:
  - conforming to *IESO* requirements for the maintenance of *metering installations*; (Appendix 6.1, Section 1.3.1.1)

- performing routine tests at frequencies specified in Subsection 1.3.2, “Tests and Inspections” and providing the *IESO* with the test results; and (Appendix 6.1, Section 1.3.2.1)
- notifying the *IESO* of planned and *emergency* power switching operations and ensuring *metering data* are collected up to and throughout the operations.
- **Meter Manufacturer** or **meter Reseller**, who is responsible for:
  - Reading and understanding *IESO* requirements and standards for *meters*.
  - Submitting the “Conforming Meter List Application” form to the *IESO* with all supporting documentation.
  - Providing clarifications to the *IESO* with respect to the application, and additional supporting documents, if requested.
  - Conducting the Dynamic Bench Test in conjunction with the *IESO* as described in Appendix B of this document.
  - Informing the *IESO* when a hardware or software change is made to a *meter* at any stage in this procedure, or when the *meter* is currently included on the “Conforming Meter List”.
- the *IESO*, which is responsible for:
  - monitoring the conformance of *meters* and *metering installations* with the “Market Rules” and *IESO* standards;
  - communicating standards for conformance and performance to *metering service providers, market participants, and other affected parties*;
  - conducting audits for *metering service provider* registration, and both announced and unannounced audits of *metering installations*;
  - performing routine reconciliation tests at frequencies specified in Subsection 1.3.2, “Tests and Inspections”;
  - identifying *meters* to be quarantined, when required;
  - disabling *meter* trouble report triggers, if required, and ensuring *metering data* are collected up to and throughout power switching operations.
  - Maintaining standards and requirements for *meters* and making them publicly available on its Web site (<http://www.ieso.ca>)
  - Reviewing applications from manufacturers or *meter* resellers interested in having their *meter* included on the *IESO* “Conforming Meter List”.
  - Conducting the Dynamic Bench Test in conjunction with the applicant as described in Appendix B of this document.
  - Deciding if a *meter* conforms, conditionally conforms, or fails to conform to requirements.
  - Maintaining the “Conforming Meter List”.

### 1.4.1 Contact Information

If the *market participant* wishes to contact the *IESO*, the *market participant* can contact the *IESO* Help Centre via email at [helpcentre@ieso.ca](mailto:helpcentre@ieso.ca) or via telephone, mail or courier to the numbers and addresses given on the *IESO* Web site ([www.ieso.ca](http://www.ieso.ca) - or click on 'Have a question?' to go to the 'Contacting the *IESO*' page). If the *IESO* Help Centre is closed, telephone messages or emails may be left in relevant voice or electronic *IESO* mail boxes, which will be answered as soon as possible by Help Centre staff.

Standard forms that participants must complete for this procedure are listed in Appendix A. These forms are generally available for downloading on the *IESO* Web site. These signed forms as well as the accompanying supporting documentation must be transmitted to the *IESO* via mail or courier by using the appropriate address provided on the *IESO* Web site or on the form. All correspondence relating to this procedure shall identify the subject: **Conformance Monitoring**.

– End of Section –

## 2. Procedural Work Flow

The following diagrams represent the flow of work and information relating to the Conformance Monitoring procedure among the *IESO*, *metered market participants*, *metering service provider's*, and other parties.

The steps illustrated in the diagram are described in detail in Section 3.

**Table 2–1: Legend for Work Flow Diagrams**

<b>Legend</b>	<b>Description</b>
Oval	An event that triggers task or that completes task. Trigger events and completion events are numbered sequentially within procedure (01 to 99).
Task Box	Shows reference number, party responsible for performing task (if “other party”), and task name or brief summary of task. Reference number (e.g., 1A.02) indicates procedure number within current <i>market manual</i> (1), sub-procedure identifier (if applicable) (A), and task number (02).
Solid horizontal line	Shows information flow between the <i>IESO</i> and external parties.
Solid vertical line	Shows linkage between tasks.
Broken line	Links trigger events and completion events to preceding or succeeding task.

### 2.1 Undergoing Audits

The following diagram represents the flow of work and information between *market participants*, *metered market participants*, *metering service providers*, and the *IESO*, related to the audit process.

The steps shown in the following chart are described in detail in Section 3.1.

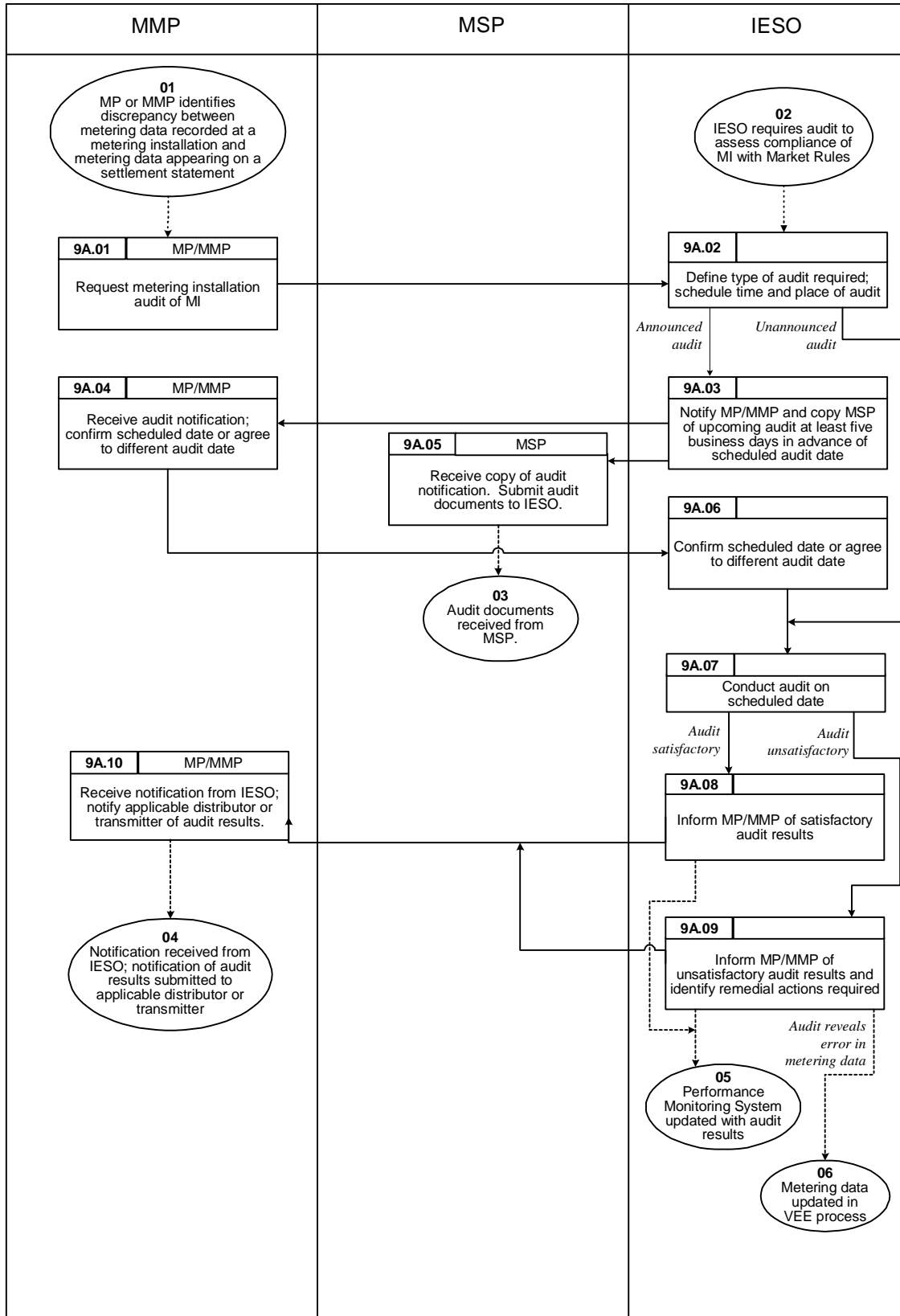


Figure 2–1: Work Flow for Undergoing Audits

## 2.2 Performing Tests

The following diagram represents the flow of work and information between *metering service providers* and the *IESO* related to the performance of tests including on-site reconciliation and *meter* register dial readings, spot check of *meter* operations and *instrument transformer* checks.

The steps shown in the following chart are described in detail in Section 3.2.

