

PROCEDURE



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Market Manual 5: Settlements
Part 5.2: Metering Data
Processing

Issue 24.0

This procedure describes to *market participants* metering data processes for the purpose of settlements.

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This *market manual* may contain a summary of a particular *market rule*. Where provided, the summary has been used because of the length of the *market rule* itself. The reader should be aware, however, that where a *market rule* is applicable, the obligation that needs to be met is as stated in the "*Market Rule*". To the extent of any discrepancy or inconsistency between the provisions of a particular *market rule* and the summary, the provision of the *market rule* shall govern.

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Table of Changes

Reference (Paragraph and Section)	Description of Change
Section 1.3.2	Footnote to identify the content of the <i>VEE standard</i> , in the <i>market rules</i> , Chapter 11 is contained in Appendices B, C and D.
Appendices B, C and D	Noted that Appendices B, C and D contain content referred to in Chapter 11, Section 1.1.1.419 of the <i>market rules</i> .

Market Manuals

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

The "*Settlements Manual*" is Volume 5 of the *market manuals*, where this document forms "Part 5.2: Metering Data Processing."

A list of the other component parts of the "*Settlements Manual*" is provided in "Part 5.0: *Settlements 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. "**Procedural Work Flow**", which contains graphical representations 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 defined in the "Market Manual Overview" document.

– End of Section –

1. Introduction

1.1 Purpose

This procedure provides *market participants* and their *metering service providers (MSPs)* with the process for data collection and validation of revenue *metering data* for the purpose of *settlements*. The procedure includes:

- recording and collecting revenue *metering data*;
- validating, estimating, and editing revenue *metering data*;
- processing meter trouble reports (MTRs) to investigate potential problems with *revenue meters*; and
- submitting *physical allocation data*.

All references in the remainder of this procedure to *meters* or *metering data* should be assumed to refer to *revenue meters* and revenue *metering data*.

1.2 Scope

This procedure is intended to provide *market participants* and their *metering service providers* with a summary of the steps and interfaces between the *metered market participant (MMP)*, the *IESO*, the *metering service provider* and other parties for data collection and validation. The procedural work flows and steps described in this document serve as a roadmap for applicants and the *IESO*, and reflect the requirements set out in the *market rules* and applicable *IESO* policies and standards.

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

1.3 Overview of Metering Data Processing

Some of the procedures in metering data processing are fully automated and do not require manual intervention. As such, these elements of the process are not captured in the work flow diagrams in Section 2 and are described here to provide background information on the overall process.

1.3.1 Metering Data Collection

Metered market participants are required to make *metering data* available to the *IESO* as specified by the *market rules*. Revenue Wholesale Meters must be capable of electronic, remote communication with the *IESO's* meter interrogation system to transfer *metering data*. The *IESO* will *publish* on its Web site the time period during which interrogations are performed. *Market participants* are

responsible for making *metering data* available to the *IESO* during this period. The *IESO* will make reasonable efforts to inform *market participants* if *metering data* collection occurs outside the interrogation period posted on its Web site, normally by posting a special message on the *IESO* Web site to this effect. If remote acquisition of *metering data* becomes unavailable, the *IESO* will contact the *metered market participant* or *metering service provider* to arrange an alternate means of transferring the data.

Metering data from *check meters* must be provided to the *IESO* by 06.00 EST using the email address: hhffiles@ieso.ca. All data received by this time will be processed by the *IESO* on that day.

Metering data is collected automatically by the *IESO's* meter data collection application¹, which attempts three interrogations of all *metering installations* daily (except *check meters*).

Once communication with the *metering installation* is established, the *meter* data collection application collects *metering data* from the installation, synchronizes the clock to ± 5 seconds of EST, and imports it into its database. *Metering installations* that could not be contacted are treated as validation errors by the *meter* data collection application. Causes of this problem include defective modems, changed communication protocols, telephone line breakdowns, or other switching problems. See Subsection 1.3.2, "Metering Data Validation, Estimation, and Editing (VEE)" for further information on the treatment of such problems.

All *metering data* must be recorded for each *metering interval* except as otherwise provided in the *market rules*. An *intertie metering point* shall record *metering data* in a manner consistent with the applicable interchange protocol.

1.3.2 Metering Data Validation, Estimation, and Editing (VEE)²

The raw *metering data* collected or received by the *IESO* are checked using the Validation, Estimation, and Editing (VEE) process. The *VEE process*, which operates according to the *settlement* schedule specified in the *market rules*, results in validated, estimated, or edited "settlement-ready" *metering data* suitable for use in determining *settlement amounts*. This allows errors to be detected in *metering data* resulting from improper operational conditions and/or hardware/software malfunctions, including failures of, or errors in, metering or communication hardware, and from *metering data* exceeding pre-defined variances or tolerances. All validation tests are performed automatically by the *meter* data collection application.

The *VEE process* applies to three types of *metering installations*:

- *main/alternate metering installation*, which includes two revenue quality *meters*: one main *meter* and one alternate *meter*;
- *main/check metering installation*, which includes one revenue quality *meter* (the main *meter*) and one *meter* that is not revenue quality (the *check meter*); and

¹ The *IESO's* meter data collection application is MV-90.

² *Market rules*, Chapter 11, Section 1.1.1.419 identifies the definition of *VEE standard* as the part of the *market manual* pertaining to metering entitled "Validating, Estimating, and Editing - Requirements for Validating, Estimating, and Editing of Revenue Metering Data in the *IESO* - Administered Market". Appendices B, C, and D of this *market manual* ("Market Manual 5, Metering, Part 5.2: Metering Data Processing") comprise the *VEE standard*.

- stand alone *metering installation*.

The *VEE process* uses the revenue *metering data* collected or received by the *IESO* from the main and alternate *meter*, or from the main and *check meter*, or from the stand alone *meter*. The *metering data* are evaluated using criteria provided by the *metered market participant/metering service provider*, as appropriate, to validate raw *metering data*. *Metering data* that fail validation result in a meter trouble report being issued to the *metering service provider* responsible for that *meter*. Meter trouble reports are discussed in greater detail in Subsection 1.3.4.

Validation tests common to all types of *metering installations* (stand alone, *main/alternate*, *main/check*) appear in Appendix B.1. Data channel assignments for conforming Main/Alternate *meters* appear in Appendix B.2. The *meter* data collection application performs some additional validation tests on *main/alternate* (Appendix B.3) or *main/check* (Appendix B.4) *metering installations*.

"Estimating" refers to the automatic estimations and/or substitutions performed by the *meter* data collection application on *metering data* from single or main *meters* when the following validation errors occur:

- communication errors causing *metering data* gaps; or
- when data from an alternate or *check meter* are substituted for main *metering data* that have failed validation.

These estimates or substitutions replace the data that have failed validation and remain in place until the meter trouble report is resolved (see Subsection 1.3.4, "Meter Trouble Reports"). There is no estimation or substitution for alternate or *check meters*. Based on the resolution of the meter trouble report, the automatic estimates may be retained, or replaced by actual *metering data* or edited *metering data*.

After resolving the meter trouble report, the *metering service provider* may propose an adjustment to the estimated value, or to *metering data* that have failed validation; this comprises the "editing" process. The *IESO* must agree to any proposed change prior to editing the *metering data*. Guidelines for editing *metering data* exist for stand alone *metering installations* (Appendix D.1) and for *main/alternate* or *main/check metering installations* (Appendix D.2).

Data Versioning and Flags

All *metering data* at a *meter point* are associated with a date and version number (beginning at 1) for tracking, auditing, and reference purposes. The version number is assigned automatically by the *IESO's metering database*. It allows the *metered market participant* and *metering service provider* (and other parties who have appropriate access rights) to view successive versions of *metering data* (using the *meter* data viewing application³) as they are processed. The *preliminary settlement statement* will contain the latest version of the *metering data* available prior to the data transfer from the revenue metering system to the commercial reconciliation system.

The version number for *metering data* at a *meter point* will increment when the data values change as a result of estimating or editing activities. This ensures that changes to *metering data* at a *meter point*

³ The *IESO's* meter data viewing application is MV-WEB. See the MV-WEB User Guide on the Technical Interfaces page on the *IESO* Web site for more details on this application.

are identifiable and easily tracked. *Metering data* that pass validation and require no editing or estimating will have a version number of 1. *Metering data* that fail validation, or contain gaps, will normally have multiple versions, triggered by the required estimates and possible edits.

The *meter* data collection application also associates a status flag with each interval of *metering data*. The status flag indicates whether the *metering data* passed validation, or whether they failed validation, using a variety of different flags to represent different failure causes.

The *IESO's* Production Group changes the validation flags on edited *metering data* to indicate that the *metering data* are no longer in a "failed validation" state.

Totalization

Metering data are submitted for totalization with the appropriate version number and failed validation flags. Meter trouble report findings relating to data that failed initial validation may necessitate edits to the *metering data* and require the data to be sent again for totalization with a new version number.

When a communication failure occurs, no *metering data* may exist and the *meter* data collection application creates estimates that it substitutes for the gaps (in main and single *meters* only). These estimates are sent for adjustment and totalization until the meter trouble report is resolved and an edit is agreed to by the *metering service provider* and the *IESO*. Once the appropriate edit is performed, the updated *metering data* are submitted for totalization with a new version number.

1.3.3 Metering Database

The *IESO* has established and maintains a *metering database* containing *metering data* transferred from each *registered wholesale meter*.

The *metering database* includes original *energy* readings, substitutions, estimations, and calculated values for that *meter point* and the totalized, adjusted, and allocated quantities at the summary *meters* and *delivery point* for that *metered market participant*.

The *metering data* recorded in the *metering database* with respect to a *registered wholesale meter* is *confidential information* and will only be made available to:

- the *metered market participant* for that *registered wholesale meter*;
- the *metering service provider* for that *registered wholesale meter*;
- any *market participant* whose *settlement statement* is determined on the basis of the *metering data* recorded in that *registered wholesale meter*;
- any *transmitter* or *distributor* to whose system a *facility* with respect to which the *registered wholesale meter* relates is connected; and
- in addition, *metered market participants* may authorize other *market participants* to access their specific *delivery point* data.

The *market participant* or *metered market participant* may query the *metering database* for the purpose of reviewing the *metering data* to determine its correctness. Requests for *meter* data can be made through the *meter* data viewing application, accessed via the *IESO's* *market participant* interface system, or via a file transfer protocol (FTP) scripted by the *market participant*. *Meter*

readings may be requested by a single *delivery point* or for all *delivery points* to which a *market participant* has access.

Market Participants can receive the *meter data response* file in EDI-867 format or, if using the *meter data viewing application*, in ASCII text space delimited file format. The *response* file is downloaded during the session using the *meter data viewing application* (or placed on the FTP server for download by the *market participant*, where this mechanism is used). Multiple requests for individual *delivery points* will result in multiple *response* files. A single request for all *delivery points* to which the *market participant* has access will result in a single *response* file. See the "MV-WEB User Guide" for more information on this application and the *meter data* that can be requested. A sample EDI-867 *meter data* request file is available on the Technical Interfaces page on the IESO Web site (<http://www.ieso.ca/>).

The *market participant* must advise the IESO if they have concerns about the validity of data. The IESO can issue a meter trouble report to the *metered market participant's metering service provider* to resolve the issue.

The IESO may use collection systems operated by *meter data agencies* to collect *metering data* for its *metering database*.

1.3.4 Meter Trouble Reports

The IESO issues a meter trouble report to the *metering service provider* for each *meter* for which it is responsible with data that fail the validation process, including missing data. Although most meter trouble reports are initiated by the IESO, *metering service providers* and *metered market participants* who experience difficulties communicating with a *metering installation* or validating their data may also trigger a meter trouble report by contacting the IESO and requesting that the IESO issue a meter trouble report. The *metering service provider/metered market participant* may request the IESO to issue a meter trouble report for a *meter* that is suspect, has failed or has invalid data by sending a request to the IESO MTR mailbox: mtr.requests@ieso.ca

Where the IESO has not already issued a meter trouble report to address the problem identified by the *metered market participant*, it will do so, where this is deemed necessary to resolve the problem. Where the IESO determines that a meter trouble report is not required, it notifies the *metered market participant* and/or *metering service provider* of its decision.

Market Participants should review the entries in the *metering database* in a timely manner so that discrepancies can be addressed before the *preliminary settlement statement* is issued by the IESO. Upon discovery of a metering error, the *metered market participant* shall immediately notify the IESO of the error. If the *metered market participant* believes that the problem was caused by a hardware or software malfunction at the *metering installation*, the *metered market participant* must inform the IESO of this problem within one *business day*. The IESO will issue a meter trouble report to the *metering service provider* for the affected *meter* to investigate the problem, perform repairs as required, and provide substitute *metering data* in accordance with this procedure.

The *market rules* contain strict timelines with respect to meter trouble report processing. These timelines are required to ensure prompt resolution of all meter trouble reports and maintain the integrity of the *settlements* process. *Metering service providers* are expected to meet these timelines and all exceptions are tracked by the IESO. Meter trouble reports that are not resolved within

timelines specified in the *market rules* can trigger sanctions and data estimates provided for in Chapter 6, Section 11 against the *metered market participant* for the *metering installation*.

To access the meter trouble report system, individuals in a *metered market participant* or *metering service provider* organization, require a User ID and password. To obtain a User ID, download the following form from the *IESO* Web site and complete it as directed including the appropriate signatures. Return the completed form to the *IESO*. The *IESO* will notify the user of the User ID and password.

- "IESO Workflow Access and User Identification" (IMO-FORM-1314): Check the box for access to Meter Trouble Report.

1.3.4.1 Meter Trouble Report Timelines

Meter trouble reports are initiated within the following timeframes:

MSP/MMP-requested MTR:

- **One Business day Pre-Meter Trouble Report.** A *metering service provider/metered market participant* is required to notify the *IESO* of a potential defect, malfunction, or service problem at a *metering installation* within one *business day* of discovering the potential problem. The request is submitted to mtr.requests@ieso.ca. For example, if an MSP is conducting tests on the *meter*, an MTR is requested indicating the meter channel, applicable time period and correct *metering data* for resolution.

IESO-generated MTR:

- **Day of Meter Trouble Report.** The *IESO* is required to issue a meter trouble report to the associated *metering service provider* and promptly notify the *metered market participant* when it becomes aware of a potential defect or malfunction at a *metering installation*. This will normally happen the first *business day* following a trade day, when the *IESO* processes validations from the *data collection system* and issues the meter trouble report.
- **One Business day Post Meter Trouble Report Notification.** The *metering service provider* is required to acknowledge receipt of a meter trouble report within one *business day* of notification by the *IESO*. This rule ensures that receipt of the meter trouble report is confirmed by the *metering service provider*.
- **Two Business days Post Meter Trouble Report Notification.** The *metering service provider* is required to resolve a meter trouble report within two *business days* of receipt of notification of a meter trouble report from the *IESO*, unless the cause of the meter trouble report is a malfunction of the *instrument transformers*. **Note:** In order to close a meter trouble report, the *IESO* must agree to its resolution.

In the event of an *instrument transformer* failure, the *metering service provider* is required to implement the *Emergency Restoration Plan* for the *metering installation* within two *business days* post meter trouble report instead, and inform the *IESO* of the plan. The *market rules* then allow the *metering service provider* up to twelve weeks to rectify an *instrument transformer* malfunction.

- **Three Business days Post Meter Trouble Report Notification.** Meter trouble reports that remain open three *business days* or more post notification can trigger special provisions of the "Market Rules" (Chapter 6, Section 11) dealing with late meter trouble reports that are likely to have a significant impact on other *market participants*. The *IESO* sends a notification, under these circumstances, to the *metered market participant* to which the *metered market participant* must respond within one *business day* of receipt.

The notification requires the *metered market participant* to clarify that its *metering service provider* will rectify the problem. Chapter 6, Section 11 of the "Market Rules" empowers the *IESO* to implement data estimates if the meter trouble report remains open more than three *business days* following issuance of this warning (two *business days* if the *metered market participant* does not respond to the warning within one *business day*).

- **Four Business days Post Meter Trouble Report Notification.** When the "significant impact" provision has been triggered, the *market rules* require the *metered market participant* to respond to the *IESO* notification by this day (one *business day* after the warning).
- **Seven Business days Post Meter Trouble Report Notification.** If the meter trouble report is still unresolved by this day, the "Market Rules", Chapter 6, Section 11 empowers the *IESO* to implement estimates referred to above.

1.3.4.2 Relationship Between VEE and Meter Trouble Reports

The VEE and meter trouble report procedures intersect at several important points. These connections are illustrated on the respective work flow diagrams in each procedure.

Validation failures trigger meter trouble reports. A meter trouble report is issued to the *metering service provider*, and the *metered market participant* is notified that the report has been issued.

Most editing of *metering data* occurs because the *metering service provider*, has responded to the meter trouble report, investigated the source of the validation error, and proposed amending the *metering data*, or retaining the estimate or original data.