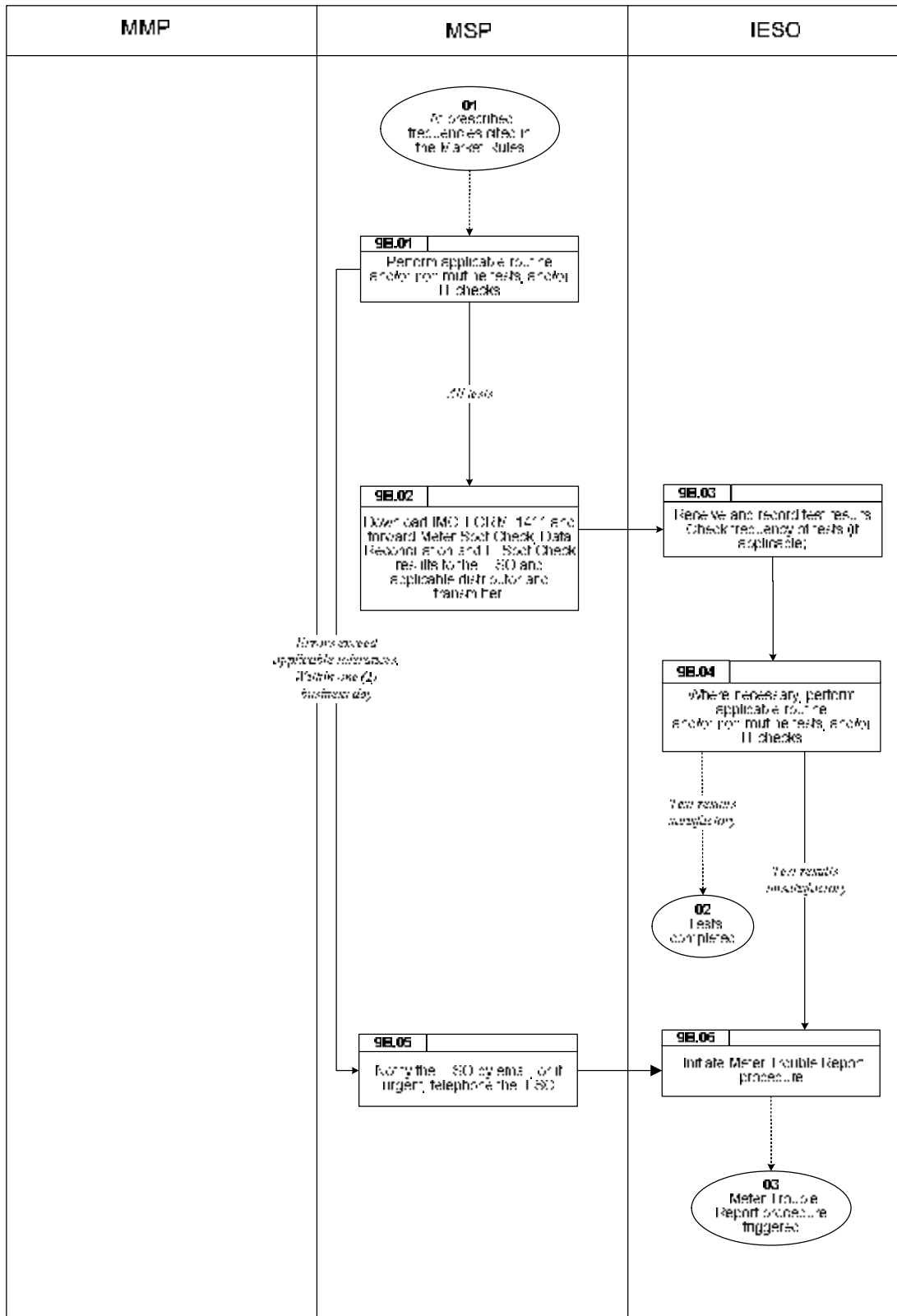


Figure 2–2: Work Flow for Performing Tests

## 2.3 Quarantining Metering Installations

The following diagram represents the flow of work and information between *metered market participants*, *metering service providers*, the accredited *meter verifier*, and the *IESO*, related to quarantining *meters*.

The steps shown in the following chart are described in detail in Section 3.3.

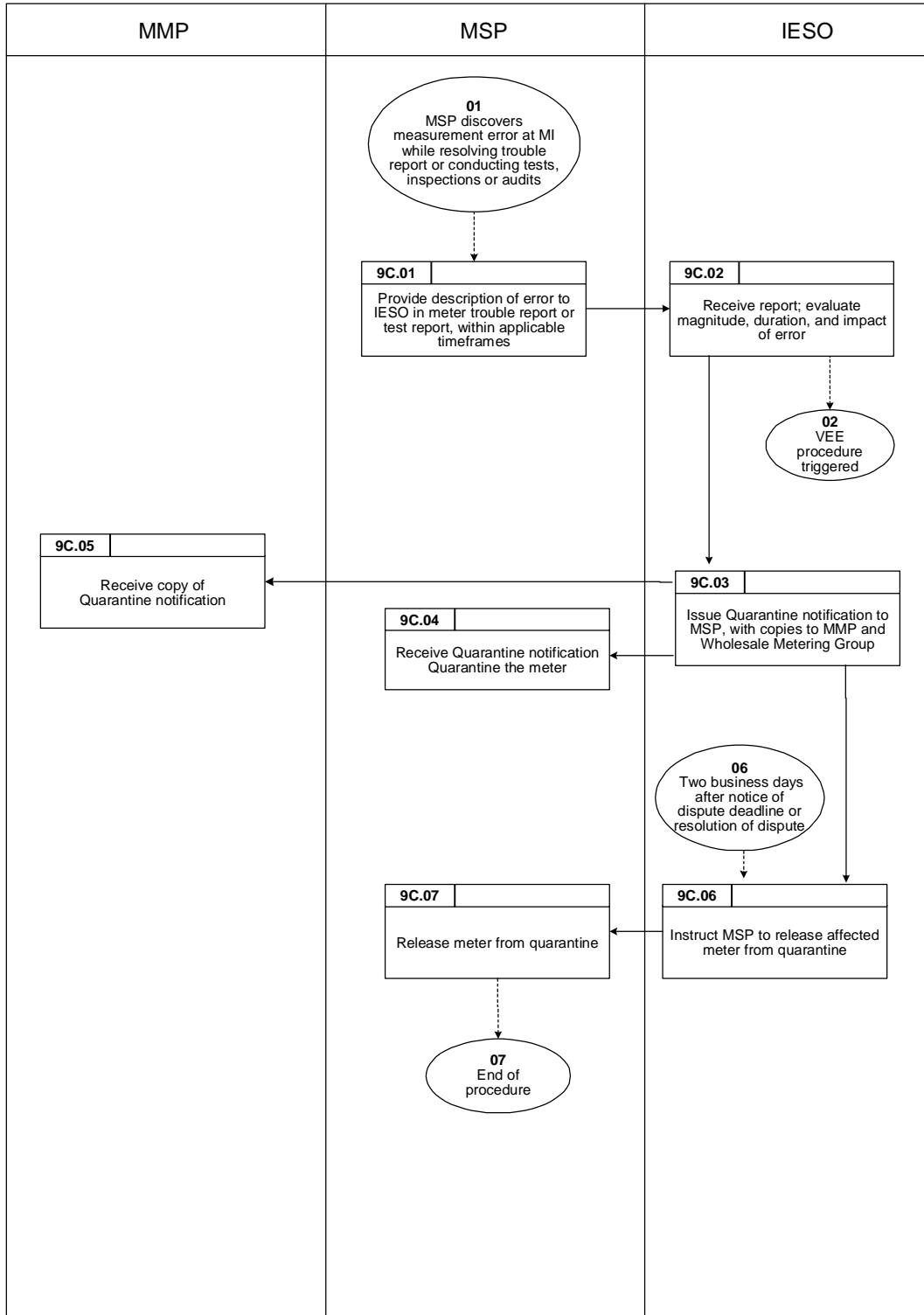
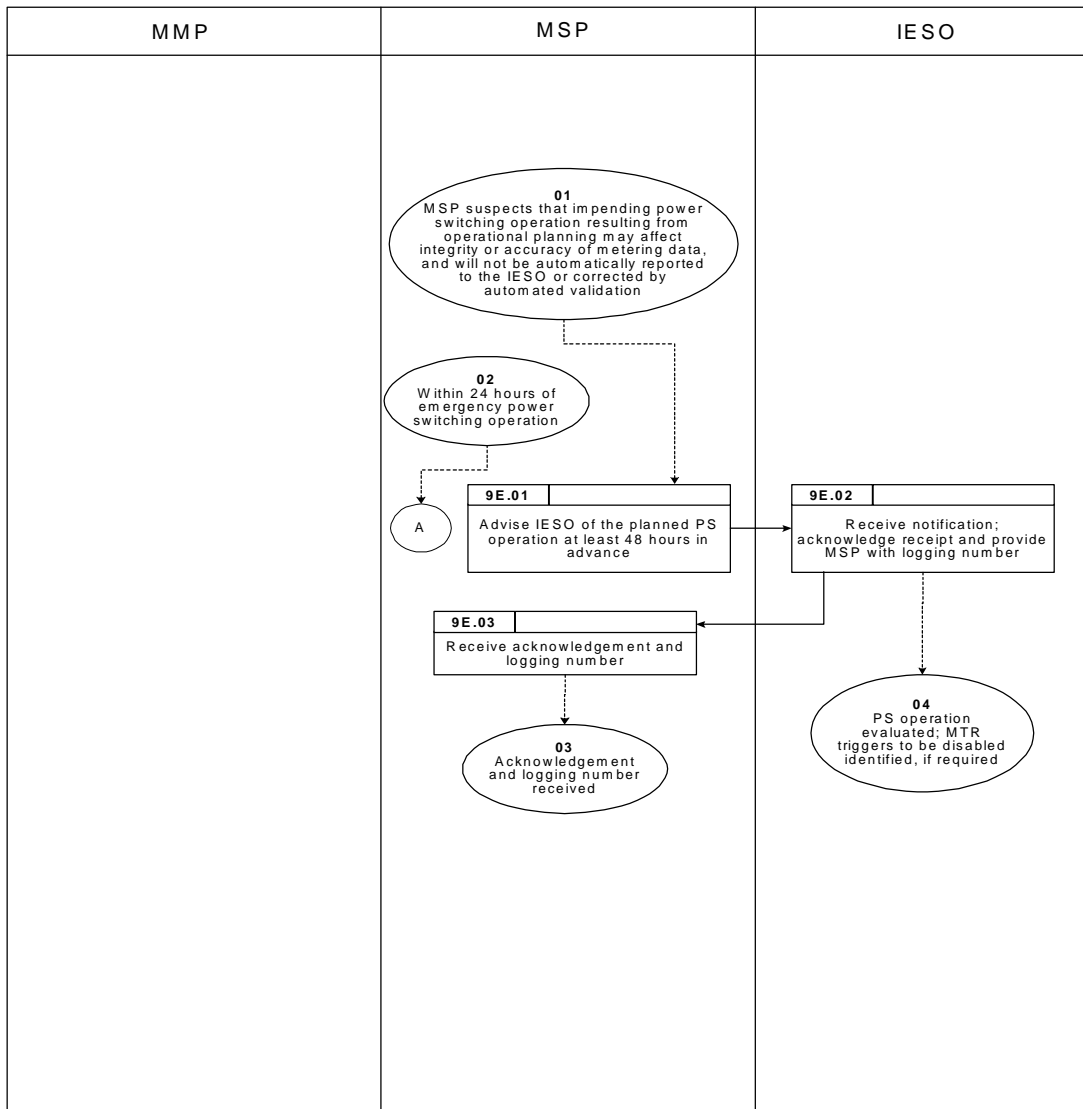


Figure 2–3: Work Flow for Quarantining Metering Installations

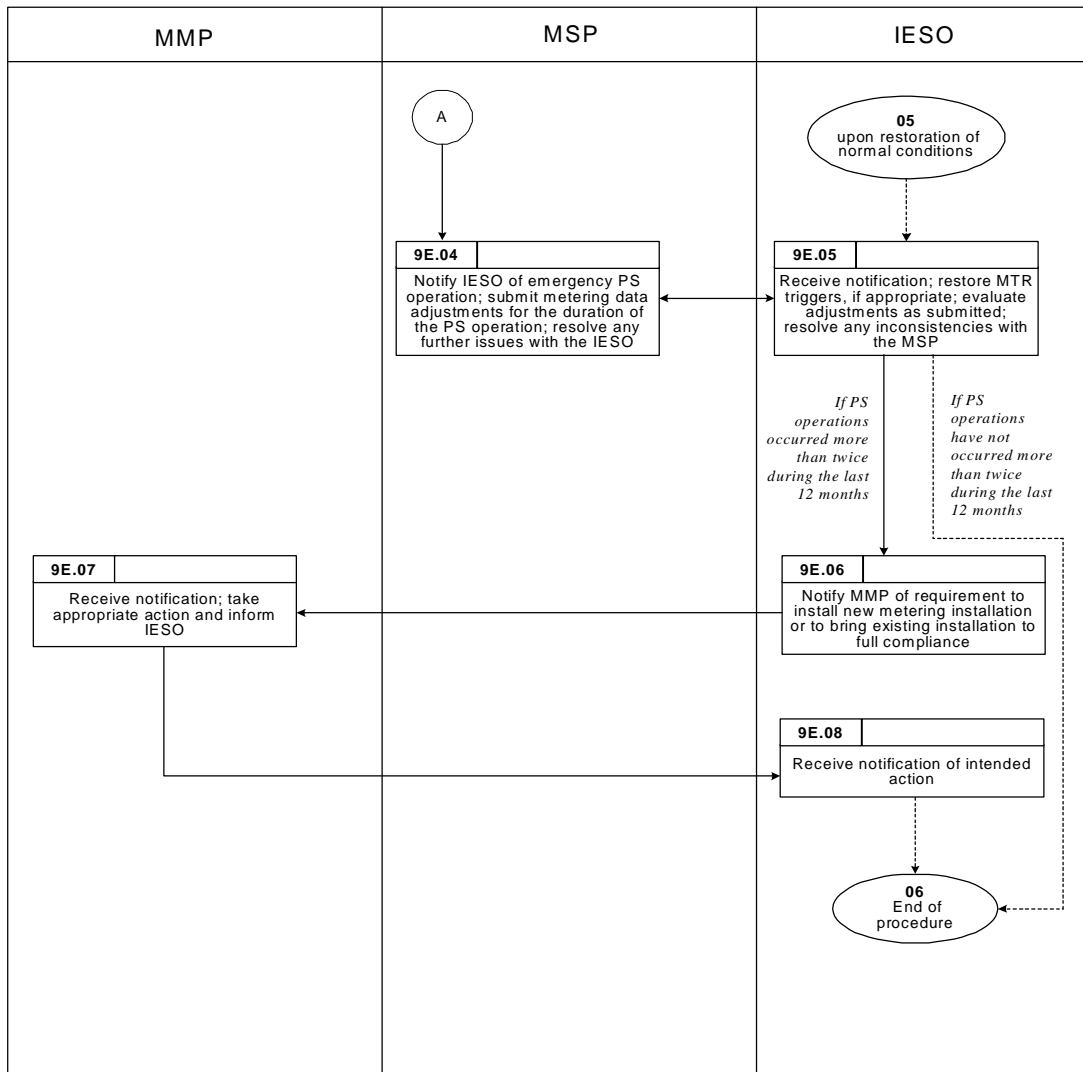
## 2.4 Managing Compliance Issues for Power Switching Operations

The following diagram represents the flow of work and information between *market participants*, *metered market participants*, *metering service providers*, and the *IESO*, related to managing compliance issues for power switching operations.

The steps shown in the following chart are described in detail in Section 3.5.



**Figure 2–4: Work Flow for Managing Compliance Issues for Power Switching (PS) Operations**



**Figure 2–4: Work Flow for Managing Compliance Issues for Power Switching (PS) Operations**  
(continued)

## 2.5 Conforming Meter Application Process

The following diagram represents the flow of work and information between *market participants*, *metered market participants*, *metering service providers*, and the *IESO*, related to the conforming *meter* application process.

The steps shown in the following chart are described in detail in Section 3.6.