1.3.4.3 Metering Outages

All *metered market participants* may use the MMP Metering Outage Form to notify their *metering service provider* and the *IESO* of any outages that will affect metering. The *metering service provider* will use this information to resolve MTRs that have been issued. Appendix G shows a sample of the form and instructions for completion.

Power Outage Meter Trouble Reports Process

When power to the *revenue meter* is interrupted, depending on the type of *meter*, the meter program will flag either a power outage (PO), create a lapse in data or both. *IESO's* MV90 system which interrogates the *meters* and validates the *metering data* early each morning will detect these flags, create a validation report and send the trouble code to the meter trouble reporting system. The MTR system automatically creates a meter trouble report. These MTRs are held for *IESO* assessment prior to being issued.

All power outage validations will be queued for assessment by the *IESO* and an MTR will be manually issued by the *IESO*. No automatic PO MTR will be issued. For situations that meet the

definition as Short Duration Power Outages, no MTR will be issued. For other power Outage situations, the MTR will contain the information outlined in the Decision Table in Appendix H. *Metering service providers* (with *metered market participants*, if appropriate) will provide confirmation of the power outage and a correct and valid data file if the estimate is not appropriate.

The Power Outage Meter Trouble Report Process includes:

A. Short Duration Power Outage

It is low risk to assume that short period power outages are legitimate if there is comparable *energy* in the interval before and after the interval with the power outage. Many weather fault, line fault and operational switching activities are of very short duration and almost always result in power interruptions of less than one minute.

Definition of Short Duration Power Outage:

A short duration power outage exists when:

- a) power outage flag or lapsed data exist in an interval for a stand alone *meter*; in both of the *meters* in a main/alternate configuration; or in the alternate *meter* only for a main/alternate configuration where the main *meter* is auxiliary powered via a UPS or reliable power source independent of the alternate *meter*;
- b) the total power outage time (for multiple events in an interval) is less than one minute as identified in the event summary;
- c) the *energy* in the interval following the PO interval is comparable to the interval preceding the PO interval;
- d) reasonable provision may be made in assessing c) for load/unload periods; and
- e) where the power outage initiates in the last 30 seconds of an interval, a short term power outage can be deemed to have occurred over the 2 intervals if the total event time is less than one minute and c) applies.

No MTR will be issued if a short duration power outage (SDPO) exists. Instead, the *metering data* will be accepted as valid. Any MTR created in the system will have the time of the PO identified and the MTR is rejected.

B. Potential power outages that are not Short Duration

1. In a main / alternate installation where the apparent power outage exists in both *meters*, one MTR should be used to identify and resolve the issue.
2. The alternate *meter* is compliant with *market rules* and Measurement Canada. It should be used for *settlement* in the absence of validated main *meter* where possible to minimize the work effort and maintain market rule timeliness in the meter trouble reporting process.
3. When main *meter* or stand alone *meter* has missing data:
 - where possible, the estimation *market rules* are used to establish the *metering data*, and

- one MTR is used to resolve the validity of the power outage.

Treatment

Table H–1 in Appendix H sets out the possible combinations of main / alternate and stand alone situations that could exist and the proposed treatment, based on duration, by the *IESO* and MSP.

1.3.5 Quarantining a Meter

See Part 3.9 Conformance Monitoring, Sections 1.3.3 and 1.3.4.

1.3.6 Physical Allocation Data

The *market rules* allow a *metered market participant* for each *RWM* in respect of which it is the *metered market participant*, to submit *physical allocation data (PAD)* to the *IESO* for the purpose of allocating some or all of its *metering data* at its *delivery point* to other *market participants*. Chapter 9, Section 2.4 of the “Market Rules” specifies the process and the *market rules* governing the submission of *physical allocation data*. A *market participant* to whom *metering data* is being allocated must have previously identified itself to the *IESO* (via the PLC) as being willing to accept an allocation. (See “Market Manual 1: Market Entry, Maintenance & Exit, Part 1.1: Participant Authorization, Maintenance & Exit” procedure for more details on this process.) The *metered market participant* shall indemnify and hold the *IESO* harmless for any *settlement amounts* determined by the *IESO* through proper application of *physical allocation data* that it provides the *IESO*: (Chapter 9, section 2.4.2.2 of the “Market Rules”).

A *market participant* may submit *physical allocation data* to the *IESO* for each *delivery point* for which it is designated as the *metered market participant*. If a *metered market participant* does not submit *physical allocation data* for a *delivery point* for which it is designated, a default allocation factor of 1.0 will be assumed by the *IESO* and the entire *meter* reading shall be allocated to the *metered market participant* associated with the *delivery point*.

Where the *metered market participant* is a *distributor*, the *metered market participant* may only submit *physical allocation data* to:

- a *market participant* who is either a *retailer* or a *transmitter*;
- a *market participant* whose *facility* is embedded within the *metered market participant's* *distribution system*; or
- a *market participant* who is a *distributor* with a *distribution system* that is adjacent to the *distribution system* of the *metered market participant*.

Physical Allocation Data as Part of Metering Data Processing

The *physical allocation data* process is the final step of *metering data* processing. Data collection, Validation, Estimation and Editing (*VEE process*), the application of loss adjustments (SSLA, MEC, and DLF), and totalization all precede the *physical allocation data* process. In practice, this means physical allocations are only applied to *metering data* at the *delivery point* that have:

- passed required validations in the *meter* data collection application, or, if applicable, been estimated and edited;

- been adjusted using applicable loss-factors in the *metering database*; and
- undergone totalization in the *metering database*.

The application of the Totalization Tables to the *metering data* populates the *delivery points*. *Physical allocation data* is applied on a channel basis at the *delivery point*. It cannot be applied to the *delivery point* as a whole.

Physical Allocation Data Consent Requirements

Prior to submitting *physical allocation data* to the *IESO*, the *metered market participant* must demonstrate to the *IESO* that the *market participant* receiving the *physical allocation data* has consented to the attribution to it of such *physical allocation data* (Chapter 9, sections 2.4.5 and 2.4.6 of the “Market Rules”). The *metered market participant* shall do so by faxing to the *IESO* a completed *physical allocation data* consent form signed by the *market participant* receiving the *physical allocation data*. A copy of the form appears in Appendix F.

Features of the consent form:

On each consent form there can only be:

- one *metered market participant* and one *market participant*,
- one type of *physical allocation data* – standing, interval percentage or absolute,
- one *delivery point* ID number, one *delivery point* channel number and one interval size – 5 or 15 minutes, and
- one percentage or kWh value for the 'maximum per interval'.

One consent form can cover a range of *dispatch days* – this means each *physical allocation data* submission does not need a separate form.

The *metered market participant* must:

- fill in all the applicable fields in the form,
- send the form to the *market participant* for signature, and
- fax the completed form (that has been signed by the *market participant*) to the *IESO* before any *physical allocation data* is submitted to the *IESO*; the fax number is on the form.

The *market participant* must:

- check the information on the consent form that was received from the *metered market participant*, and
- sign the form (if in agreement with all the information in the form) and return it to the *metered market participant*.

When *physical allocation data* is submitted and the *IESO* has no *physical allocation data* consent form, or the consent conditions were not adhered to, the *IESO* will delete the *physical allocation data* in the *IESO's metering database* (MV-STAR). The *IESO* will notify the *metered market participant* by E-mail that the *physical allocation data* was deleted and why it was deleted.

Physical Allocation Data Submission Requirements

The *metered market participant* must submit *physical allocation data* allocations in an XML file via MV-WEB to the IESO. A sample of a *physical allocation data* XML file appears in Appendix E. The XML file contains the *delivery point* ID, the *metered market participant's* ID number, the ID number of the *market participant* who received the *physical allocation data*, and the allocation types and amounts. The XML file is imported from the *metered market participant's* directory in MV-WEB into MV-STAR where it undergoes automated validation checks. Only *physical allocation data* allocations that pass the required validations are applied to the *metering data* in MV-STAR.

A *metered market participant* can submit either percentage or absolute *physical allocation data*. Percentage allocations specify the fraction of the total *metering data* to be allocated to the *market participant* (e.g., 25%), whereas absolute allocations identify a specific amount (e.g., 4,400 kWh) on an interval basis.

There are two types of percentage allocations – standing and interval percentage. Standing allocations apply for a specific period of time, specified by a start date and an end date (Chapter 9, section 2.4.8 of the “Market Rules”). The allocation, which can be from 1 to 100 percent, applies to all intervals in the time period. Interval percentage allocations are specified for specific intervals, one interval at a time. Each interval has a start date and time and an end date and time. Time is in hours and minutes (e.g. 04:15). Chapter 9, section 2.4.7 of the “Market Rules” requires a *metered market participant* to submit percentage allocations prior to the start of the *dispatch day* to which the allocation applies. Allocations can be submitted 31 calendar days prior to the *dispatch day*. Percentage allocations submitted on or after the *dispatch day* are rejected by MV-STAR.

Metered market participants can submit an absolute allocation in preliminary form within two *business days* after the *dispatch day* and in final form within six *business days* after the *dispatch day* (Chapter 9, section 2.4.9 of the “Market Rules”). Absolute allocations submitted outside this time window will be rejected by MV-STAR. A *metered market participant* can make a percentage allocation for a *dispatch day* and subsequently override it with an absolute allocation, as long as all applicable validations are satisfied.

Metered market participants can reverse incorrect *physical allocation data* submissions by submitting *physical allocation data* of 0 (zero) and then submitting new *physical allocation data* with the correct data within the timelines specified above.

Suspension Orders

Where the IESO issues either a notice of the IESO's intent to commence suspension proceedings in accordance with Chapter 3, section 6.3.3.1 of the “Market Rules” or a *default notice* in accordance with Chapter 3, section 6.3.3.2 of the “Market Rules” to a *market participant* that has been allocated *metering data* pursuant to Chapter 9, section 2.4.5 of the “Market Rules”, such notice shall be deemed to constitute a revision to any *physical allocation data* that relate to the period from the time the notice was issued until the *event of default* is remedied. All such *physical allocation data* that relate to such period will be revised to zero.

1.4 Special Provisions for Metering Data

The *market rules* contain special requirements affecting *metering data* when certain conditions occur. These conditions are described below.

1.4.1 Unresolved Meter Trouble Reports

As described in Section 1.3.4 of this document, the *IESO* can implement estimates of *metering data*, when meter trouble reports are not resolved within specific periods. These estimates are described in Chapter 6 Section 11.1.4, 11.1.4A, 11.1.4B, and 11.1.5 of the "Market Rules". These estimates remain in place until the meter trouble report is rectified to the *IESO's* satisfaction. The following rules apply to *metering data* subject to these estimates:

- *Metering data* at a *generation facility* are estimated at zero.
- *Metering data* at a load are estimated at 1.8 times the self-cooled rating of the power transformer or, if none exists, the highest hourly level of *energy* recorded for the load during the 12-month period preceding the original meter trouble report date.

If the *metering service provider* resolves the meter trouble report and subsequently provides *metering data* acceptable to the *IESO* for the period in which the estimates were created, the *IESO* replaces those estimates with that *metering data*. The *metered market participant/metering service provider* must make the *metering data* available to the *IESO* at least three *business days* before the final statement date(s) for the trade day(s) affected. If the *metered market participant/metering service provider* does not make the *metering data* available to the *IESO* by this deadline, the Chapter 6 Section 11.1.4 estimates will appear on the final statement.

1.4.2 Errors in Measurement Standards Detected During Audits, Tests and Inspections

When an error is discovered during an audit, test, or inspection of a *metering installation*, the *market rules* require the *IESO* to determine the materiality of the error and make appropriate corrections to *metering data* in the *metering database*. Errors are defined to be material when they exceed prescribed limits of *any* measurement standard in the *market rules*.

If the *IESO* cannot determine when the error arose, Chapter 6: Section 10.4.1 of the "Market Rules", deems that the error arose half way between the most recent test or audit demonstrating compliance with the relevant measurement standard and the time when the error was detected.

If the error is *less* than the prescribed measurement standard, the *market rules* require the *IESO* to perform a "significant impact" assessment of the error on other *market participants*. If the error is determined to have significant impact, the *IESO* must effect a correction to the *metering data* in respect to the period in which the error occurred, or is deemed to have occurred.

1.4.3 Segregated Mode of Operation

Segregated mode of operation refers to registered generating *facilities* that use a portion of the *IESO-controlled grid* to deliver electricity or *physical services* to a neighboring *control area*.

Market participants must obtain prior approval from the *IESO* before operating in *segregated mode of operation*. *Market participants* have an obligation to zero the *meter* at the affected *metering installation* when operating in this mode; this ensures that the participant is not paid by the *IESO* for *energy* being delivered to another (non-*IESO*) *control area*. (Appendix 6.1, Section 1.2.1.7)

Because the power flow direction for transformers spans several intervals, *metering data* will be adjusted to the following limits:

- *metering data* should be non-zero in the interval in which switching occurs;
- the interval following the switch to Quebec is zero;
- the interval preceding the switch to Ontario is zero.

The *IESO* will deem *metering data* to read zero in cases where the *market participant* was operating in *segregated mode of operation* but failed to set the *metering data* to zero during that period.

1.4.4 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 1.1.1.2 and 1.6.1–1.6.3.)
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 of the "Market Rules")
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.

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)

1.5 IT Applications that Support this Procedure

The process of registration of a *metering installation* is supported by a number of applications as described below.

1.5.1 Metering Installation Registration Tool (MIRT)

This tool enables the *metering service provider* to provide the *IESO*, via email, with an MV-90 Master File. *Metering service providers* can either create the MV-90 Master File in MIRT, or import the Master File into MIRT from MV-90, complete it, and then send it to the *IESO*.

1.5.2 MV-90

The MV-90 Production module is employed by *IESO* in order to collect, validate, estimate, and edit *metering interval* data that is then transmitted to MV Star. In addition, the MV-90 Production module will provide the information required to produce trouble reports.

1.5.3 MV-STAR and MV-WEB

MV-STAR receives *metering data* validated by MV-90 and generates totalization tables. MV-WEB is the tool *market participants* can use to view and download market transactions.

1.5.4 PLC

The Participant Life Cycle (PLC) system supports *facility* registration and Maintenance. The PLC database maintains lists and profiles of valid *market participants*, *metered market participants*, *metering service providers*, *transmitters*, *distributors*, and *delivery points*. Relationships between these entities and user permissions are also maintained in the PLC.

1.5.5 Meter Trouble Report (MTR) Application

This system allows the *IESO* to issue a meter trouble report automatically with a failed validation or manually as required in *Settlements*. The *IESO* and the *metering service provider* can communicate to resolve an issue through the use of this tool.

1.6 Roles and Responsibilities

Responsibility for *settlements* data collection and validation is shared among:

- ***metered market participants (MMPs)***, who are responsible for:
 - maintaining *metering installations* to provide *metering data* to the *IESO*;
 - submitting *check metering data* to the *metering database* communication interface where appropriate;
 - reviewing, *metering data* to the extent necessary to determine its validity;
 - submitting *physical allocation data* for each *delivery point* or alternatively submitting absolute *meter* readings for each *market participant* associated with a *delivery point*;
 - identifying to the *IESO* an associated *metering service provider* for any *metering data* errors discovered via *metering database* queries; and
 - obtaining prior approval from the *IESO* if operating in *segregated mode of operation* and setting the *meter* to zero while in *segregated mode of operation*.
- ***metering service providers (MSPs)***, who are responsible for responding to meter trouble calls issued by the *IESO* for *registered wholesale meters*.
- The ***IESO***, which is responsible for:
 - interrogating the *revenue meters*;
 - receiving, validating, and applying physical allocations to *metering data* in accordance with the relevant *metered market participant* requirements;
 - creating "*settlement-ready*" *metering data*; and
 - establishing and maintaining a *metering database* containing the "*settlement-ready*" *metering data*.

1.7 Contact Information

As part of the participant authorization and registration process, applicants are able to identify a range of contacts within their organization that address specific areas of market operations. For Metering Data Processing this contact will most likely be the Revenue Metering Market Contact Type as indicated in PLC (Market Participant Contacts Screens). If a *market participant* has not identified a specific contact, the *IESO* will seek to contact the Main Contact in PLC that is established during the participant authorization process. The *IESO* will seek to contact these individuals for activities within this procedure, unless alternative arrangements have been established between the *IESO* and the *market participant*. For more information on PLC and the participant authorization process see *Market Entry, Maintenance & Exit, Part 1.1 – Participant Authorization Maintenance & Exit*.

If the *market participant* wishes to contact the *IESO*, the *market participant* can contact the *IESO* Customer Relations via email at customer.relations@ieso.ca or via telephone, mail or courier to the numbers and addresses given on the *IESO* Web site (www.ieso.ca – or click on 'Have a question?' to go to the 'Contacting the *IESO*' page). If the *IESO* Customer Relations is closed, telephone messages or emails may be left in relevant voice or electronic *IESO* mailboxes, which will be answered as soon as possible by Customer Relations 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 forms as well as the accompanying supporting documentation must be transmitted to the *IESO* via mail or courier. The appropriate addresses are provided on the *IESO* Web site or on the form. All correspondence relating to this procedure shall identify the subject: **Metering Data Processing**. *Metering data* is to be sent by 06:00 EST to: hhfiles@ieso.ca.

– End of Section –

2. Procedural Work Flow

The diagrams in this section represent the flow of work and information related to the data collection and validation procedure between the *IESO*, the primary external participant involved in the procedure, and any other parties.

Table 2–1: Legend for Procedural Work Flow Diagrams

Legend	Description
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 Market Manual (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 Metering Data Validation, Estimation, and Editing (VEE)

The following diagram represents the flow of work and information related to *metering data* validation, estimation, and editing between the *IESO*, *metering service providers*, and *metered market participants*.

The steps shown in the following figure are described in detail in Section 3, Table 3-1.

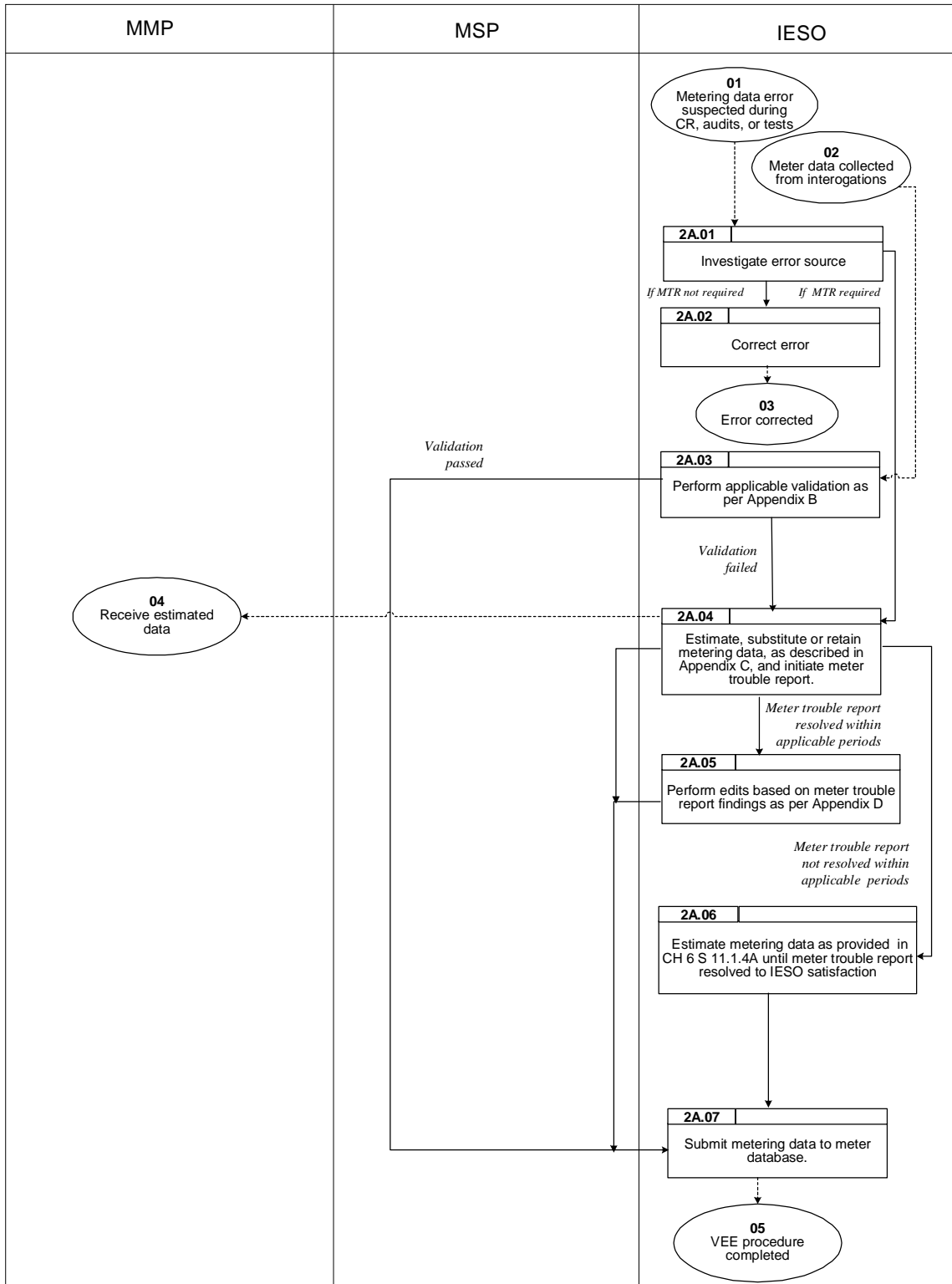


Figure 2- 1: Work Flow for Metering Data Validation, Estimation, and Editing (VEE)

2.2 Meter Trouble Reports

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

The steps shown in the following figure are described in detail in Section 3, Table 3-2.

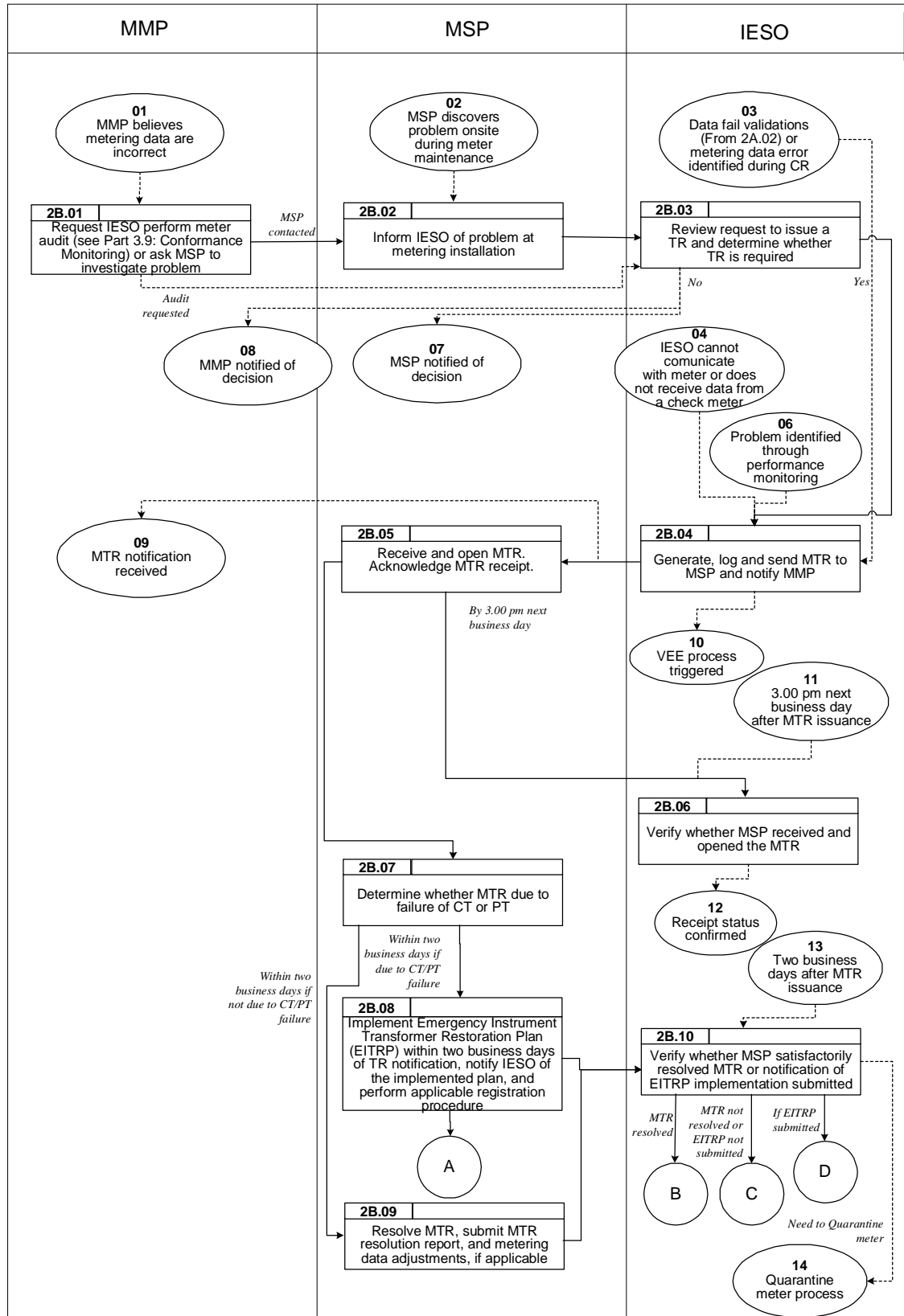


Figure 2–2: Work Flow for Meter Trouble Reports

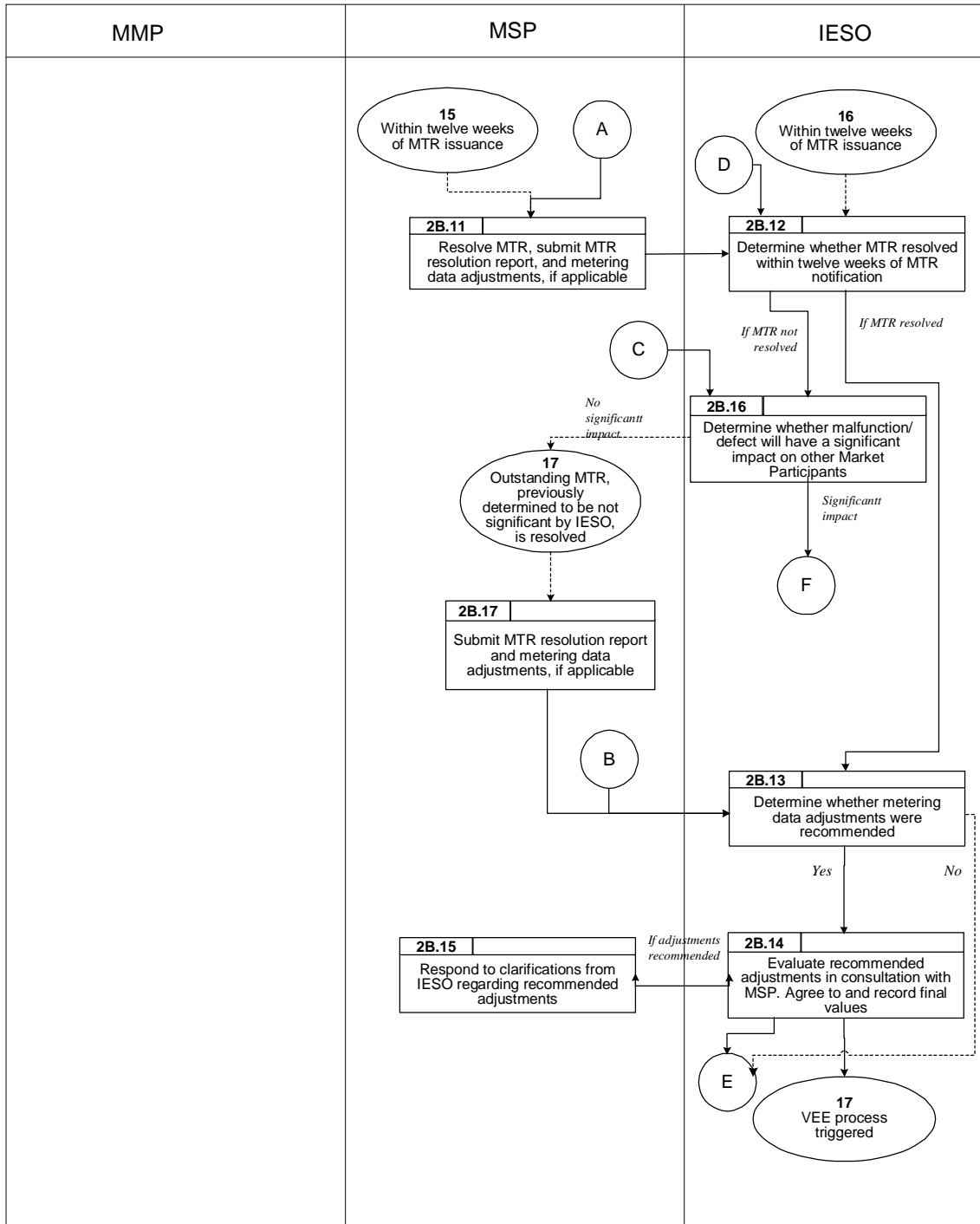


Figure 2–2: Work Flow for Meter Trouble Reports (continued)

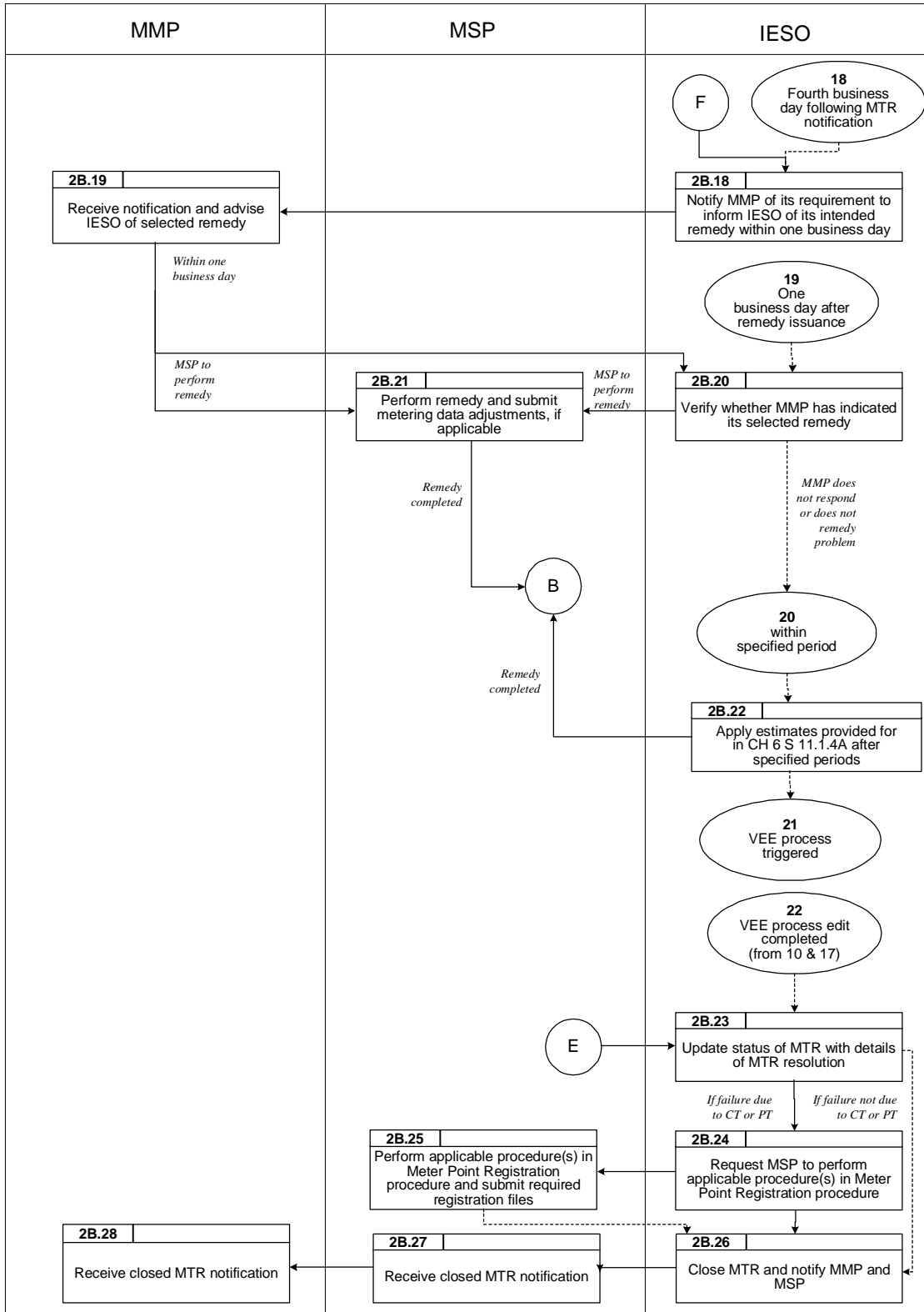


Figure 2–2: Work Flow for Meter Trouble Reports (continued)

2.3 Quarantining a Meter

The following diagram represents the flow of work and information related quarantining a meter. The steps shown in the following chart are described in detail in Section 3, Table 3-3.