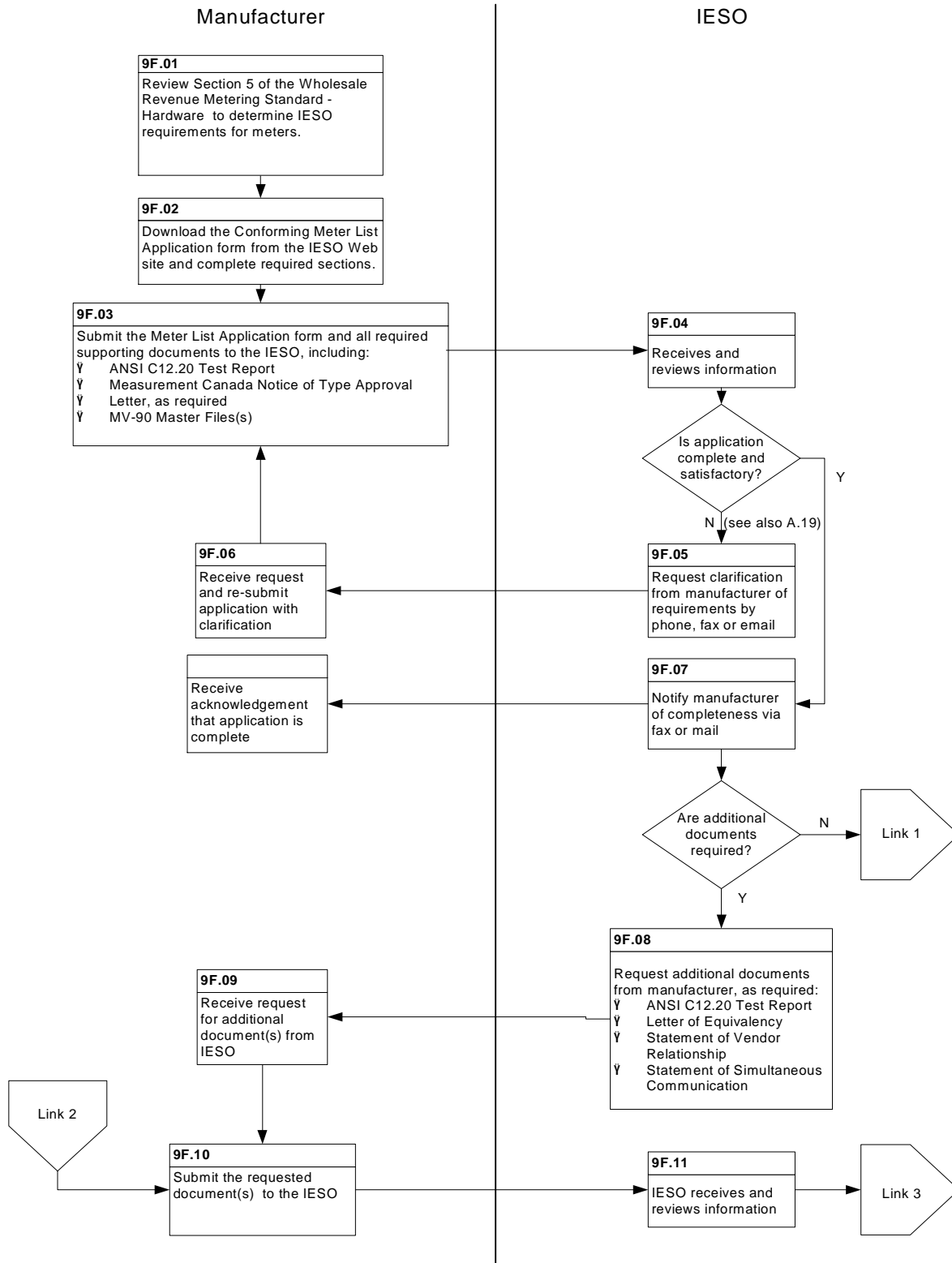


Figure 2-5: Conforming Meter Application Process

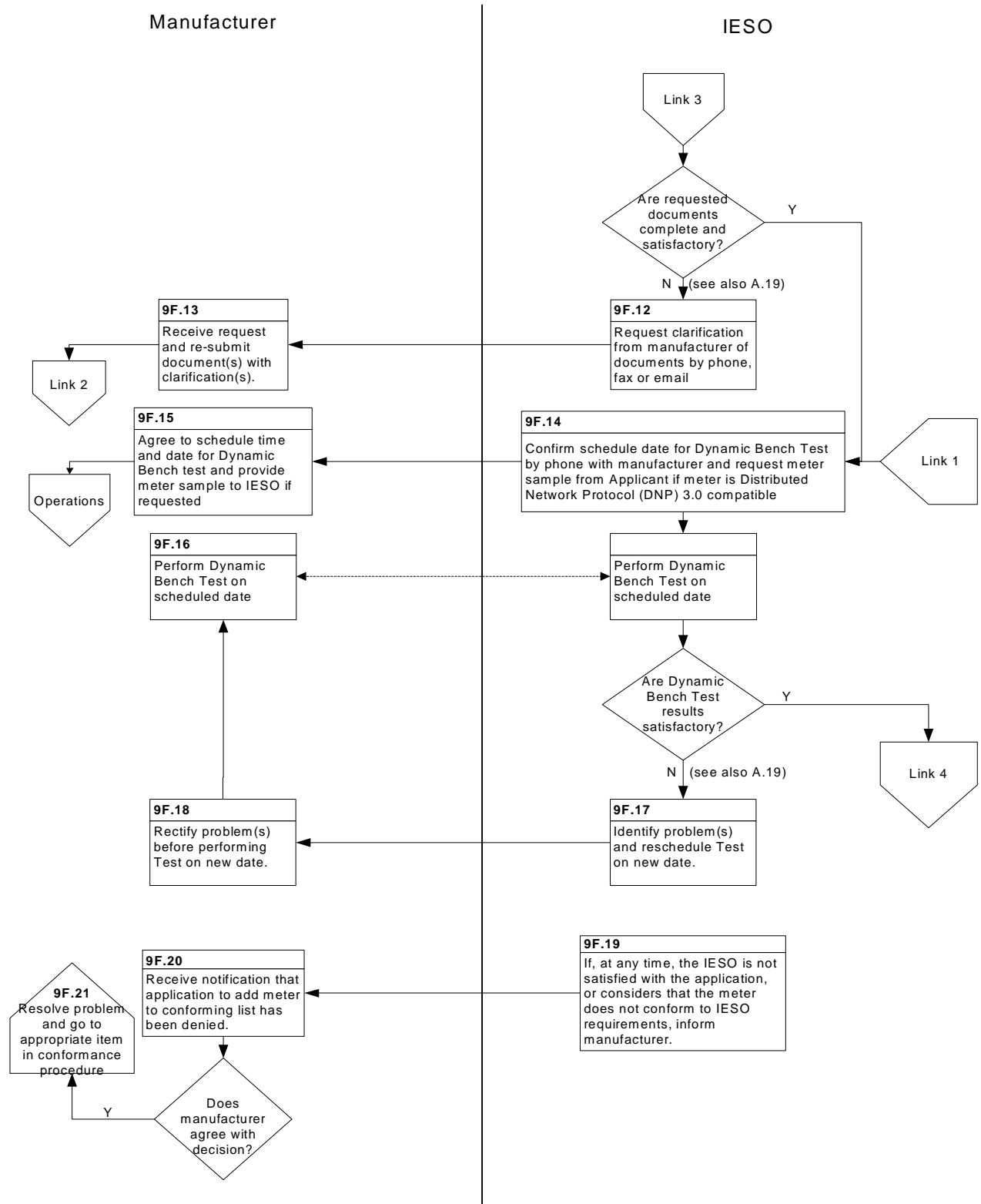


Figure 2-5: Conforming Meter Application Process (cont.)

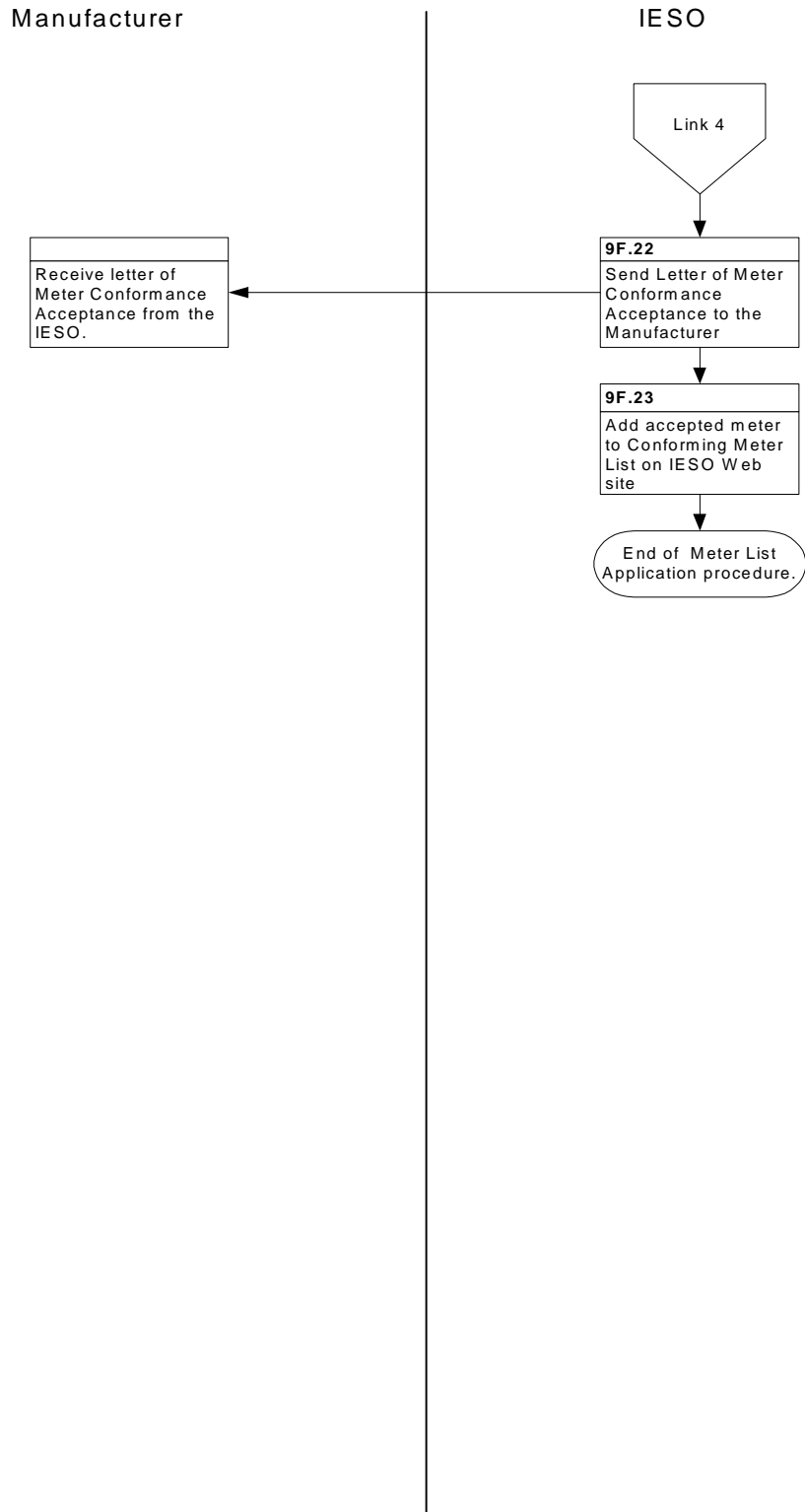
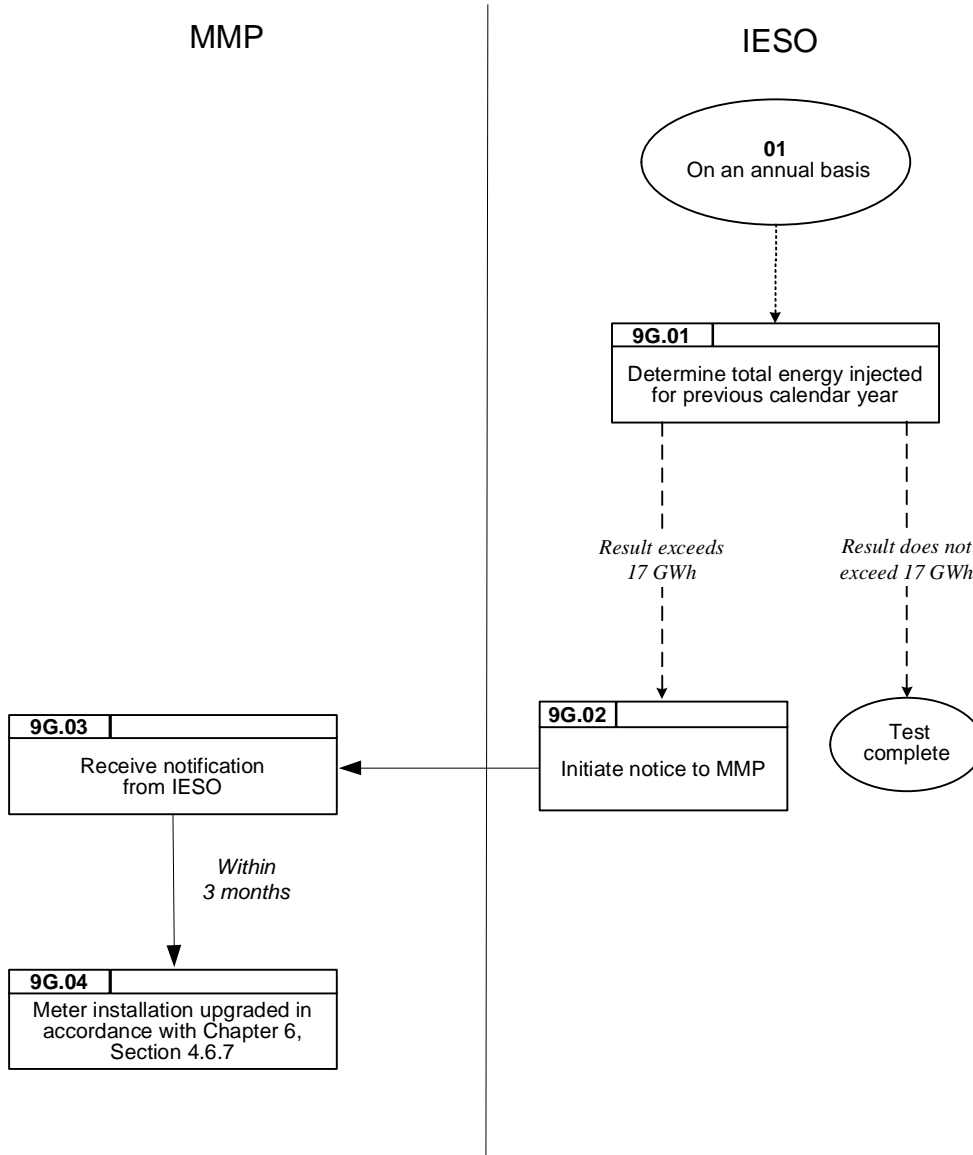


Figure 2-5: Conforming Meter Application Process (cont.)

## 2.6 Eligibility for Small or Minor Embedded Generation Facilities



**Figure 2–6: Work flow for Eligibility for Small or Minor Embedded Generation Facilities**

– End of Section –



## 3. Procedural Steps

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This section contains detail on the tasks (steps) that comprise the Conformance Monitoring procedure. The steps in the following table are illustrated in Section 2.

Each table contains seven columns, as follows:

**Ref.**

The numerical reference to the task.

**Task Name**

The task name as identified in Section 2.

**Task detail**

Detail about the task.

**When**

A list of all the events that can trigger commencement of the task.

**Resulting information**

A list of the information flows that may or must result from the task.

**Method**

The format and method for each information flow are specified.

**Completion events**

A list of all the circumstances in which the task should be deemed finished.

### 3.1 Undergoing Audits

The steps described in Table 3-1 are illustrated in Figure 2-1.

**Table 3–1: Procedural Steps for Undergoing Audits**

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9A.01	Request audit of <i>metering installation</i> .	The <i>market participant metered market participant</i> requests an - audit of a <i>metering installation</i> .	Upon identification of a discrepancy between the <i>metering data</i> recorded at a <i>metering installation</i> and <i>metering data</i> appearing on a <i>settlement statement</i> .	Request for audit.		Request for audit submitted to the <i>IESO</i> .
9A.02	Define type of audit required; schedule time and place of audit.	The <i>IESO</i> determines the type of audit required, and schedules the time and place of the audit.  If the audit is to be announced, proceed to 9A.03.  If the audit is to be unannounced, proceed to 9A.07.	Following Step 9A.01; or, upon determination by the <i>IESO</i> that an <i>metering installation</i> audit, physical security audit, or systems and procedures audit is required to assess compliance of the <i>metering installation</i> with the <i>market rules</i> .	None.	None.	Type of audit determined; time and place of audit scheduled.

**Table 3–1: Procedural Steps for Undergoing Audits**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9A.03	Notify <i>market participant, metered market participant</i> and copy <i>metering service provider</i> of upcoming audit at least five <i>business days</i> in advance of scheduled audit date.	The <i>IESO</i> informs the <i>market participant/metered market participant</i> and copies <i>metering service provider</i> of its intention to conduct the audit, the type of audit to be conducted, the auditor's name, and the exact time and place of the audit.	Upon determination in Step 9A.02 that the audit constitutes an announced audit, and at least five days in advance of the audit date.	Notification of upcoming audit.	Fax and regular mail.	Notification of upcoming audit sent to <i>market participant, metered market participant</i> .
9A.04	Receive audit notification; confirm scheduled date or agree to different audit date.	The <i>market participant, metered market participant</i> receives the audit notification and either agrees to the scheduled date, or negotiates a different date with the <i>IESO</i> .	Following Step 9A.03.	Confirmation of scheduled date or negotiation of different date.		Audit notification received; scheduled date confirmed or different date negotiated.
9A.05	Receive copy of audit notification; submit audit documents.	The <i>metering service provider</i> receives copy of <i>market participant/metered market participant</i> audit notification and submits audit documents.	Following Step 9A.03.	Audit documents.	Courier, regular mail and email.	Audit documents received.
9A.06	Confirm scheduled date or agree to different audit date.	The <i>IESO</i> confirms the scheduled date or agrees to a different audit date.	Following Step 9A.04	Confirmation of scheduled date or negotiation of different date.		Scheduled date confirmed or different date negotiated.

Table 3–1: Procedural Steps for Undergoing Audits

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9A.07	Conduct audit on scheduled date.	The <i>IESO</i> conducts the audit on the scheduled date and determines whether the results are satisfactory or unsatisfactory.  If the audit results are satisfactory, the <i>IESO</i> proceeds to Step 9A.08.  If the audit results are unsatisfactory, the <i>IESO</i> proceeds to Step 9A.08.	Following Step 9A.06, and following Step 9A.02, if audit is unannounced.	None.	None.	Audit conducted on scheduled date.
9A.08	Inform <i>market participant/metered market participant</i> of satisfactory audit results.	The <i>IESO</i> notifies the <i>market participant/metered market participant</i> of the satisfactory audit results.	Upon determination in Step 9A.07 that the results of the audit are satisfactory.	Notification of satisfactory audit results.	Email.	Notification of satisfactory audit results sent to <i>market participant/metered market participant</i> .
9A.09	Inform <i>market participant/metered market participant</i> of unsatisfactory audit results and identify remedial actions required.	The <i>IESO</i> informs the <i>market participant/metered market participant</i> of the unsatisfactory audit results and identifies the remedial actions required. The <i>IESO</i> also updates the Performance Monitoring system with the audit results.  If the audit reveals an error in the <i>metering data</i> , the <i>IESO</i> updates the <i>metering data</i> according to the Validation, Estimation, and Editing (VEE) process described in “Market Manual 5: Settlements, Part 5.2: Metering Data Processing Section 3.1, Metering Data Validation, Estimation, and Editing”.	Upon determination in Step 9A.07 that the results of the audit are unsatisfactory.	Notification of unsatisfactory audit results.		Notification of unsatisfactory audit results and remedial actions required sent to <i>market participant/metered market participant</i> .

**Table 3–1: Procedural Steps for Undergoing Audits**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9A.10	Receive notification from <i>IESO</i> notify applicable <i>distributor</i> or <i>transmitter</i> of audit results.	The <i>market participant/metered market participant</i> receives notification of audit results from the <i>IESO</i> and notifies the applicable <i>distributor</i> or <i>transmitter</i> of the results.	Following Step 9A.08 and Step 9A.09.	Notification of audit results.		Notification of audit results received from <i>IESO</i> applicable <i>distributor</i> or <i>transmitter</i> notified of audit results <i>market participant/metered market participant</i> .

## 3.2 Performing Tests

The steps described in Table 3-2 are illustrated in Figure 2-2.

**Table 3–2: Procedural Steps for Performing Tests**

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9B.01	Perform applicable routine and/or non-routine tests and/or <i>IT</i> checks.	The <i>metering service provider</i> performs the applicable routine and/or non-routine tests on the <i>metering installation</i> .	At prescribed frequencies cited in the <i>market rules</i> .  See “Frequency of Routine Tests and Inspections” in Subsection 1.3.2 “Tests and Inspections”.	None.	None.	Applicable routine and non-routine tests performed at frequencies cited in the <i>market rules</i> .
9B.02	Download IMO-FORM-1411 and forward test results to <i>IESO</i> and applicable <i>distributor</i> or <i>transmitter</i> .	The <i>metering service provider</i> downloads “Meter Read Reconciliation Form”, completes it and forwards the test results to the <i>IESO</i> and to the applicable <i>distributor</i> or <i>transmitter</i> .	Following Step 9B.01.	Test results.		Test results forwarded to the <i>IESO</i> and applicable <i>distributor</i> or <i>transmitter</i> .
9B.03	Receive and record test results. Check frequency of tests.	The <i>IESO</i> receives and records the test results.	Following Step 9B.02.	None.	None.	Test results received and recorded.

Table 3–2: Procedural Steps for Performing Tests

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9B.04	Where necessary, perform applicable routine and/or non-routine tests and/or <i>IT</i> checks.	The <i>IESO</i> performs the applicable routine and/or non-routine tests on the <i>metering installation</i> .  If the test results are satisfactory, no further action is required.  If errors exceed applicable tolerances, the <i>IESO</i> proceeds to Step 9B.06.	Following Step 9B.03.	Test results.	None.	Applicable routine and non-routine tests performed.
9B.05	Notify the <i>IESO</i> by email, or if urgent, telephone the <i>IESO</i> .	The <i>metering service provider</i> notifies the <i>IESO</i> if routine and/or non-routine tests reveal errors exceeding the applicable tolerances.	Upon determination in Step 9B.01 that errors exceed applicable tolerances.	None.	Email or if urgent, by telephone.	<i>IESO</i> has been notified of errors.
9B.06	Initiate <i>Meter</i> Trouble Report procedure.					<i>Meter</i> Trouble Report procedure initiated.