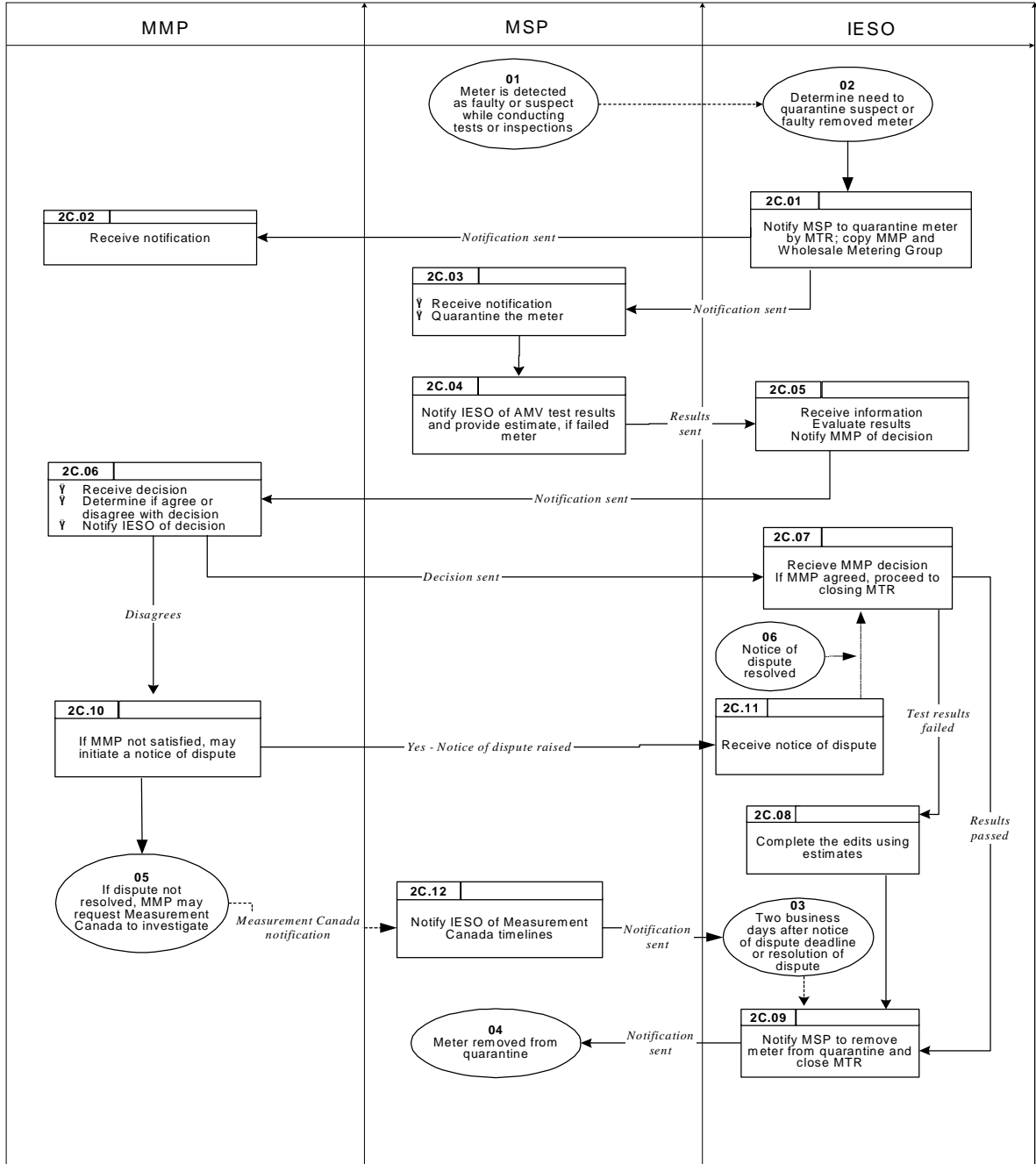


Figure 2-3: Work Flow for Quarantining a Meter

2.4 Submitting Physical Allocation Data (PAD)

The following diagram represents the flow of work and information between the *IESO* and *metered market participants* related to submitting *physical allocation data (PAD)*.

The steps shown in the following chart are described in detail in Section 3, Table 3-4.

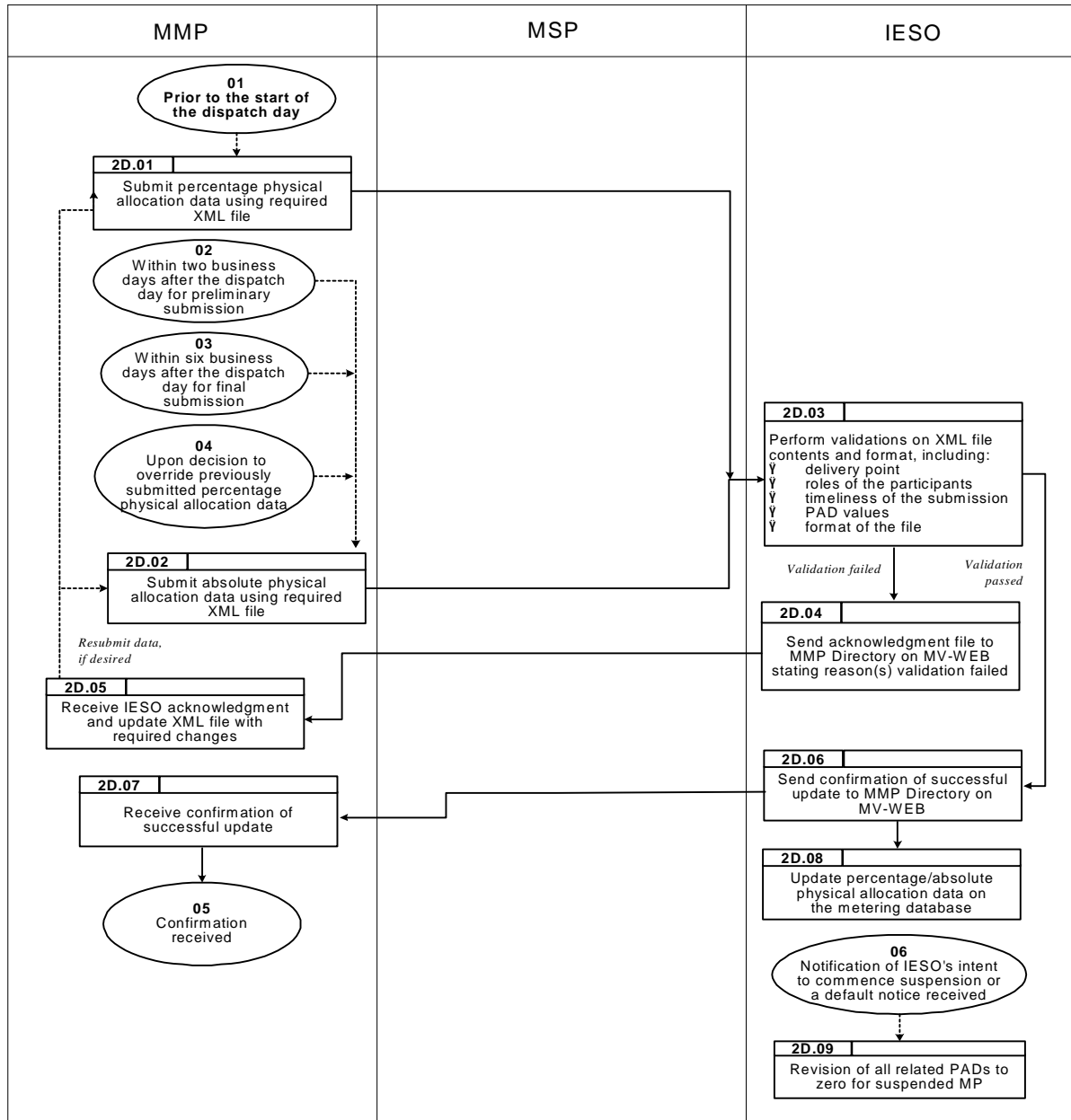


Figure 2–4: Work Flow for Submitting Physical Allocation Data (PAD)

2.5 Managing the Effect of Power Switching on Metering Data

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 the effect of power switching operations on *metering data*.

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

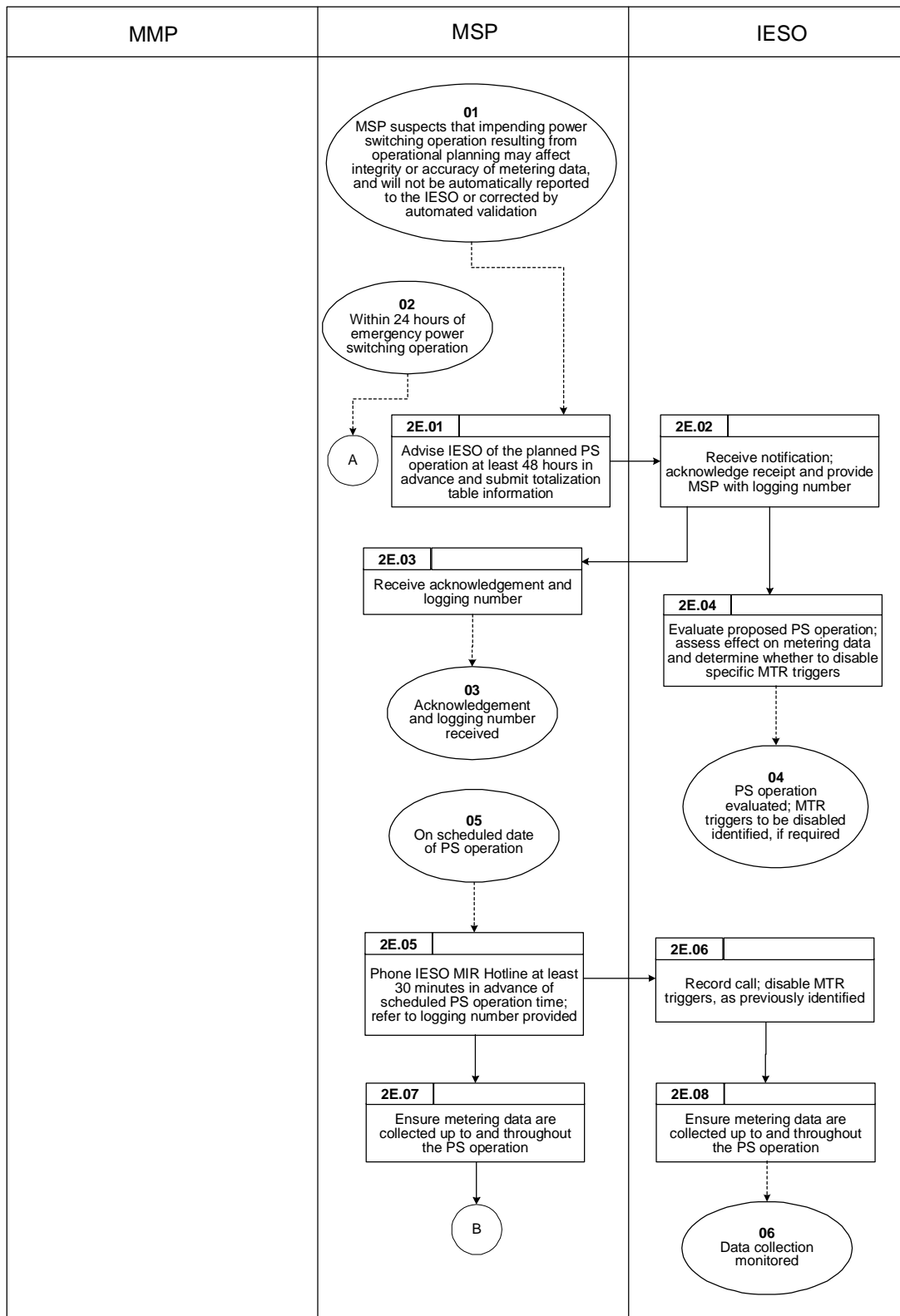


Figure 2-5: Work Flow for Managing the Effect of Power Switching (PS) Operations on Metering Data

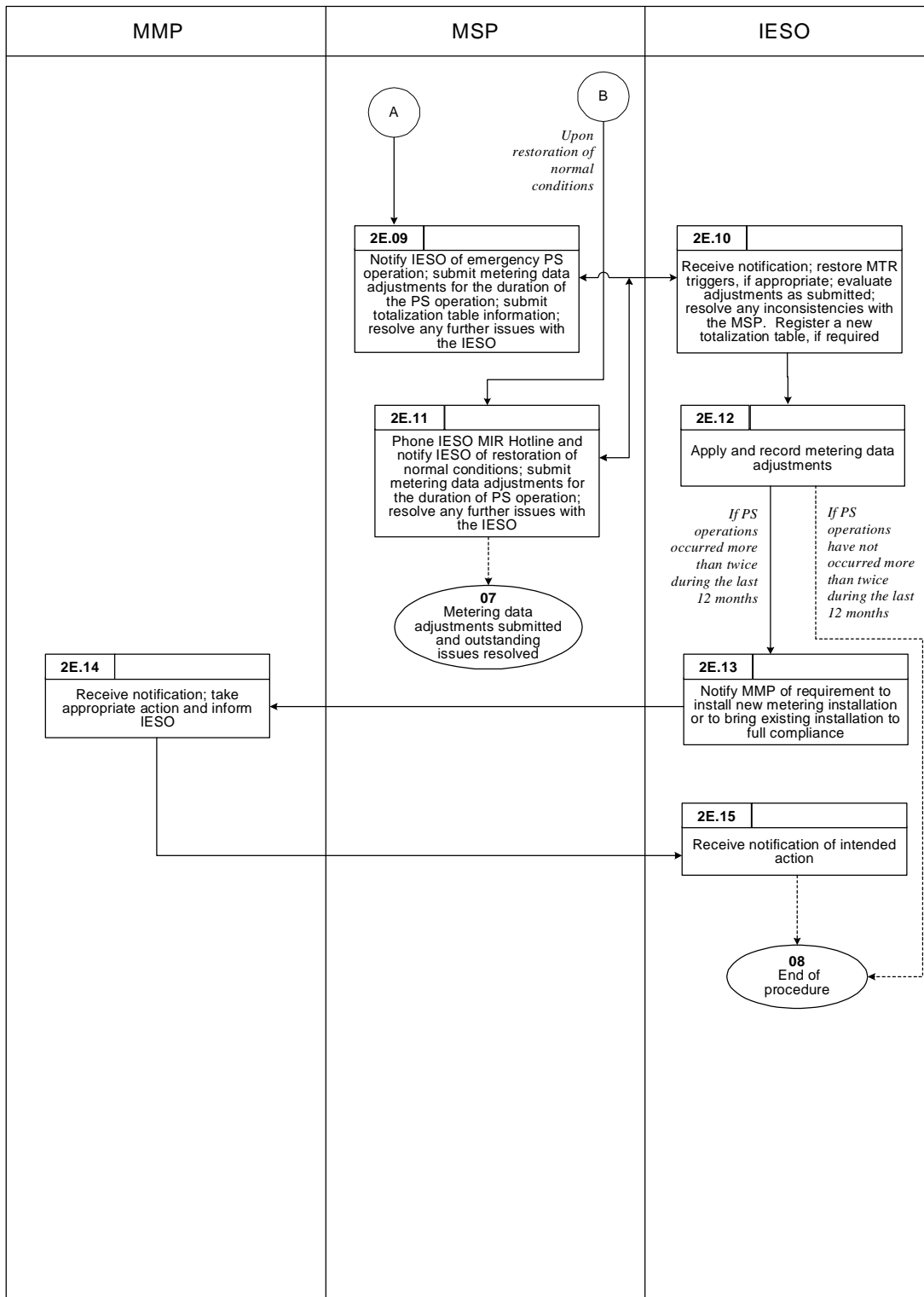


Figure 2–5: Work Flow for Managing the Effect of Power Switching (PS) Operations on Metering Data (continued)

– End of Section –

3. Procedural Steps

This section contains detail on the tasks (steps) that comprise the data collection and validation procedure. The tasks in the following tables are illustrated in Section 2.

The tables contain 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 Metering Data Validation, Estimation, and Editing (VEE)

The following table details the flow of work and information related to *metering data* validation, estimation, and editing between the *IESO*, *metering service providers* and *metered market participants*. This is an internal process to the *IESO* that is provided for information.

The steps in the following table are illustrated in Section 2.1, Figure 2-1.