### 3.3 Quarantining Metering Installations

The steps described in Table 3-3 are illustrated in Figure 2-3.

**Table 3–3: Procedural Steps for Quarantining Metering Installations**

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9C.01	Provide description of error to <i>IESO</i> in <i>meter</i> trouble report or test report, within applicable timeframes.	The <i>metering service provider</i> provides a description of the error to the <i>IESO</i> in <i>meter</i> trouble report or test report.	Within applicable timeframes, upon discovery of measurement error at <i>metering installation</i> while resolving <i>meter</i> trouble report or conducting tests and inspections.	Description of error included in <i>meter</i> trouble report or test report.		Description of error submitted to the <i>IESO</i> .
9C.02	Receive report; evaluate magnitude, duration, and impact of error.	The <i>IESO</i> receives the <i>meter</i> trouble report or test report from the <i>metering service provider</i> and evaluates the magnitude, duration, and impact of the error according to the process described in “Market Manual 5: Settlements, Part 5.2: Metering Data Processing, Section 3.1, Metering Data Validation, Estimation, and Editing”.	Following Step 9C.01.	None.	None.	Report received and error evaluated by the <i>IESO</i> , VEE procedure triggered.

Table 3–3: Procedural Steps for Quarantining Metering Installations

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9C.03	Issue Quarantine notification to <i>metering service provider</i> , with copies to <i>metered market participant</i> and Wholesale Metering Group.	The <i>IESO</i> issues a Quarantine notification to the <i>metering service provider</i> stating that the <i>meter</i> must remain in quarantine until notified by the <i>IESO</i> , with copies to the <i>metered market participant</i> and Wholesale Metering Group.	Following Step 9C.02.  or After a <i>notice of disagreement</i> or <i>dispute</i> is registered suggesting accuracy problems at <i>meter</i> .	Quarantine notification.	<i>Meter</i> trouble report.  IESO-FORM-1607; see Appendix A, “Forms”.	Quarantine notification issued to <i>metering service provider</i> , with copies to <i>metered market participant</i> and Wholesale Metering Group.
9C.04	Receive Quarantine notification.  Quarantine the <i>meter</i> .	The <i>metering service provider</i> receives the quarantine notification from the <i>IESO</i> and places the <i>meter</i> in quarantine.	Following Step 9C.03.	None.	None.	Quarantine notification received.
9C.05	Receive copy of quarantine notification.	The <i>metered market participant</i> receives a copy of the quarantine notification.	Following Step 9C.03.	None.	None.	Quarantine notification received.
9C.06	Instruct <i>metering service provider</i> to release affected <i>meter</i> from quarantine.	The <i>IESO</i> instructs the <i>metering service provider</i> to release the affected <i>meter</i> from quarantine.	Two days following deadline for <i>market participant</i> to a register a <i>notice of dispute</i> , or resolution of dispute.	Instruction to release <i>meter</i> from quarantine.		<i>Metering service provider</i> instructed to release <i>meter</i> from quarantine.
9C.07	Release of <i>meter</i> from quarantine.	The <i>metering service provider</i> arranges for release of the <i>meter</i> from quarantine.	Following Step 9C.06.	Arrangements for release of <i>meter</i> .	None.	<i>Meter</i> released from quarantine.

### 3.4 Managing Compliance Issues for Power Switching (PS) Operations

The steps described in Table 3-4 are illustrated in Figure 2-4.

**Table 3-4: Procedural Steps for Managing Compliance Issues for Power Switching (PS) Operations**

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9E.01	Advise <i>IESO</i> of the planned power switching operation at least 48 hours in advance.	The <i>metering service provider</i> advises the <i>IESO</i> of the planned power switching operation at least 48 hours in advance of the operation.	Upon suspicion by the <i>metering service provider</i> that the impending power switching operation resulting from operational planning may affect the integrity or accuracy of the <i>metering data</i> , and will not be automatically reported to the <i>IESO</i> or corrected by automated validation.	Notification of impending power switching operation.	IMO-FORM-1464, submitted via email.  See Appendix A "Forms".	Notification of impending power switching operation submitted to <i>IESO</i> .
9E.02	Receive notification; acknowledge receipt and provide <i>metering service provider</i> with logging number.	The <i>IESO</i> receives the <i>metering service provider's</i> notification of the planned power switching operation, acknowledges its receipt, and provides the <i>metering service provider</i> with a logging number.	Following Step 9E.01.	Acknowledgement of receipt; logging number.	E-mail.	Notification of impending power switching operation received by the <i>IESO</i> , acknowledgement and logging number sent to the <i>metering service provider</i> .
9E.03	Receive acknowledgement and logging number.	The <i>market participant</i> receives the acknowledgement and logging number from the <i>IESO</i> .	Following Step 9E.02.	None.	None.	Acknowledgement and logging number received by the <i>metering service provider</i> .

**Table 3–4: Procedural Steps for Managing Compliance Issues for Power Switching (PS) Operations**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9E.04	Notify <i>IESO</i> of <i>emergency</i> power switching operation; submit <i>metering data</i> adjustments for the duration of the power switching operation; resolve any further issues with the <i>IESO</i> .	The <i>metering service provider</i> notifies the <i>IESO</i> of the <i>emergency</i> power switching operation, submits <i>metering data</i> adjustments for the duration of the power switching operation, and resolves any further issues with the <i>IESO</i> .	Within 24 hours of <i>emergency</i> power switching operation.	Notification of <i>emergency</i> power switching operation.	IMO-FORM-1464; see Appendix A, “Forms”.	
9E.05	Receive notification; restore <i>TR</i> triggers, if appropriate; evaluate adjustments as submitted; resolve any inconsistencies with the <i>metering service provider</i> .	The <i>IESO</i> receives notification of the <i>emergency</i> power switching operation (from 9E.04) or the restoration of normal conditions (from 9E.05), restores <i>TR</i> triggers, if appropriate, evaluates the <i>metering data</i> adjustments, and resolves any inconsistencies with the <i>metering service provider</i> .	Following Step 9E.04 and Step 9E.05.	Resolution of outstanding inconsistencies.		Notifications received, <i>TR</i> triggers restored, <i>metering data</i> adjustments evaluated, and outstanding issues resolved with the <i>metering service provider</i> .
9E.06	Notify <i>metered market participant</i> of requirement to install new <i>metering installation</i> or to bring existing installation to full compliance.	The <i>IESO</i> notifies the <i>metered market participant</i> of its requirement to install a new <i>metering installation</i> or to bring the existing installation to full compliance.	Upon determination in Step 9E.05 that power switching operations occurred more than twice during the last 12 months.	Notification of requirement to install new <i>metering installation</i> or bring existing installation to full compliance.	Email.	Notification sent to <i>metered market participant</i> .
9E.07	Receive notification; take appropriate action and inform <i>IESO</i> .	The <i>metered market participant</i> receives the notification from the <i>IESO</i> , takes the appropriate action, and informs the <i>IESO</i> .	Following Step 9E.06.	None.		Notification received by <i>metered market participant</i> , notification of intended actions sent to the <i>IESO</i> .

**Table 3–4: Procedural Steps for Managing Compliance Issues for Power Switching (PS) Operations**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9E.08	Receive notification of intended action.	The <i>IESO</i> receives the <i>metered market participant's</i> notification of its intended actions.	Following Step 9E.07.	None.	None.	Notification of <i>metered market participant's</i> intended actions received by the <i>IESO</i> .

### 3.5 Conforming Meter Application Process

The steps described in Table 3-5 are illustrated in Figure 2-5.

**Table 3–5: Procedural Steps for Conforming Meter Application Process**

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9F.01	Review Section 5 of the “Wholesale Revenue Metering Standard-Hardware” to determine the <i>IESO</i> requirements for <i>meters</i> .	Manufacturers are must read and understand <i>IESO</i> requirements for Wholesale <i>revenue meters</i> to verify that the <i>meter</i> meets those requirements.	Before submitting the “Conforming Meter List Application” form.			Manufacturer understands <i>IESO</i> requirements for Wholesale <i>revenue meters</i> .
9F.02	Download the “Conforming Meter List Application” form from the <i>IESO</i> Web site and complete required sections.	Manufacturers must download the “Conforming Meter List Application” form and complete all applicable sections of the form.	Following Step 9F.01.	.	Download form from <a href="http://www.ieso.ca">www.ieso.ca</a> .	“Conforming Meter List Application” form completed.
9F.03	Submit the “Conforming Meter List Application” form and all required supporting documents to the <i>IESO</i> including:  ANSI C12.20 Test report.  Measurement Canada Notice of Type Approval Letters, as required.  MV-90 Master File(s).	Manufacturers submit the completed form and all required supplementary reports, Letters, and computer files to the <i>IESO</i> .	Following Step 9F.02.		Mail or courier.	Manufacturer sends complete application package to the <i>IESO</i> .