Table 3–1: Metering Data Validation, Estimation, and Editing (VEE)

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.01	Investigate error source.	The <i>IESO</i> investigates the source of an error in the <i>metering data</i> identified during the Commercial Reconciliation process.	Upon identification of an error in the <i>metering data</i> during the Commercial Reconciliation process.	None.	None.	Error source investigated by the <i>IESO</i> .
2A.02	Correct error.	The <i>IESO</i> corrects the error discovered during the Commercial Reconciliation process.	Following Step 2A.01, if meter trouble report not required.	None.	None.	Error corrected internally by the <i>IESO</i> .
2A.03	Perform applicable validation as per Appendix B.	The <i>meter</i> data collection application automatically validates the <i>metering data</i> . If the <i>metering data</i> pass validation, the <i>IESO</i> proceeds to Step 2A.07. If the <i>metering data</i> fail validation the <i>IESO</i> proceeds to Step 2A.04.	Upon collection of the interrogation readings from <i>metering installations</i> at each <i>metering interval</i> .	None.	None.	<i>Metering data</i> validated by the <i>meter</i> data collection application.

Table 3–1: Metering Data Validation, Estimation, and Editing (VEE)

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.04	Estimate, substitute or retain, <i>metering data</i> as described in Appendix C, and initiate meter trouble report.	The <i>IESO</i> issues a meter trouble report to the <i>metering service provider</i> for <i>metering data</i> that fail validation. The validation failure type and the <i>Meter Point ID</i> form the basis of the meter trouble report. The <i>IESO</i> also notifies the <i>metered market participant</i> of the meter trouble report issued to the <i>metering service provider</i> . Details of this step are provided in Section 3.2, "Meter Trouble Reports". See Appendix C for a description of MV-90 actions when <i>metering data</i> fail validation.	Upon <i>metering data</i> failure of validations conducted in Step 2A.03.	Meter trouble report.	See Section 3.2, "Meter Trouble Reports". See Appendix C for a description of MV-90 actions when <i>metering data</i> fail validation.	MV-90 <i>response to metering data</i> that fails validation. Meter trouble report issued to the <i>metering service provider</i> and estimated data sent to the <i>metered market participant</i> .
2A.05	Perform edits based on meter trouble report findings as per Appendix D.	The <i>IESO</i> performs edits on the <i>metering data</i> as per Appendix D.	Upon determination in Step 2A.04 that the meter trouble report was resolved within applicable periods.	None.	None.	Edits performed on data that failed validation.

Table 3–1: Metering Data Validation, Estimation, and Editing (VEE)

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.06	Estimate <i>metering data</i> as provided in CH 6 S 11.1.4 until meter trouble report resolved to <i>IESO</i> satisfaction.	The <i>IESO</i> begins to estimate the <i>metering data</i> with estimates provided for in CH 6 S 11.1.4 until the meter trouble report is resolved to the <i>IESO's</i> satisfaction.	Upon determination in Step 2A.05 that the meter trouble report was not resolved within applicable periods.	None.	None.	<i>IESO</i> begins estimates provided for in CH 6 S 11.1.4.
2A.07	Submit <i>metering data</i> to the <i>metering database</i> .	MV-90 submits the <i>metering data</i> to the <i>metering database</i> where it is available for totalization in MV-WEB.	After step 2A.03, 2A.05, or 2A.06.	None.	None.	VEE procedure completed.

3.2 Meter Trouble Reports

The following table details the flow of work and information related to the issuing, tracking and resolution of meter trouble reports between the *IESO*, *metering service providers* and *metered market participants*.

The steps in the following table are illustrated in Section 2.2, Figure 2-2.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.01	Request <i>IESO</i> perform <i>meter</i> audit (see "Market Manual Metering, Part 3.9: Conformance Monitoring") or ask <i>metering service provider</i> to investigate problem.	The <i>metered market participant</i> either requests that the <i>IESO</i> perform an audit of the <i>metering installation</i> (as set out in "Market Manual Metering, Part 3.9: Conformance Monitoring") or instructs its <i>metering service provider</i> to investigate the problem.	Upon suspicion by the <i>metered market participant</i> that the <i>metering data</i> are incorrect.	If audit required: <i>Request for Meter Audit</i> . <i>Metering service provider</i> instructed to investigate.	As cited in "Market Manual 3: Metering, Part 3.9: Conformance Monitoring".	<ul style="list-style-type: none"> • Audit requested of <i>IESO</i> or <i>metering service provider</i> instructed to investigate problem. • Audit report produced.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.02	Inform <i>IESO</i> of problem at <i>metering installation</i> .	The <i>metering service provider</i> informs the <i>IESO</i> of a problem discovered at a <i>metering installation</i> . <i>Metering service providers</i> may discover problems at <i>metering installations</i> during normal service activities, such as maintenance or seal changes, or be informed of a problem by a <i>metered market participant</i> .	Within one <i>business day</i> of a discovery by (or notification to) the <i>metering service provider</i> of a problem at a <i>metering installation</i> .	Request for meter trouble report.	If urgent, the <i>metering service provider</i> phones the <i>IESO</i> to report the problem. In all cases the <i>metering service provider</i> sends an email addressed to MeterTR@ieso.ca giving details of the problem at the <i>metering installation</i> .	Request for meter trouble report submitted to the <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.03	Review request to issue a meter trouble report and determine whether meter trouble report is required.	<p>The <i>IESO</i> reviews the results of the <i>metering data</i> audit submitted by the <i>metered market participant</i> or the problem at the <i>metering installation</i> reported by the <i>metering service provider</i> and determines whether a meter trouble report is warranted.</p> <p>If a meter trouble report is warranted, the <i>IESO</i> proceeds to Step 2B.04.</p> <p>If a meter trouble report is not warranted, the <i>IESO</i> logs the actions taken to address the reported problem and the reasons for not issuing a meter trouble report and notifies the <i>metering service provider</i> and <i>metered market participant</i> of its decision.</p>	Upon receipt of a request for a meter trouble report from a <i>metered market participant</i> or <i>metering service provider</i> or, upon identification of an error in the <i>metering data</i> during the Commercial Reconciliation process.	Details for meter trouble report or arguments to justify why it will not be issued.	<i>IESO</i> staff exercise their judgment re: the results of the Data Audit Report or details of the problem at the <i>metering installation</i> .	Decision as to whether meter trouble report is warranted and actions logged.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.04	Generate, log and send meter trouble report to <i>metering service provider</i> and notify <i>metered market participant</i> .	The <i>IESO</i> generates, logs, and sends the meter trouble report to the <i>metering service provider</i> and notifies the <i>metered market participant</i> of the meter trouble report.	<p>Upon a determination in Step 2B.03 that a meter trouble report is warranted.</p> <p>Upon failing <i>VEE process</i> validations (from Step 2A.02).</p> <p>Upon failure of the <i>metering data</i> collection application to communicate with a <i>metering installation</i>; or, upon failure to receive <i>metering data</i> from a <i>check meter</i>.</p> <p>Upon identification of a problem at a <i>metering installation</i> through performance monitoring.</p> <p>Upon failure of an audit by a <i>metering installation</i> or upon determination that a <i>meter</i> is not compliant with requirements.</p>	Data required to complete the fields of a Meter Trouble Report form. Issue it to the <i>metering service provider</i> for resolution, and notify the <i>metered market participant</i> .	<p>Automatic completion and issue via Internet of a Meter Trouble Report form for a selection of Communication or Validation Failures;</p> <p style="text-align: center;">Or</p> <p>Automatic completion and manual issue via Internet of the meter trouble report form for a selection of Communication or Validation Failures;</p> <p style="text-align: center;">Or</p> <p>Manual completion and issue via Internet of the meter trouble report form for reports of failed Data Audits, problems at a <i>metering installation</i>, non compliant <i>meters</i>, CR data discrepancies.</p>	Meter trouble report generated, logged, and sent to the <i>metering service provider</i> and the <i>metered market participant</i> is notified.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.05	Receive and open meter trouble report. Acknowledge meter trouble report receipt.	The <i>metering service provider</i> receives and opens the meter trouble report, sends to <i>IESO</i> an acknowledgement of <i>meter trouble report receipt</i> by 15:00 EST on the next <i>business day</i> following meter trouble report issue.	Following Step 2B.04.	Acknowledgement of meter trouble report Receipt.	The <i>metering service provider</i> : <ul style="list-style-type: none"> receives meter trouble report form via Internet; checks the box "Acknowledge Receipt". 	Meter trouble report received and opened by <i>metering service provider</i> . Acknowledgement of meter trouble report Receipt checked.
2B.06	Verify whether <i>metering service provider</i> received and opened the meter trouble report.	The <i>IESO</i> verifies whether the <i>metering service provider</i> received and opened the meter trouble report, and records result for Performance Monitoring.	Following Step 2B.05 or after 15:00 EST on the next <i>business day</i> following meter trouble report notification.	Late acknowledgement, if applicable.	If applicable, <i>Late Acknowledgement</i> message displayed on <i>IESO</i> system.	Receipt status confirmed by <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.07	Determine whether meter trouble report due to failure of CT or PT.	<p>The <i>metering service provider</i> determines whether the meter trouble report is due to the failure of a current transformer (CT) or a potential transformer (PT).</p> <p>If the meter trouble report is due to the failure of a CT or PT, the <i>metering service provider</i> proceeds to Step 2B.08.</p> <p>If the meter trouble report is not due to the failure of a CT or PT, the <i>metering service provider</i> proceeds to Step 2B.09.</p>	Following Step 2B.05.	None.	The <i>metering service provider</i> conducts its own investigation.	Determination rendered as to whether meter trouble report is due to failure of CT or PT.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.08	Implement <i>Emergency Instrument Transformer</i> Restoration Plan (EITRP) within two <i>business days</i> of meter trouble report notification, notify <i>IESO</i> of the implemented plan, and perform applicable registration procedure.	The <i>metering service provider</i> implements an <i>Emergency Instrument Transformer</i> Restoration plan (EITRP) to remedy the meter trouble report within two <i>business days</i> of meter trouble report notification, notifies the <i>IESO</i> of the implemented plan, and performs the applicable registration procedure. The EITRP must remain in place until the CT or PT is replaced.	Within two days of determining in Step 2B.07 that meter trouble report is due to the failure of a CT or PT.	Notification of Implementation of EITRP.	<ul style="list-style-type: none"> The <i>metering service provider</i> selects "Yes" in boxes. "Failure Type is PT or CT?" & "EITRP Implemented" attaches pertinent information if required and returns the meter trouble report form to the <i>IESO</i> via Internet. The <i>metering service provider</i> phones the <i>IESO</i> Metering Group, then sends an email to MeterTR@ieso.ca with pertinent registration details. 	<i>Emergency Instrument Transformer</i> Restoration Plan implemented and applicable registration procedure performed by the <i>metering service provider</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.09	Resolve meter trouble report, submit meter trouble report resolution report, and <i>metering data</i> adjustments, if applicable.	The <i>metering service provider</i> resolves the meter trouble report and submits the actions taken to resolve the meter trouble report to the <i>IESO</i> . The <i>metering service provider</i> may also submit <i>metering data</i> adjustments to the <i>IESO</i> , if applicable.	Within two days of determining in Step 2B.07 that meter trouble report is not due to the failure of a CT or PT.	Meter trouble report resolution report and <i>metering data</i> adjustments, if applicable.	<ul style="list-style-type: none"> The <i>metering service provider</i>: Completes the "MTR Resolution Report" in the Meter Trouble Report form, attaches pertinent information, If applicable, selects "Yes" in the box "<i>Metering Data</i> Adjustments" submits proposed data adjustments and justification, Returns Meter Trouble Report form to the <i>IESO</i> via Internet. 	Meter trouble report resolved and Meter Trouble Report resolution report and, if required, applicable <i>metering data</i> adjustments submitted to the <i>IESO</i> .
2B.10	Verify whether <i>metering service provider</i> satisfactorily resolved meter trouble report or notification of EITRP implementation	The <i>IESO</i> verifies whether the <i>metering service provider</i> satisfactorily resolved the meter trouble report or whether the <i>metering service provider</i> submitted a notification to the <i>IESO</i> of the implemented <i>Emergency</i>	Following Steps 2B.08 or 2B.09, and within two days following issuance of meter trouble report.	None.	<i>IESO</i> check <i>metering service provider's</i> "MTR Resolution Report" in Meter Trouble Report form: <ul style="list-style-type: none"> If <i>metering service provider</i> reports that problem has been fixed, <i>IESO</i> 	Verification of meter trouble report resolution or <i>Emergency Instrument Transformer Restoration Plan</i> submission completed.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
	submitted.	<p><i>Instrument Transformer Restoration Plan.</i></p> <p>If the meter trouble report is resolved, the <i>IESO</i> proceeds to Step 2B.13.</p> <p>If the meter trouble report is not resolved (and an EITRP notification has not been submitted), the <i>IESO</i> proceeds to Step 2B.16.</p> <p>If the <i>metering service provider</i> submitted an EITRP, the <i>IESO</i> proceeds to Step 2B.12.</p> <p>If the meter trouble report requires that the <i>meter</i> be quarantined, the Quarantine <i>Meter</i> process is followed.</p>			<p>verifies that the original cause of problem does not persist and <i>metering service provider</i> has provided accurate, accessible, complete information,</p> <p style="text-align: center;">or</p> <ul style="list-style-type: none"> • If <i>metering service provider</i> has selected "Yes" in boxes. "Failure Type is PT or CT?" and "EITRP Implemented" of the Meter Trouble Report form, <i>IESO</i> verifies that <i>meter Quarantine</i> and re-registration have processes have been initiated. 	

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.11	Resolve meter trouble report, submit meter trouble report resolution report, and <i>metering data</i> adjustments, if applicable.	The <i>metering service provider</i> resolves the meter trouble report and submits a report documenting the actions taken to resolve the meter trouble report to the <i>IESO</i> . The <i>metering service provider</i> may also submit <i>metering data</i> adjustments to the <i>IESO</i> , if applicable.	Following Step 2B.08, within twelve weeks of meter trouble report notification.	Meter Trouble Report resolution report, and <i>metering data</i> adjustments, if applicable, duly justified by the <i>metering service provider</i>	The <i>metering service provider</i> <ul style="list-style-type: none"> • Completes the "MTR Resolution Report" in the Meter Trouble Report form, attaches pertinent information, • If applicable, selects "Yes" in the box "Metering Data Adjustments" submits proposed data adjustments and justification, • Returns Meter Trouble Report form to the <i>IESO</i> via Internet. 	Meter trouble report resolved and Meter Trouble Report resolution report and applicable <i>metering data</i> adjustments submitted to the <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.12	Determine whether meter trouble report resolved within twelve weeks of meter trouble report notification.	<p>The <i>IESO</i> determines whether the meter trouble report was resolved within twelve weeks of meter trouble report notification.</p> <p>If the meter trouble report was resolved, the <i>IESO</i> proceeds to Step 2B.13.</p> <p>If the meter trouble report was not resolved, the <i>IESO</i> proceeds to Step 2B.16.</p>	Following Step 2B.10 and within twelve weeks of determining in Step 2B.07 that meter trouble report is due to the failure of a CT or PT.	None.	<p><i>IESO</i> check metering service provider's "MTR Resolution Report" in Meter Trouble Report form:</p> <ul style="list-style-type: none"> • If <i>metering service provider</i> reports that problem has been fixed, <i>IESO</i> verifies that the original cause of problem does not persist and <i>metering service provider</i> has provided accurate, accessible, complete information; and • Re-registration process has been initiated. 	Determination rendered as to whether meter trouble report was resolved within twelve weeks of notification.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.13	Determine whether <i>metering data</i> adjustments were recommended.	<p>The <i>IESO</i> determines whether the <i>metering service provider</i> recommended any adjustments to the <i>metering data</i>.</p> <p>If <i>metering data</i> adjustments were recommended, the <i>IESO</i> proceeds to Step 2B.14.</p> <p>If <i>metering data</i> adjustments were not recommended, the <i>IESO</i> proceeds to the <i>VEE process</i> described in Figure 2-1.</p>	<p>Upon determination in Step 2B.10 that meter trouble report was resolved; or</p> <p>upon determination in Step 2B.12 that meter trouble report was resolved; or</p> <p>following resolution of meter trouble report in Step 2B.17; or</p> <p>after remedy performed by <i>metering service provider</i> in Step 2B.21.</p>	None.	<i>IESO</i> checks "MTR Resolution Report" submitted by <i>metering service provider</i> in the Meter Trouble Report form, and verifies "Yes/No" selection by <i>metering service provider</i> in "Metering Data Adjustments" box.	Determination rendered as to whether the <i>metering service provider</i> recommended metering data adjustments.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.14	Evaluate recommended adjustments in consultation with <i>metering service provider</i> Agree to and record final values.	The <i>IESO</i> evaluates the recommended adjustments submitted by the <i>metering service provider</i> and, if clarifications are required, consults the <i>metering service provider</i> , and records final values.	Upon determination in Step 2B.13 that the <i>metering service provider</i> submitted <i>metering data</i> adjustments.	Proposed adjustments and final values.	<i>IESO</i> staff assess proposed adjustments and justifications, verify that <ul style="list-style-type: none"> Adjusted data are comparable to data collected before and after failure and to previous load patterns, Values are within nameplate rating of power transformers, Adjustments are supported by operations data, "as found" and "as left" readings. 	Final adjustment values agreed to and recorded by the <i>IESO</i> .
2B.15	Respond to clarifications from the <i>IESO</i> regarding recommended adjustments.	The <i>metering service provider</i> responds to clarifications from the <i>IESO</i> regarding the recommended adjustments.	Following Step 2B.14.	Clarifications regarding recommended adjustments.	Telephone conversations, followed by emails to record exchanges and agreed adjustment values.	Clarifications responded to by the <i>metering service provider</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.16	Determine whether malfunction/defect will have a significant impact on other <i>market participants</i> .	<p>Where an <i>metering service provider</i> does not:</p> <ul style="list-style-type: none"> • resolve a meter trouble report within two <i>business days</i>; • implement an <i>Emergency Restoration Plan</i> within two <i>business days</i> of notification of a CT/PT failure; or • install and register a new PT or CT, as required, within twelve weeks of meter trouble report notification, <p>the <i>IESO</i> assesses the potential impacts/risks for other <i>market participants</i>. The <i>IESO</i> assumes that the unresolved malfunction/defect has a significant impact on other <i>market participants</i> unless it is determined that the <i>metering data</i> affected are not significant.</p> <p>If the unresolved meter</p>	Upon determination in Step 2B.12 that the <i>metering service provider</i> has not satisfactorily resolved the meter trouble report; or, upon determination in Step 2B.10 that the <i>metering service provider</i> has not satisfactorily resolved the meter trouble report.	None.	By default, late meter trouble reports have a significant impact on other <i>market participants</i> . Exceptions are determined by the <i>IESO</i> .	Determination rendered as to whether malfunction/defect will have a significant impact on other <i>market participants</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
		<p>trouble report does not have a significant impact on other <i>market participants</i>, the <i>IESO</i> awaits resolution of the meter trouble report by the <i>metering service provider</i> (Step 2B.17).</p> <p>If the unresolved meter trouble report will have a significant impact on other <i>market participants</i>, the <i>IESO</i> proceeds to Step 2B.18.</p>				

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.17	Submit meter trouble report resolution report, and <i>metering data</i> adjustments, if applicable.	The <i>metering service provider</i> resolves the meter trouble report and submits a report documenting the actions taken to resolve the meter trouble report to the <i>IESO</i> . The <i>metering service provider</i> may also submit <i>metering data</i> adjustments to the <i>IESO</i> , if applicable.	Following resolution of outstanding meter trouble report, previously assessed to not impact other <i>market participants</i> .	Meter Trouble Report resolution report and <i>metering data</i> adjustments, if applicable.	The <i>metering service provider</i> : <ul style="list-style-type: none"> • Completes the "MTR Resolution Report" in the Meter Trouble Report form, attaches pertinent information, • If applicable, selects "Yes" in the box "Metering Data Adjustments" submits proposed data adjustments and justification, • Returns meter trouble report form to the <i>IESO</i> via Internet. 	Meter trouble report resolved and Meter Trouble Report resolution report and applicable <i>metering data</i> adjustments submitted to the <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.18	Notify <i>metered market participant</i> of its requirements to inform <i>IESO</i> of its intended remedy within one <i>business day</i> .	<p>The <i>IESO</i> sends a notification letter to the <i>metered market participant</i>, indicating that:</p> <ul style="list-style-type: none"> the <i>metered market participant</i> must advise the <i>IESO</i> whether its <i>metering service provider</i> will rectify the problem; the <i>metered market participant</i> must respond to the notification within one <i>business day</i>. 	On fourth <i>business day</i> following meter trouble report notification.	Notification letter.	Email to <i>metered market participant</i> .	Notification sent to the <i>metered market participant</i> .
2B.19	Receive notification and advise <i>IESO</i> of selected remedy.	The <i>metered market participant</i> receives the notification from the <i>IESO</i> .	Within one <i>business day</i> of Step 2B.18.	Proposed remedy for meter trouble report.	<i>Metered market participant</i> completes appropriate section of the notification form, sends it to <i>IESO</i> via Internet.	Notification received by the <i>metered market participant</i> and selected remedy for meter trouble report communicated to the <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.20	Verify whether <i>metered market participant</i> has indicated its selected remedy.	<p>The <i>IESO</i> verifies whether the <i>metered market participant</i> has communicated its selected remedy to the <i>IESO</i> within one <i>business day</i>.</p> <p>If the <i>metered market participant</i> has responded and has chosen to rectify the problem, the <i>metering service provider</i> proceeds to Step 2B.21.</p> <p>If the <i>metered market participant</i> has not responded within three <i>business days</i> of receiving the notification, or fails to rectify the problem within three <i>business days</i> of receiving the notification, the <i>IESO</i> proceeds to Step 2B.22.</p>	One <i>business day</i> after notice issued in Step 2B.18.	None.	<ul style="list-style-type: none"> • <i>IESO</i> Reviews Meter Trouble Report form, • If applicable, <i>Late Response</i> message displayed on <i>IESO</i>'s system. 	Determination rendered as to whether <i>metered market participant</i> has communicated its selected remedy to the <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.21	Perform remedy and submit <i>metering data</i> adjustments, if applicable.	<p>The <i>metering service provider</i> performs its selected remedy submits <i>metering data</i> adjustments, if applicable.</p> <p>If the remedy is performed within the agreed period, the <i>IESO</i> proceeds to Step 2B.13.</p> <p>If the remedy is not performed within the agreed period, the <i>IESO</i> will apply the data estimates in Step 2B.22.</p>	Following determination in Step 2B.20 that the <i>metering service provider</i> will perform the remedy within the required timeframe.	Meter Trouble Report resolution report and <i>metering data</i> adjustments, if applicable.	<p>The <i>metering service provider</i>:</p> <ul style="list-style-type: none"> • Completes the "MTR Resolution Report" in the Meter Trouble Report form, attaches pertinent information, • If applicable, selects "Yes" in the box "<i>Metering Data</i> Adjustments" submits proposed data adjustments and justification, • Returns Meter Trouble Report form to the <i>IESO</i> via Internet. 	Meter trouble report resolved and Meter Trouble Report resolution report and applicable <i>metering data</i> adjustments submitted to the <i>IESO</i> .

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.22	Apply estimates provided for in CH 6 S 11.1.4A after specified periods.	The <i>IESO</i> applies estimates provided for in CH 6 S 11.1.4A after specified periods and proceeds to the <i>VEE process</i> illustrated in Figure 2–1. These estimates are applied until the meter trouble report is resolved to the <i>IESO's</i> satisfaction.	Upon failure of <i>metering service provider</i> to perform remedy within specified periods.	Estimates provided for in CH 6 S 11.1.4A.	<i>IESO</i> calculates and applies estimates per Chapter 6, S. 11.1.1.4A for Preliminary Statement of Trade Days from the <i>business day</i> Pre-Meter Trouble Report until the meter trouble report is resolved to its satisfaction.	Estimates applied.
2B.23	Update status of meter trouble report with details of resolution.	The <i>IESO</i> logs the status of the meter trouble report and the details of its resolution. If the failure was due to a CT or PT, the <i>IESO</i> proceeds to Step 2B.24. If the failure was not due to a CT or PT, the <i>IESO</i> closes the meter trouble report.	Following Steps 2B.14; or upon completion of <i>VEE process</i> edit (ovals 10 and 17).	None.	Entries in Meter Trouble Report form.	Meter trouble report status updated.

Table 3–2: Procedural Steps for Meter Trouble Reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.24	Request <i>metering service provider</i> to perform applicable procedure(s) in "Market Manual 3: Metering, Part 3.2: Meter Point Registration".	The <i>IESO</i> requests the <i>metering service provider</i> to perform the applicable procedure(s) in the "Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance".	Following Step 2B.23, where the problem was a result of a failure of a CT or PT.	Request to <i>metering service provider</i> .	Notification by meter trouble report.	Request sent to <i>metering service provider</i> .
2B.25	Perform applicable procedure(s) in "Market Manual 3: Metering, Part 3.2: Meter Point Registration" and submit required registration files.	The <i>metering service provider</i> performs the applicable procedure(s) in "Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance" and submits the required registration files to the <i>IESO</i> .	Following Step 2B.24.	Required registration files.	As cited in "Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance".	Applicable "Changes to <i>Metering installation Registration</i> " sub-procedure conducted and required registration files submitted to the <i>IESO</i> .
2B.26	Close meter trouble report and notify <i>metered market participant</i> and <i>metering service provider</i> .	The <i>IESO</i> sends a notification to the <i>metered market participant</i> and the <i>metering service provider</i> once it is satisfied that the meter trouble report has been successfully closed.	Following Step 2B.24 or 2B.25, as applicable.			<i>Metered market participant</i> and <i>metering service provider</i> receive notification from <i>IESO</i> that meter trouble report is formally closed.

3.3 Quarantining a Meter

The following table details the flow of work and information related to the quarantining a *meter*.

The steps in the following table are illustrated in Section 2.3, Figure 2-3.

Table 3–3: Procedural Steps for Quarantining a Meter

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.01	Notify <i>metering service provider</i> to quarantine <i>meter</i> by meter trouble report; copy Wholesale Metering Group.	<i>IESO</i> requests <i>metering service provider</i> to perform applicable procedure from "Market Manual Part 3.9 Conformance Monitoring, Section 2.3". Notify the Wholesale Metering Group of this event.	Upon the discovery that a <i>meter</i> is measuring <i>energy</i> incorrectly.	Request to <i>metering service provider</i> .	Notification by meter trouble report.	Meter trouble report updated. Wholesale Metering Group notified.
2C.02	Receive notification.	<i>Metered market participant</i> receives quarantine notification.	Following 2C.01.		Notification by meter trouble report.	<i>Metered market participant</i> notified of quarantined <i>meter</i> .
2C.03	<ul style="list-style-type: none"> • Receive notification. • Quarantine the <i>meter</i>. 	<i>Metering service provider</i> receives quarantine notification and places <i>meter</i> in quarantine.	Notification received and <i>meter</i> placed in quarantine.	Quarantined <i>meter</i> .	Notification by meter trouble report.	Notification received by the <i>metering service provider</i> and <i>meter</i> quarantined.
2C.04	Notify <i>IESO</i> of accredited meter verifier's test results and provide estimate, if failed <i>meter</i> .	Accredited meter verifier has conducted tests and submitted them to the <i>metering service provider</i> , who, in turn, submits the test results and estimates of data, as required, to the <i>IESO</i> .	After the meter has been placed in quarantine.	Test results and estimate, if failed <i>meter</i> .	Information attached to meter trouble report by <i>metering service provider</i> .	Test results and estimates sent to <i>IESO</i> .

Table 3–3: Procedural Steps for Quarantining a Meter

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.05	Receive information. Evaluate results. Notify <i>metered market participant</i> of decision.	The <i>IESO</i> receives the test results and any estimates from the <i>metering service provider</i> . The results are evaluated and a decision is made concerning entries for the <i>metering data</i> . This decision is communicated to the <i>metered market participant</i> .	Following receipt of the <i>metering service provider</i> submission.	Decision concerning correct <i>metering data</i> .	Email.	<i>Metered market participant</i> notified of <i>IESO</i> decision.
2C.06	<ul style="list-style-type: none"> • Receive decision. • Determine if agree or disagree with decision. • Notify <i>IESO</i> of decision. 	<i>Metered market participant</i> receives <i>IESO</i> decision; makes an assessment of whether there is agreement or disagreement with the decision and notifies the <i>IESO</i> of their decision.	Following 2C.05.	<i>Metered market participant</i> agreed or disagreed with the <i>IESO</i> decision.	Email.	Decision sent to <i>IESO</i> .
2C.07	Receive <i>metered market participant</i> decision. If <i>metered market participant</i> agreed, proceed to closing the meter trouble report.	The <i>IESO</i> receives decision from the <i>metered market participant</i> as to whether the <i>IESO</i> decision is accepted or not.	Upon receiving <i>metered market participant</i> decision.	Notification of decision.	Email.	<i>IESO</i> notified of <i>metered market participant</i> decision. If <i>metered market participant</i> agreed with the <i>IESO</i> decision, proceed to 2C.08 and .09.
2C.08	Complete the edits using estimates.	The <i>meter</i> failed the accredited meter verifier's tests and the <i>metering data</i> requires estimates.	<i>Meter</i> failure required estimate.	<i>Metering data</i> updated.	Data estimated or retained. Meter trouble report.	Edits to <i>metering data</i> completed.

Table 3–3: Procedural Steps for Quarantining a Meter

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.09	Notify the <i>metering service provider</i> to remove <i>meter</i> from quarantine and close meter trouble report.	<i>IESO</i> updates meter trouble report instructing the <i>metering service provider</i> to remove <i>meter</i> from quarantine. The meter trouble report is closed.	Trigger at two <i>business days</i> after the <i>notice of dispute</i> deadline or a dispute has been resolved.	Removal notification sent.	Meter trouble report.	Approval to remove the <i>meter</i> from quarantine sent to <i>metering service provider</i> . Meter trouble report is closed.
2C.10	If <i>metered market participant</i> is not satisfied, may initiate <i>notice of dispute</i> .	If the <i>metered market participant</i> is not satisfied with the <i>IESO</i> decision, a <i>notice of dispute</i> may be initiated. If the <i>metered market participant</i> decides to initiate a <i>notice of dispute</i> , it is initiated according to "Market Manual Part 2.1 Dispute Resolution".	Following 2C.06.	<i>Notice of dispute</i> .		<i>Notice of dispute</i> initiated.
2C.11	Receive <i>notice of dispute</i> .	The <i>metered market participant</i> initiated a <i>notice of dispute</i> and it is received by the <i>IESO</i> .	Following 2C.10.			Receipt of <i>notice of dispute</i> .

Table 3–3: Procedural Steps for Quarantining a Meter

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.12	Notify <i>IESO</i> of Measurement Canada timelines.	If the dispute has not been resolved with the <i>IESO</i> the <i>metered market participant</i> may request Measurement Canada to investigate. Measurement Canada will inform the <i>metering service provider</i> of the timelines for the quarantined <i>meter</i> . The <i>metering service provider</i> sends notification to the <i>IESO</i> .	Following Measurement Canada informing the <i>metering service provider</i> of the timelines for the quarantined <i>meter</i> .	End date for quarantined <i>meter</i> .	Meter trouble report.	Notification sent.

3.4 Submitting Physical Allocation Data (PAD)

The following table details the flow of work and information between the *IESO* and *metered market participants* related to submitting *physical allocation data* (PAD).

The steps in the following table are illustrated in Section 2.4, Figure 2-4.

Table 3–4: Procedural Steps for Submitting Physical Allocation Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2D.01	Submit percentage <i>physical allocation data</i> using required XML file.	<p>The <i>metered market participant</i> submits percentage <i>physical allocation data</i> to the <i>IESO</i> using the required XML file (see Step 2D.02 for absolute allocations).</p> <p>See Appendix E, "Sample XML File".</p> <p>Percentage <i>physical allocation data</i> can be established as "standing data" or for a specific time interval. Standing allocations are ongoing, whereas interval allocations have a start date and end date.</p>	<p>Prior to the start of the <i>dispatch day</i>.</p> <p>Percentage allocations submitted after this time cause the <i>physical allocation data</i> submission to be rejected.</p>	<p>Data file containing percentage factors indicating the fraction of <i>delivery point metering data</i> that is to be allocated to each <i>market participant</i> in each <i>metering interval</i>.</p> <p>Standing declaration of <i>delivery point metering data</i> allocation (where all <i>delivery point metering data</i> is allocated to a single <i>market participant</i>).</p>	<p>The XML file is imported from the <i>metered market participant's</i> directory in MV-WEB into MV-STAR. See Appendix E, "Sample XML file".</p>	<p>Percentage <i>physical allocation data</i> submitted to the <i>IESO</i>.</p>

Table 3–4: Procedural Steps for Submitting Physical Allocation Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2D.02	Submit absolute <i>physical allocation data</i> using required XML file.	<p>The <i>metered market participant</i> submits absolute <i>physical allocation data</i> using the required XML file.</p> <p>See Appendix E, "Sample XML File".</p> <p>Absolute <i>physical allocation data</i> must be for a specific time interval. Each interval has a start date and time and an end date and time.</p>	<p>Within two <i>business days</i> after the <i>dispatch day</i> (in preliminary form); or, within six <i>business days</i> after the <i>dispatch day</i> (final form); or, upon decision to override previously submitted <i>physical allocation data</i> within this four-<i>business day</i> window.</p> <p>Absolute allocations submitted outside this time period for that <i>dispatch day</i> cause the <i>physical allocation data</i> submission to be rejected.</p>	Data file containing absolute allocation factors indicating the specific amount of <i>delivery point metering data</i> that is to be allocated to each <i>market participant</i> in each <i>metering interval</i> .	The XML file is imported from the <i>metered market participant's</i> directory in MV-WEB into MV-STAR. See Appendix E, 'Sample XML file'.	Absolute <i>physical allocation data</i> submitted to the <i>IESO</i> .
2D.03	MV-STAR performs automatic validation checks on XML file contents and format, including:	<ul style="list-style-type: none"> The <i>IESO</i> validates: the <i>delivery point</i> for the submission, ensuring that the <i>delivery point</i> belongs to the <i>metered market participant</i> making the 	Upon receipt of percentage/absolute physical allocation factors from the <i>metered market</i>	None.	None.	Validations performed on XML file.