**Table 3–5: Procedural Steps for Conforming Meter Application Process**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9F.04	<i>IESO</i> receives and reviews information.	The <i>IESO</i> reviews the completed application form and all required supplementary information for completeness.	On receiving the “Conforming Meter List Application” form.			If the <i>IESO</i> determines that the Application is complete, continue to Step 9F.07, otherwise continue to Step 9F.05.
9F.05	Request clarification from manufacturer by phone, fax or email.	If the <i>IESO</i> determines that the application is incomplete or requires clarifications, the <i>IESO</i> requests the information from the manufacturer.			Phone, fax or email.	<i>IESO</i> requests clarifications from manufacturer.
9F.06	Receive request and re-submit application.	Manufacturers must resubmit the “Conforming Meter List Application” form with the required clarifications or missing information.			Courier.	Manufacturer submits requested information to the <i>IESO</i> .
9F.07	Notify manufacturer of completeness via fax or mail.	The <i>IESO</i> sends a notification to manufacturers whose “Conforming Meter List Application” form is complete.		“Acknowledgement Letter for Conforming Meter List” (IMO-FORM-1471) sent.	Fax or mail.	<i>IESO</i> sends confirmation that Application form has been received and is complete.

**Table 3–5: Procedural Steps for Conforming Meter Application Process**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9F.08	Request additional documents from manufacturer, as required:  ANSI C12.20 Test Report.  Letter of Equivalency.  Statement of Vendor Relationship.  Statement of Simultaneous Communication.	On reviewing the “Conforming Meter List Application” form further, the <i>IESO</i> may request special statements or Letters from the manufacturer.		“Request for Clarification or Additional Documents for Conforming Meter List” (IMO-FORM-1468) sent.	Fax or mail.	If applicable, <i>IESO</i> requests supporting statement or Letter from manufacturer.
9F.09	Receive request for additional document(s) from <i>IESO</i> .		When in receipt of “Request for Clarification or Additional Documents for Conforming Meter List” (IMO-FORM-1468).		Fax or mail.	Request for additional documents is sent to manufacturer.
9F.10	Submit requested document(s) to the <i>IESO</i> .				Fax or mail.	
9F.11	<i>IESO</i> receives and reviews information.					
9F.12	Request clarification from manufacturer of documents by phone, fax or email.	The <i>IESO</i> requests further clarifications if the requested Letter(s) or Statement(s) are incomplete.		“Request for Clarification or Additional Documents for Conforming Meter List” (IMO-FORM-1468) is re-sent, as required.	Phone, fax or email.	

Table 3–5: Procedural Steps for Conforming Meter Application Process

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9F.13	Receive request and re-submit document(s) with clarifications.		Upon receipt of “Request for Clarification or Additional Documents for Conforming Meter List” (IMO-FORM-1468).		Fax or mail.	<i>IESO</i> receives requested information from manufacturer.
9F.14	Confirm schedule for Dynamic Bench Test with manufacturer and request <i>meter</i> sample from applicant if <i>meter</i> is Distributed Network Protocol (DNP) 3.0 compatible.	A description of the Dynamic Bench Test appears in Appendix B. The <i>IESO</i> confirms the time and date for the test with the manufacturer. If the manufacturer stated that the <i>meter</i> is DNP 3.0 compatible on the “Conforming Meter List Application” form, then the <i>IESO</i> requests a sample of the <i>meter</i> for further testing.				
9F.15	Agree to schedule and time for Dynamic Bench Test and provide <i>meter</i> sample to <i>IESO</i> if requested.	The manufacturer agrees to perform the Dynamic Bench Test on being contacted by the <i>IESO</i> in Step 9F.14.  The manufacturer must provide a sample of the <i>meter</i> to the <i>IESO</i> if the <i>meter</i> is DNP 3.0 compatible.				
9F.16	Perform Dynamic Bench Test on scheduled date.	A description of the Dynamic Bench Test appears in Appendix B. This test is jointly performed by the <i>IESO</i> and the manufacturer.	On the scheduled time and date to perform the test.			If Dynamic Bench Test was successful, continue to Step 9F.22.  If the Dynamic Bench Test was unsuccessful, continue to Step 9F.17.

**Table 3–5: Procedural Steps for Conforming Meter Application Process**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9F.17	Identify problem(s) and reschedule Test on new date.	If the <i>IESO</i> identifies problems during the Dynamic Bench Test, or after reviewing the results of a completed test, the <i>IESO</i> may, at its discretion, request that a repeat test be performed.				If the <i>IESO</i> permits the Dynamic Bench Test to be repeated, continue to Step 9F.16, else continue to Step 9F.19.
9F.18	Rectify problem(s) before performing test on new date.	The Manufacturer must rectify any problems with the <i>meter</i> identified by the <i>IESO</i> before repeating the test.				
9F.19	If, at any time, the <i>IESO</i> is not satisfied with the application, or a <i>meter</i> currently on the “Conforming Meter List”, and considers that the <i>meter</i> does not conform to <i>IESO</i> requirements, inform manufacturer.	<p>The <i>IESO</i> rejects</p> <ul style="list-style-type: none"> <li>• applications from manufacturers that remain incomplete;</li> <li>• <i>meters</i> that fail to conform to its requirements; and</li> <li>• <i>meters</i> that fail the Dynamic Bench Test.</li> </ul> <p>The <i>IESO</i> can de-list <i>meters</i> that have been accepted onto the “Conforming Meter List” but no longer conform to its requirements.</p> <p>The <i>IESO</i> sends a notification to the Manufacturer informing it of its decision and requesting a response.</p>	Any time <i>IESO</i> is not satisfied that <i>meter</i> conforms to its requirements.	“Rejection Letter for Conforming Meter List” (IMO-FORM-1469) sent.	Fax or mail.	Manufacturer receives notification from the <i>IESO</i> that <i>meter</i> does not conform to its requirements and cannot be included on the “Conforming Meter List”.

**Table 3–5: Procedural Steps for Conforming Meter Application Process**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9F.20	Receive notification that application to add <i>meter</i> to “Conforming Meter List” has been denied, or that <i>meter</i> will be de-listed.		Upon receipt of “Rejection Letter for Conforming Meter List” (IMO-FORM-1469).			
9F.21	Resolve problem and go to appropriate item in conformance procedure.	Manufacturers must rectify deficiencies identified in the <i>IESO</i> notification, and respond to the notification, for the application to process to proceed, or for the <i>meter</i> to not be de-listed.				The manufacturer must rectify the deficiencies identified by the <i>IESO</i> and return the applicable step as directed by the <i>IESO</i> .
9F.22	Send Letter of <i>meter</i> Conformance Acceptance to the Manufacturer.	The <i>IESO</i> sends a letter to manufacturers whose <i>meters</i> have successfully met the requirements and tests for the ‘Conforming Meter List’.		“Acceptance Letter for Conforming Meter List” (IMO-FORM-1470) sent.	Fax or mail.	<i>IESO</i> send notification to manufacturer that <i>meter</i> has been accepted on to the Conforming Meter List.
9F.23	Add accepted <i>meter</i> to “Conforming Meter List” on <i>IESO</i> Web site.	<i>Meters</i> that successfully meet all requirements and test for the “Conforming Meter List” are added to the “Conforming Meter List” on the <i>IESO</i> Web site.				<i>Meter</i> added to the “Conforming Meter List”.

### 3.6 Eligibility for Small or Minor Embedded Generation Facilities

The steps described in Table 3-6 are illustrated in Figure 2-6.

**Table 3–6: Procedural Steps for Eligibility for Small or Minor Embedded Generation Facilities**

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
9G.01	Determine total energy injected for previous calendar year.	<p>The <i>IESO</i> determines the total energy injected for the previous calendar year for each <i>meter installation</i> registered under section 4.6 of Chapter 6.</p> <p>The total energy injected is based on the <i>meter</i> reading data without the application of losses or measurement error correction.</p> <p>If result does not exceed 17 GWh, no further action is required.</p> <p>If result exceeds 17 GWh, the <i>IESO</i> proceeds to Step 9G.02.</p>	Performed annually at the end of each calendar year.	Total energy injected (kWh) for the previous calendar year without the application of losses or measurement error correction.	Extraction of <i>metering data</i> from MVSTAR.	<p>If result does not exceed 17 GWh, no further action is required.</p> <p>If result exceeds 17 GWh, the <i>IESO</i> proceeds to Step 9G.02.</p>
9G.02	Initiate notice to <i>MMP</i> .	The <i>IESO</i> notifies the <i>MMP</i> that the <i>metering installation</i> is no longer eligible for registration under section 4.6.1 of Chapter 6.	Upon determination in Step 9G.01 that result exceeds 17 GWh.	None.	Fax and regular mail.	<i>MMP</i> has been notified of result.
9G.03	Receive notification from <i>IESO</i> .	The <i>MMP</i> receives notification and confirms remedial action.	Following Step 9G.02.	Details of proposed <i>metering installation</i> upgrade.	Fax, email or regular mail.	Notification of <i>MMP</i> 's intended compliance with section 4.6.7 of Chapter 6 received by <i>IESO</i> .

**Table 3–6: Procedural Steps for Eligibility for Small or Minor Embedded Generation Facilities**

<b>Ref.</b>	<b>Task Name</b>	<b>Task Detail</b>	<b>When</b>	<b>Resulting Information</b>	<b>Method</b>	<b>Completion Events</b>
9G.04	<i>Meter installation</i> upgraded in accordance with Chapter 6, Section 4.6.7.	The <i>MMP</i> upgrades <i>metering installation</i> in accordance with Chapter 6, section 4.6.7.	Within 3 months following Step 9G.03.	<i>Metering installation</i> registered as per Market Manual 3.2.		Meter Point Registration procedure initiated.