Table 3–4: Procedural Steps for Submitting Physical Allocation Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
	<ul style="list-style-type: none"> • <i>delivery point</i>; • roles of the participants; • timeliness of the submission; • <i>physical allocation data</i> values; and • format of the file. 	<p>submission;</p> <ul style="list-style-type: none"> • <i>market participant</i> roles, ensuring that the <i>market participant</i> submitting the <i>physical allocation data</i> factors is a <i>metered market participant</i>, and that the <i>physical allocation data</i> factors were submitted for a <i>market participant</i> defined as a <i>physical allocation data</i> recipient in the PLC system; • the timeliness of the submission, ensuring that percentage <i>physical allocation data</i> was submitted before the <i>dispatch day</i>, preliminary absolute <i>physical allocation data</i> was submitted within two <i>business days</i> after the <i>dispatch day</i> and final absolute <i>physical allocation data</i> was submitted within six <i>business days</i> after the <i>dispatch day</i>; 	<p><i>participant.</i></p>			

Table 3–4: Procedural Steps for Submitting Physical Allocation Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
		<ul style="list-style-type: none"> the percentage <i>physical allocation data</i> values in the submission are non-negative and do not total more than 100%; and the absolute <i>physical allocation data</i> values are not greater than the <i>delivery point</i> values; and the file syntax of the submission, ensuring that the XML file containing <i>physical allocation data</i> values follow proper XML syntax and format. <p>If the data fail the validation checks, proceed to Step 2D.04.</p> <p>If the data pass all validation checks, proceed to Step 2D.06.</p>				
2D.04	Send acknowledgement file to <i>metered market participant</i> directory on MV-WEB stating reason(s) validation failed.	When a <i>physical allocation data</i> submission fails validation, the <i>metering database</i> (MV-STAR) sends an error message to the <i>metered market participant</i> citing the validation check(s) the XML file failed.	Upon failing one or more validation checks in Step 2D.03.	Acknowledgement file.	MV-STAR to MV-WEB.	Message sent to <i>metered market participant</i> directory in MV-WEB stating reason(s) validation failed.

Table 3–4: Procedural Steps for Submitting Physical Allocation Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2D.05	Receive acknowledgement file from MV-STAR (IESO) and update XML file with required changes.	The <i>metered market participant</i> receives an acknowledgement file from MV-STAR (IESO) and updates the XML file with the required changes. Proceed to Step 2D.01 or 2D.02.	Following Step 2D.04.	New (updated) <i>physical allocation data</i> file.	MV-STAR to MV-WEB	<i>MV-STAR (IESO)</i> acknowledgement received and required changes made to XML file.
2D.06	Send confirmation of successful update to <i>metered market participant</i> directory in MV-WEB.	<i>MV-STAR (IESO)</i> sends confirmation of the successful update to the <i>metered market participant</i> directory in MV-WEB.	Following Step 2D.03.	<i>Metered market participant</i> receives confirmation of successful update.	MV-STAR to MV-WEB	Confirmation of successful update sent to <i>metered market participant</i> directory in MV-WEB.
2D.07	Receive confirmation of successful update.	The <i>metered market participant</i> receives confirmation of the successful update via MV-WEB.	Following Step 2D.06.	None.	MV-WEB	Confirmation of successful update received by <i>metered market participant</i> .
2D.08	Update percentage/absolute <i>physical allocation data</i> on the <i>metering database</i> .	MV-STAR (IESO updates <i>physical allocation data</i> factors on the <i>metering database</i>).	Upon passing all validation checks in Step 2D.03.	<i>Metered market participant physical allocation data</i> in MV-STAR <i>metering database</i> .	MV-STAR	Percentage/absolute <i>physical allocation data</i> updated in MV-STAR.
2D.09	Revision of all related <i>physical allocation data</i> to zero for <i>suspended market participant</i> .	Where a <i>market participant</i> has been suspended, the IESO will revise any <i>physical allocation data</i> relating to the period from the time a <i>default notice</i> was issued until the <i>event of default</i> is remedied to zero.	Upon issuing of a notice of IESO's intent to commence suspension or issuing of a <i>default notice</i> .	Applicable <i>physical allocation data</i> revised to zero.	MV-STAR	Applicable <i>physical allocation data</i> is revised to zero.

3.5 Managing the Effect of Power Switching (PS) Operations on Metering Data

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

Table 3–5: Procedural Steps for Managing the Effect of Power Switching (PS) Operations on Metering Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2E.01	Advise <i>IESO</i> of the planned power switching operation at least 48 hours in advance and submit totalization table information.	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 and submits totalization table information at this time. Refer to "Market Manual 3: Metering, Part 3.7: Totalization Table Registration" for details on re-submitting totalization table information.	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 to power.switching@ieso.ca . Submit IMO-FORM-1310 "Totalization Table Form" via email to totalizationtables@ieso.ca See Appendix A, "Forms".	Notification of impending power switching operation submitted to <i>IESO</i> .
2E.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 2E.01.	Acknowledgement of receipt; logging number.	Email.	Notification of impending power switching operation received by the <i>IESO</i> acknowledgement and logging number sent to the <i>metering service provider</i> .

Table 3–5: Procedural Steps for Managing the Effect of Power Switching (PS) Operations on Metering Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2E.03	Receive acknowledgement and logging number.	The <i>market participant</i> receives the acknowledgement and logging number from the <i>IESO</i> .	Following Step 2E.02.	None.	None.	Acknowledgement and logging number received by the <i>metering service provider</i> .
2E.04	Evaluate proposed power switching operation; assess effect on <i>metering data</i> and determine whether to disable specific MTR triggers.	The <i>IESO</i> evaluates the proposed power switching operation, assesses its effect on the <i>metering data</i> and determines whether to disable specific MTR triggers.	Following Step 2E.02.	None.	None.	Proposed power switching operation evaluated; determination rendered as to whether the <i>IESO</i> should disable certain MTR triggers.
2E.05	Phone <i>IESO</i> MIR Hotline at least 30 minutes in advance of scheduled power switching operation time; refer to logging number provided.	The <i>metering service provider</i> phones the <i>settlements</i> Hotline at least 30 minutes in advance of scheduled power switching operation time, referring to the logging number provided.	On scheduled date of Power switching operation.	<i>IESO</i> MIR Hotline call.	Phone.	<i>IESO</i> contacted at least 30 minutes before scheduled power switching operation time.

Table 3–5: Procedural Steps for Managing the Effect of Power Switching (PS) Operations on Metering Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2E.06	Record call; disable meter trouble report triggers, as previously identified.	The <i>IESO</i> records the call and disables the appropriate meter trouble report triggers, as previously identified.	Following Step 2E.05.	None.	MV-90	Call recorded and appropriate MTR triggers disabled.
2E.07	Ensure <i>metering data</i> are collected up to and throughout the power switching operation.	The <i>metering service provider</i> ensures that the <i>metering data</i> are collected up to and throughout the power switching operation.	Following Step 2E.05.	None.	None.	Data collection monitored up to and throughout power switching operation.
2E.08	Ensure <i>metering data</i> are collected up to and throughout the power switching operation.	The <i>IESO</i> ensures that the <i>metering data</i> are collected up to and throughout the power switching operation.	Following Step 2E.05.	None.	None.	Data collection monitored up to and throughout power switching operation.
2E.09	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; submit totalization table information; 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, submits totalization table information 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; Submit IMO-FORM-1310 "Totalization Table Form" via email; see Appendix A, "Forms".	
2E.10	Receive notification; restore meter trouble report triggers, if appropriate; evaluate adjustments as	The <i>IESO</i> receives notification of the <i>emergency</i> power switching operation (from 2E.09) or the restoration of normal conditions (from	Following Step 2E.09 and Step 2E.11.	Resolution of outstanding inconsistencies.		Notifications received, MTR triggers restored, <i>metering data</i> adjustments

Table 3–5: Procedural Steps for Managing the Effect of Power Switching (PS) Operations on Metering Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
	submitted; resolve any inconsistencies with the <i>metering service provider</i> . Register a new totalization table, if required.	2E.11), restores MTR triggers, if appropriate, evaluates the <i>metering data</i> adjustments, and resolves any inconsistencies with the <i>metering service provider</i> . In certain instances, a new totalization table will be registered for the period of time during power switching.				evaluated, and outstanding issues resolved with the <i>metering service provider</i> . A new totalization table is registered, if required.
2E.11	Phone <i>IESO</i> MIR Hotline and notify <i>IESO</i> of restoration of normal conditions; 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> phones the <i>IESO</i> MIR Hotline and notifies the <i>IESO</i> that normal conditions have been restored. The <i>metering service provider</i> submits <i>metering data</i> adjustments for the duration of the power switching operation and resolves any further issues with the <i>IESO</i> .	Following Step 2E.07, upon restoration of normal conditions.	Notification of restoration of normal conditions, <i>metering data</i> adjustments, resolution of outstanding inconsistencies.	Phone (<i>IESO</i> MIR Hotline), fax (<i>metering data</i> adjustments).	<i>IESO</i> notified of restoration of normal conditions, <i>metering data</i> adjustments submitted, and outstanding issues resolved with the <i>IESO</i> .
2E.12	Apply and record <i>metering data</i> adjustments.	The <i>IESO</i> applies and records the <i>metering data</i> adjustments submitted by the <i>metering service provider</i> . If power switching operations occurred more than twice during the last 12 months, the <i>IESO</i> proceeds to Step 2E.13.	Following Step 2E.10.	None.	MV-90	<i>Metering data</i> adjustments applied and recorded.

Table 3–5: Procedural Steps for Managing the Effect of Power Switching (PS) Operations on Metering Data

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
		If power switching operations did not occur more than twice during the last 12 months, no further action is required.				
2E.13	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 2E.12 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> .
2E.14	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 2E.13.	None.		Notification received by <i>metered market participant</i> notification of intended actions sent to the <i>IESO</i> .
2E.15	Receive notification of intended action.	The <i>IESO</i> receives the <i>metered market participant's</i> notification of its intended actions.	Following Step 2E.14.	None.	None.	Notification of <i>metered market participant's</i> intended actions received by the <i>IESO</i> .

– End of Section –

Appendix A: Forms

This appendix contains a list of the forms associated with the "Metering Data Processing" procedure, which are available on the *IESO* Web site (<http://www.ieso.ca/>). The forms included are as follows:

Form Name	Form Number
IESO Workflow Access and User Identification	IMO-FORM-1314
Totalization Table Form	IMO-FORM-1310
Market Participant PAD Allocation Consent	IMO-FORM-1495

– End of Section –

Appendix B: Validation Tests for Metering Installations

Appendices B, C and D in this *market manual* comprise the VEE standard as defined in Chapter 11 of the *market rules*. (Refer to Section 1.3.2 in this *market manual*.)

B.1 Overview

The validation software must be able to handle three types of *metering installations*:

1. Main/Alternate
2. Main/Check
3. Stand Alone

Only conforming *meters* make up a Main/Alternate, Main/Check and stand alone *metering installations*.

Non-conforming meters make up a Non-conforming Main/Alternate, Non-conforming Main/Check and Non-conforming stand alone *metering installations*.

The main *meter* in any of these installations transmits the data to be validated. There are two general methodologies for validating the main data:

4. Comparing it to another meter measuring the same power flow; or
5. Comparing it to data previously gathered from the main. Data previously gathered from the main is often referred to as historical data.

Data from the alternate *meter* in a *main/alternate metering installation* is of revenue quality and can be substituted for the main meter data without legal implications. Because the two *meters* measure the same power flow, and the loss between the installations is essentially zero, direct comparison to alternate data provides the strongest possible assurance that the main data is correct.

The system will record the source of the data as redundant until the meter trouble report process resolves the cause of validation failure.

Comparing the main data to data from the *check meter* provides an alternative, although less rigorous, test. The check data is not of revenue quality and some electrical loss between the main and *check meters* may occur. The check data must be adjusted for the difference.

Use of check data for *settlement* is permitted only when the main *meter* in a main/check or non-stand alone installation has failed. The use of *check metering data* must be recorded as an estimate prepared from a non-revenue-approved source. The cumulative total amount of all estimates from non-revenue metering is one of several important measures indicating how well the *metering* system is performing.

The *IESO* shall limit comparison checks to two *meters*. If both alternate and *check meters* are installed, the installation is defined as main/alternate and the *IESO* shall collect data from the alternate only.

In stand alone installations, no alternate or check data exists. The validation criteria are based on the historical load pattern and alarms from the stand alone *meter*.

For stand alone installations, the *metered market participant* shall specify the criteria for some validation tests. The *metered market participant* shall select the actual test criteria from the list of options provided in the following sections and shall notify the *IESO* of the chosen process at the time of registration. The default values specified below are based on operating experience and may be used if the *metered market participant* has not specified test criteria.

Some validation criteria, deemed essential by the *IESO*, shall be mandatory. Trigger values for these criteria may also be set by the *IESO*.

The above also applies to Non-conforming Main/Alternate, Non-conforming Main/Check and Non-conforming stand alone *metering installations*.

B.2 Data Channel Assignments for Main/Alternate Meters

B.2.1 Data from the Main Meter

Refer to Wholesale Revenue Metering Standard – Hardware (MDP_STD_0004), Section 5.4.3

B.2.2 Data from the Alternate Meter

Refer to Wholesale Revenue Metering Standard – Hardware (MDP_STD_0004), Section 5.4.3

For non-conforming *meters*, channel numbers assignment is preferred but not mandatory.

B.3 Tests Required for Main/Alternate Metering Installations

The following tests are required for validation of *main/alternate metering installations*.

The assignment of channel numbers from Table 5.1 and Table 5.2 of Wholesale Revenue Metering Standard – Hardware ensures the main and alternate *meters* carry the same unit of measure and in the same direction of *energy* flow.

If the assignments of channel numbers are different than those specified in the above referenced Tables, then the *meters* are non-conforming, and the *IESO* should be consulted.¹

Energy Comparison in a main/alternate metering installation, for each one hour interval, the value in channel 1 of the main shall be compared to the value in channel 1 of the alternate. If the difference exceeds a predefined limit, validation fails and a meter trouble report shall be issued. The process shall be repeated for channels 2, 3, and 4 of the main. The predefined limit shall be associated with the main *meter*. The trigger level shall be changeable by the *IESO* and shall have a default value of $\pm 2\%$ for channels 1 and 3 (kWH Delivered and kWH Received respectively) and a default value of $\pm 10\%$ or less for channels 2 and 4 (kVARH Delivered and kVARH Received respectively).

In a non-conforming *main/alternate metering installation*, for each one hour interval, the value of the non-conforming main shall be compared to the corresponding value of the alternate. If the difference exceeds a predefined limit, validation fails and a meter trouble report shall be issued. The process shall be repeated for all kWH channels of the main *meter*. The predefined limit shall be associated with the main *meter*. The trigger level shall be changeable by the *IESO* and shall have a default value of $\pm 3\%$ for all kWH channels (Delivered and Received). The kVARH channels are not compared.

Voltage Check

The presence of V^2h check is performed for each one hour interval on main *meters* only.

The V^2h check consists of three steps (example for a three element *meter*):

1. All three channels are summed and divided by three to calculate the average V^2h value.
2. Validation shall succeed, if the calculated average V^2h value is between 17425 (132volts) and 10000 (100volts). In addition, validation shall succeed if the calculated average V^2h value equals zero. This validation is termed V^2Havg .
3. Each V^2h channel (channel 5, 6, 7) is compared to the calculated average V^2h value. Validation for each channel shall succeed, if the value is between $\pm 6\%$. This validation is termed $V^2H CHnn$.

If the validation fails, a meter trouble report shall be issued indicating that loss of measuring voltage is suspected.

Meters installed in delta power systems may have two voltage transformers instead of three. The voltage check would be carried out on two channels but the process is identical.

Current Check

The presence of I^2h is performed for each one hour interval on main *meters* only.

The current check consists of three steps that are procedurally the same as the voltage check (three element meter):

1. All three channels are summed and divided by three to calculate the average I^2h value.

¹ The assignment of channel numbers for a non-conforming main/alternate is much more difficult and should be discussed with *IESO* staff prior to implementation.

2. Validation shall succeed, if the calculated average I^2h value is less than 56.25 (7.5amps). This validation is termed I^2H_{avg} .
3. Each I^2h channel (channel 8, 9, 10) is compared to the calculated average I^2h value. Validation for each channel shall succeed, if the value is between $\pm 50\%$. This validation is termed I^2H_{CHnn} .