– End of Section –

## Appendix A: Forms

This appendix contains a list of the forms, agreements, and letters associated with the Conformance Monitoring procedure. The following table lists the forms and agreements, which are available on the *IESO* Web site in the same location as this procedure. The forms, agreements, and letters included are as follows:

Form Name	Form Number
Notification of Power Switching Form	IMO-FORM-1464
Conforming Meter List Application	IMO-FORM-1179
Meter Read Reconciliation Form & Instrument Transformer Spot Check Form	IMO-FORM-1411

The following table lists the standard letters sent out by the *IESO* during the processing of a “Conforming Meter Application”:

Form Name	Form Number
Request for Clarification or Additional Documents for Conforming Meter List	IMO-FORM-1468
Rejection Letter for Conforming Meter List	IMO-FORM-1469
Acceptance Letter for Conforming Meter List	IMO-FORM-1470
Acknowledgement Letter for Conforming Meter List	IMO-FORM-1471

The following table lists the standard letters sent out by the *IESO* during processing of “Quarantining Metering Installations”.

Form Name	Form Number
Notification of Quarantine Metering Installations	IESO-FORM-1607

– End of Section –



# Appendix B: Dynamic Bench Test

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The Dynamic Bench Test demonstrates proper *meter* measurement and status flagging in accordance with various *IESO* test scenarios. The test also demonstrates that the *meter* can properly communicate with the *IESO* network. If daisy chaining is a possible configuration of the *meter*, this functionality is also tested during the Dynamic Bench Test.

Applicants must indicate a preferred date for the test in part A of the “Meter List Application” form. The *IESO* contacts the applicant to confirm and schedule the test after the application and all required supporting documents have been reviewed and accepted.

The test is conducted at the applicant’s *facility*. Applicants must follow the instructions below when performing the test. Failure to follow these instructions may result in cancellation of the test.

## B.1 Preparing for the Dynamic Bench Test

### B.1.1 Setting Up the Meter

Mount the 3-element *meter* on a commercial quality electrical test bench for the test. The *meter* must be connected to appropriate power sources so that it can measure different voltages or currents for each phase, as required by the test.

Connect the *meter* to a phone line so that the *IESO* can dial into the *meter* during the test and interrogate readings, or transmit commands, as required. The *IESO* will schedule a preliminary communication test before the actual test date to confirm that interrogation can take place.

Applicants must ensure that at least two *meters* are available for the last step of the Dynamic Bench Test, which covers daisy-chaining functionality.

The applicant is responsible for ensuring that standard safety precautions are followed when performing all tasks in this Appendix.

### B.1.2 Configuring the Meter

Configure *meter* channels using the settings specified in Part C.1 of the “Conforming Meter List Application” form.

MV-90 parameters must match those submitted to the *IESO* in Part C.2 of the “Conforming Meter List Application” form. Inform the *IESO* if any parameter has changed since then.

Set the *meter* clock to Eastern Standard Time (no Daylight Savings Time) even if this is not the time zone where you are conducting the test.

### B.1.3 Preparing a Test Record

Applicants must record the time, input settings and *meter* readings for each part of the test and forward a signed copy to the *IESO* on completion of the test. A form is included in Section A.3 to record the test results.

## B.2 Conducting the Dynamic Bench Test

The test consists of 12 parts. The *IESO* operator calls the Test Bench technician after each part of the test is completed to confirm interrogation was successful and to initiate the next part.

Part 1 of the Dynamic Bench Test must be executed before the test is scheduled to begin. For example, if the test is scheduled to start at 9 AM, then the Test Bench technician must run the required voltages and currents through the *meter* for at least 31 minutes before 9 AM.

The *IESO* operator calls at the scheduled test start time to take the first interrogation reading for part 1. Subsequent parts begin on a 5-minute time interval of the hour. If unsure about what to do for any part, ask the *IESO* operator before executing that part.

Part	Task	Applicant Instructions	IESO Actions
1	Set up load	Install a 3-element <i>meter</i> on the test bench. Connect telephone line to the <i>meter</i> . Apply 120 volts, 2.5 Amps at 0.5 Power Factor to all phases. Run <i>meter</i> at load for minimum of 31 minutes before test start time.	Interrogate <i>meter</i> channels and registers.
2	Remove one potential	Disconnect one of “B” phase voltage or “C” phase voltage for 10 minutes <sup>1</sup> .	Interrogate <i>meter</i> channels and registers.
3	Remove all potentials	Disconnect “A” phase voltage and remaining voltage phase for 10 minutes <sup>2</sup> .	Interrogate <i>meter</i> channels and registers.
4	Reconnect all potentials	Reconnect “A”, “B” and “C” phase voltages.	Interrogate <i>meter</i> channels and registers.
5	Remove one current	Disconnect one of “A” or “B” or “C” phase currents for 10 minutes.	Interrogate <i>meter</i> channels and registers.
6	Remove all currents	Disconnect remaining two phase currents for 10 minutes.	Interrogate <i>meter</i> channels and registers.
7	Reconnect all currents	Reconnect “A”, “B” and “C” phase currents.	Interrogate <i>meter</i> channels and registers.
8	Reverse all currents	Reverse “A”, “B” and “C” phase currents for 10 minutes.	Interrogate <i>meter</i> channels and registers.
9	Remove one current	Disconnect one of “A” or “B” or “C” phase currents for 10 minutes.	Interrogate <i>meter</i> channels and registers.
10	Reset Time	Set up <i>meter</i> to be effectively Measurement Canada sealed.	Attempt to reset time

<sup>1</sup> Assumes “A” phase powers *meter* electronics. If “B” phase powers *meter* electronics, then disconnect one of “A” or “C” phases. If “C” phase powers *meter* electronics, disconnect one of “A” or “B” phases. Does not matter which phase is disconnected if *meter* supplied at auxiliary power terminals.

<sup>2</sup> Substitute “B” or “C” for “A” if “B” or “C” powers *meter* electronics.

<b>Part</b>	<b>Task</b>	<b>Applicant Instructions</b>	<b>IESO Actions</b>
		Supply read-only password. Supply read plus synchronize time password. Supply read plus write password.	using each password. Note results.
<b>11</b>	Password Security		Access <i>meter</i> with valid and invalid versions of each password in Part 10. Note results.
<b>12</b>	Communicate with slave <i>meter</i>	Set up master and slave <i>meters</i> for remote interrogation.	Interrogate slave <i>meter</i> channels and registers.

### B.3 Record of Dynamic Bench Test

Test Part	Time		Input Type			Phase A	Phase B	Phase C			
1	Start Time	:	Input Setting			Current					
	Stop Time	:				Voltage					
	Use 00:00 hrs					Power Factor					
	<b>Meter Reading</b>	<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>
	Start										
	Stop										
2	Start Time	:	Input Setting			Current					
	Stop Time	:				Voltage					
	Use 00:00 hrs					Power Factor					
	<b>Meter Reading</b>	<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>
	Start										
	Stop										

Test Part	Time		Input Type			Phase A	Phase B	Phase C				
	3	Start Time	:	Input Setting	Current							
Stop Time		:	Voltage									
Use 00:00 hrs		Power Factor										
<b>Meter Reading</b>		<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>	
Start												
Stop												
5	Start Time	:	Input Setting	Current								
	Stop Time	:		Voltage								
	Use 00:00 hrs			Power Factor								
	<b>Meter Reading</b>	<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>	
	Start											
	Stop											

Test Part	Time		Input Type			Phase A	Phase B	Phase C				
	6	Start Time	:	Input Setting			Current					
Stop Time		:			Voltage							
Use 00:00 hrs					Power Factor							
<b>Meter Reading</b>		<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>	
Start												
Stop												
8	Start Time	:	Input Setting			Current						
	Stop Time	:				Voltage						
	Use 00:00 hrs					Power Factor						
	<b>Meter Reading</b>	<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>	
	Start											
	Stop											

Test Part	Time		Input Type			Phase A	Phase B	Phase C			
9	Start Time	:	Input Setting	Current							
	Stop Time	:		Voltage							
	Use 00:00 hrs			Power Factor							
	<b>Meter Reading</b>	<b>KWh DEL</b>	<b>KVarh DEL</b>	<b>KWh REC</b>	<b>KVarh REC</b>	<b>V<sup>2</sup>h "A" phase</b>	<b>V<sup>2</sup>h "B" phase</b>	<b>V<sup>2</sup>h "C" phase</b>	<b>I<sup>2</sup>h "A" phase</b>	<b>I<sup>2</sup>h "B" phase</b>	<b>I<sup>2</sup>h "C" phase</b>
	Start										
	Stop										
10	Read-only password			Time Reset? Y/N							
	Read plus synchronize time password			Time Reset? Y/N							
	Read plus write password			Time Reset? Y/N							
11	Valid read-only password			<i>Meter</i> response:							
	Invalid read-only password			<i>Meter</i> response:							
	Valid read plus synchronize time password			<i>Meter</i> response:							
	Invalid read plus synchronize time password			<i>Meter</i> response:							
	Valid read plus write password			<i>Meter</i> response:							
	Invalid read plus write password			<i>Meter</i> response:							
12	Status check			Successful? Y/N							
	Data collection			Successful? Y/N							
	Time reset			Successful? Y/N							

Name of Test Technician (please print) \_\_\_\_\_

Signature of Test Technician \_\_\_\_\_

Date of Test \_\_\_\_\_

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## References

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<b>Document ID</b>	<b>Document Title</b>
MDP_PRO_0017	Market Manual 2: Market Administration, Part 2.1: Dispute Resolution
MDP_PRO_0007	Market Manual 3: Metering, Part 3.1: Metering Service Provider (MSP) Registration, Revocation, and De-registration
MDP_PRO_0013	Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance
MDP_PRO_0032	Market Manual 5: Settlements, Part 5.2: Metering Data Processing
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
LMB_EG_01	Consolidation of the Electricity and Gas Inspection Act
MDP_STD_0004	Wholesale Metering Revenue Standard—Hardware

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