If the validation fails, a meter trouble report shall be issued indicating that loss of measuring current is suspected.

Meters installed in delta power systems may have two current transformers instead of three. In this case, the current check would be carried out on two channels but the process is identical.

Combination of Voltage and Current Check

4. The presence of V^2h and I^2h together is performed for each one hour interval on main meters only. Validation shall fail, if the calculated average V^2h value equals zero and the calculated average I^2h value is greater than zero. This validation is termed $I^2H V^2H$.

If the validation fails, a meter trouble report shall be issued indicating that loss of measuring voltage is suspected.

Event Log Check

Main Meter: The main meter will return several error messages in the event log or as a channel status flag. Error messages are collected at the same time as the interval data; however, they may not require a channel and are not channel data. Messages vary in detail from meter to meter. The event log shall be checked for error messages that indicate:

- a problem with a current transformer;
- a problem with a voltage transformer;
- a critical problem with the meter, including but not limited to:
 - pulse count overflow,
 - hardware reset, and
 - parity error.

If any of the above error messages are detected, a meter trouble report shall be issued.

Alternate Meter: If the data is available in the event log of the alternate meter, the test shall be repeated for the alternate meter.

For non-conforming *meters*, voltage and current checks are not validated.

Time Tolerance

All registered wholesale revenue meters will be validated for time tolerance. Three possible conditions may occur:

1. The meter is within ± 5 seconds, a time reset is not performed.
2. The meter is greater than ± 5 seconds but less than ± 60 seconds, a time reset is performed.²
3. Meter is greater than ± 59 seconds, a meter trouble report is issued.

Other Validation Checks

The *metered market participant* or the *IESO* may request other additional checks that are standard in MV90, as deemed appropriate.

B.4 Validation Requirements for Main/Check Metering Installations

A *main/check-metering installation* consists of two *meters*: a *main meter* and a *check meter*. These *meters* are supplied from different *instrument transformers*. The check need not be supplied from *instrument transformers* or *meters* approved by Measurement Canada.

Data from Check Meter

The *check meter* shall provide active and reactive power channels to match each active or reactive power channel in the main, and shall have the same interval length.

New *check meters* shall provide at least the following data channels where reverse power flows may occur:

Table B-1: Data Channel Requirements for Check Meters

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

All data from the *check meter* shall be compatible with automated processing by the *IESO*'s validation software.

² Numerous time resets may indicate a defective meter

Tests Required for Main/Check Metering Installation

The following test shall be executed for validation of *metering installations* using a *check meter*. Channel numbers provided are examples and assignment in the main and the *check meters* must be the same.

Main Meter: The main *meter* shall be tested as specified above, except for the *energy* comparison test as described next.

Check Meter: The interval data from the *check meter* channels 1, 2, 3, and 4 shall be compared to that of the main *meter*. The test shall fail if the comparison of *energy* exceeds a predefined limit.

The *market rules* require a mathematical relationship between the main and the *check meter*. This relationship will normally be a constant percentage. The initial value of the predefined validation limit shall be the mathematical relationship multiplied by 1.2.

The limit shall be user changeable on a per-*meter* basis.

B.5 Validation Tests for All Metering Installations

The *data collection system* will carry out the following validation tests on the *metering data* immediately following the data collection and delivery processes. These tests, which indicate possible hardware concerns, will be carried out if supported by the remote end metering hardware and will be applied to data originating from main/alternate, main/*check* and stand alone *metering installations*.

1. Data Not Collected or Delivered
Validation failure if the data was not collected, or delivered, to the *IESO* and is termed missing data.
2. Current and Voltage Check
Detects loss of current and or voltage to the *meter* due to a failure of the supply from one or more *instrument transformers* or tampering.
3. Meter Reading Vs Load Profile Type M
Checks for corruption introduced by the telecom system and checks the *meter* multiplier
If the *meter* can provide *energy* self reads this test is automated (Chapter 6 Section, 7.2.6 of the "Market Rules"). If the *meter* does not support *energy* self reads the *metering service provider* provides readings according to Chapter 6 Section, 7.2.5 of the "Market Rules".
4. Intervals Found Vs Intervals Expected
Calculates the number of intervals expected.
5. Time Tolerance
Checks for synchronism of *meter* clock to EST
6. Number of Power Outage Intervals
Allows periods of zero primary power to be identified
7. Missing Intervals

- Allows periods of missing data to be identified.
8. CRC/ROM RAM
Flag generated by the *meter* indicating failure of the internal electronics
 9. Meter Clock Over Flow
Flag generated by the *meter* indicating failure of the internal electronics
 10. Hardware Reset
Flag generated by the *meter* indicating failure of the internal electronics
 11. Time Reset
Indicates the interval in which the *meter* clock time has been changed by an MV90 system, creating either a shorter or longer interval
 12. Data Overflow on an Interval
Indicates that the *meter* is creating more pulses than it can record in an interval or MV90 can accommodate in an interval
 13. Number of Channels
The actual number of data channels from the *meter* does not match the number expected at the data collector
 14. Changed Device ID
The internal device identifier does not match the value registered at the data collector
 15. Watch Dog Time Out
Reported by some recorders when a watchdog register is tripped or activated.
 16. Parity Error
Determined by a parity error bit that is set by a recorder on a channel of data during status check or read/write function.

B.6 Additional Tests for Stand Alone Metering Installations

Parameters for these validation tests are normally *metering service provider* defined, and submitted during registration of the *metering installation*.

1. High/Low Limit on Interval
Specifies maximum and minimum interval *demand*, which if exceeded results in a meter trouble report.
2. High/Low Limit on Energy
Specifies maximum and minimum *energy*, which if exceeded over the time period being validated, results in a meter trouble report.
3. Percentage Change on Interval

- Flags validation failure if consecutive intervals differ by more than the specified amount
4. Load Factor Tolerance
Flags a validation failure when the average load divided by the maximum load over the time period being validated exceeds the prescribed level
 5. Power Factor Limit
Flags a validation failure when the average power factor over the time period being validated is less than the specified minimum.
 6. Zero Interval Tolerance
Flags a validation failure of the total number of intervals containing zeroes over the time period being validated exceeds the tolerance limit.
 7. Power Outage Intervals
Checks for power outage intervals within the data file versus a limit of tolerance number of occurrences.

B.7 Additional Validation Tests for Main/Alternate or Main/Check Metering Installations

The following *energy* comparison test is carried out after the tests in Appendix B.1. It is applied to data originating from a *main meter* and either an *alternate* or a *check meter*.

- On an hourly basis the active and reactive *energy* or *demand* values in each channel of the *main meter* is compared to the corresponding channel of an alternate or *check meter*.
- The test flags a validation failure if the values are different by more than the specified percentage, due account being taken of the mathematical correlation factor submitted by the *metering service provider* for the *check metering installation*.

B.8 IESO MV-90 Settings for Validation of Metering Data

The *IESO* uses these MV-90 settings to validate *metering data* from *market participants*.

Validation - General

Zero Interval Tolerance	0
Automatic Schedule Edit	Yes
Power Outage Interval Toler	1
Load Research File Update	No
Previous Peak Tolerance (%)	0
Demand/Energy File Update	No
Visual Demand Tolerance (%)	0
Print Events w/Validation	Yes
Billing Cycle Tolerance (Days)	0
Print Edit Log w/Validation	Yes
Automatic Validation	Yes
Extended Validation Report	Yes
Tolerance Type	Multiplier Method
Print Validation RPT	Rejected Only
Spike Tolerance (%)	0
Spike Reference Peak	0
High/Low Usage Tolerance (%)	0
Max hours for PT to PT Est	1

Validation - Editing

** Auto Plug **	
Auto Plug Enabled	Yes
Auto Plug Option	Current Month
Auto Plug Missing Days Limit	30
Auto Plug Reference Data %	0
Auto Plug Power Outage	No

**** Demand Editing Defaults ****

Pulse or E.U.	Engineering Units
Number of Decimals	1

Validation - Interval Statuses

Power Outage	Yes
Watchdog Timeout	Yes
Short/Long Interval	Yes
Time Reset Occurred	No
Clock Error	Yes
Test Mode	No
Reset Occurred	Yes
Load Control	No
CRC/ROM/RAM Checksum	Yes

Validation - Channel Statuses

Edited Intervals	No
Parity Error	Yes
Pulse Overflow	Yes
Load Factor Limit	Yes
High/Low Limit (D)	Yes
Power Factor Limit	Yes
High/Low Limit (E)	Yes
Interval % Change	Yes
Excluded Interval	No
Alarms/Phase Error	No

Validation - General Statuses

Interval Tolerance	Yes
Visual Demand Tol	No
Energy Tolerance	Yes
Previous Peak Tol	No
Time Tolerance	No
Overlap Prev File	Yes
Zero Interval Tol	Yes
Meter Change	No
Pwr Outage Int Tol	Yes
Critical Change	Yes
Redundant Channel	Yes

Validation - Comparison Criteria

** Compare By Day **	**
To Yesterday	Yes
To Last Week	No
To Last Month	No
To Last Year	No

Compare By Bill/TOU Period **	
Curr To Extended Parameters	No
Curr To Prev Period	No
Curr To Same Period Prev Yr	No

– End of Section –

Appendix C: MV-90 Actions When Metering Data Fail Validation

Appendices B, C and D in this *market manual* comprise the *VEE standard* as defined in Chapter 11 of the *market rules*. (Refer to Section 1.3.2 in this *market manual*.)

Metering data that fail validation trigger MV-90 to retain, estimate, or substitute the data, depending on the type of *metering installation* and validation error. The *IESO* submits this provisional *metering data* to its *metering database* and initiates a meter trouble report to investigate the problem. Once the meter trouble report is resolved, the *metering service provider* may suggest retaining or editing the estimated or substituted data as described in Appendix D.

Stand Alone Meters

Communication Failures

MV-90 creates an estimate of the *metering data*.

Other validation failures

MV-90 uses the *metering data* "as is" with an appropriate flag.

Main/Alternate or Main/Check Meters

Communication Failures

Main *meter* passes validation, but alternate or *check meter* fails validation

MV-90 uses the main *metering data* "as is" and flags the alternate or *check metering data* with an appropriate flag.

Main *meter* fails validation, but alternate or *check meter* passes validation

MV-90 substitutes the *metering data* from the alternate *meter*, or uses the *metering data* from the *check meter*, with an appropriate flag.

Main *meter* fails validation, and alternate or *check meter* fail validation

MV-90 creates an estimate of the *metering data*.

Other Validation Errors

Main *meter* passes validation, but alternate or *check meter* fails validation

MV-90 uses the main *metering data* "as is" and flags the alternate or *check metering data* with an appropriate flag.

Main *meter* fails validation, but alternate or *check meter* passes validation

Production Group substitutes the *metering data* from the alternate *meter*, or uses the *metering data* from the *check meter*, with an appropriate flag.

Main *meter* fails validation, and alternate or *check meter* fail validation

Production Group creates an estimate of the *metering data*.

- End of Section -

Appendix D: Editing Guidelines

Appendices B, C and D in this *market manual* comprise the *VEE standard* as defined in Chapter 11 of the *market rules*. (Refer to Section 1.3.2 in this *market manual*.)

D.1 Editing Guidelines for Stand Alone Metering Installations

Under normal circumstances the *metering service provider* will have carried out a site investigation within two *business days* of the meter trouble report and have determined the cause of the validation failure. Based on the findings of the *metering service provider* the *IESO* shall manually edit the *metering data* where necessary. The *metering service provider* may request that the *metering data* be adjusted based on the findings on site. The adjustment shall be one or more of (1) a multiplier, (2) an adder/subtractor or (3) an absolute value for each interval affected. The request for an adjustment shall be supported by auditable documentation.

Alternatively, the *metering service provider* may request that the *IESO* prepare an estimate based on the estimating method described in the VEE procedure.

In deciding which method to adopt and the values to be used the overall consideration will be to try and achieve the closest approximation to the actual *energy* delivered or received for the intervals concerned. In the event of any doubt, the *IESO* shall err in favour of the market and *market participants* in general rather than the registered *metered market participant* for the affected *metering installation*.

Missing Data

The *IESO* shall agree with the *metering service provider* an adjustment as described above if the site investigation reveals a more accurate source of data than the estimation procedure. Otherwise, the original estimate shall be retained.

Data That Fail Validation

The *IESO* shall agree with the *metering service provider* an adjustment or estimate as described above if the *meter* has been affected by a failure.

D.2 Editing Guidelines for Main/Alternate or Main/Check Metering Installations

Under normal circumstances the *metering service provider* will have carried out a site investigation within two *business days* of the meter trouble report and have determined the cause of the validation

failure. Based on the findings of the *metering service provider* the *IESO* shall manually edit the *metering data* where necessary. The *metering service provider* may request that the *metering data* be adjusted based on the findings on site. The adjustment shall be one or more of (1) a multiplier, (2) an adder/subtractor or (3) an absolute value for each interval affected. The request for an adjustment shall be supported by auditable documentation.

Alternatively, the *metering service provider* may request that the *IESO* prepare an estimate based on the estimating method described in the VEE procedure.

In deciding which method to adopt and the values to be used the overall consideration will be to try and achieve the closest approximation to the actual *energy* delivered or received for the intervals concerned. In the event of any doubt, the *IESO* shall err in favour of the market and *market participants* in general rather than the registered *metered market participant* for the affected *metering installation*.

Missing or Validation Failure of Data from Main Meter

The *IESO* shall accept the data previously substituted if the *metering service provider* confirms that the alternate or check data is correct.

The *IESO* shall agree with the *metering service provider* an adjustment or estimate as described above if the alternate or *check meter* has also been affected by the failure, despite the data having passed validation.

Missing or Validation Failure of Alternate or Check Meter

The *IESO* shall agree with the *metering service provider* an adjustment or estimate as described above if the main *meter* has also been affected by the failure, despite the data having passed validation.

Metering Data from Both Meters Fails Validation

The *IESO* shall agree with the *metering service provider* an adjustment as described above if the site investigation reveals a more accurate source of data than the estimation procedure. Otherwise, the original estimate shall be retained.

– End of Section –

Appendix E: Sample XML File

The sample XML file below can also be located in the Revenue Metering System area of the Technical Interfaces page on the *IESO* Web site <http://www.ieso.ca/>.

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE MVSTAR_TRANSACTION SYSTEM "mvstartransaction.dtd">

<!-- Begin xml -->

<MVSTAR_TRANSACTION ParticipantID="8056" StartDate="200005010000"
  EndDate="200005310000">
  <PARTICIPANT>
    <ROLE Role="MMP"/>
  </PARTICIPANT>


  <PHYSICAL_ALLOCATION_SET MeteringSystemID="1477"
    MeasurementType="KWH" PowerFlow="IMPORT"
    AllocationType="STANDING_PERCENTAGE"
    StartDate="200005011030" EndDate="200005311130">
    <ALLOCATEE ParticipantID="8054" Value="0.10">
      <PHYSICAL_ALLOCATION Value="0.4"/>
    </ALLOCATEE>
  </PHYSICAL_ALLOCATION_SET>

  <PHYSICAL_ALLOCATION_SET MeteringSystemID="1477"
    MeasurementType="KWH" PowerFlow="EXPORT"
    AllocationType="INTERVAL_PERCENTAGE"
    StartDate="200005010730" EndDate="200005010800">
    <ALLOCATEE ParticipantID="8054" Value="0.333">
      <PHYSICAL_ALLOCATION Value="0.6"/>
      <PHYSICAL_ALLOCATION Value="0.3"/>
    </ALLOCATEE>
  </PHYSICAL_ALLOCATION_SET>

</MVSTAR_TRANSACTION>
```

– End of Section –

Appendix F: Market Participant Consent of PAD Allocation

 ieso Power to Ontario. On Demand.	Market Participant Consent of PAD Allocation MMP (Allocator) Fax to 905 - 855 - 8688	
	Date _____	
Allocation		
From		
MMP Short Name _____		
MMP ID # _____		
To		
MP Short Name _____		
MMP ID # _____		
Type		
Standing _____ Interval Percentage _____ Interval Absolute _____		
Delivery Point		
ID # _____		
Channel # _____		
Dispatch Days		
Start _____ End _____ (yyyy/mm/dd)		
Intervals		
Size _____ 5 min _____ 15 min		
Number _____ to _____ ALL _____		
Maximum per Interval		
Standing _____ %		
Interval Percentage _____ %		
Interval Absolute _____ kWh		
Consent of Market Participant to whom Physical Allocation Data (PAD) attributed:		
_____	_____	
Signature of Authorized Representative	Phone Number	
_____	_____	
Name of Signatory (print)	Fax Number	
_____	_____	
Name of Market Participant (print)	E-mail Address	

– End of Section –

Appendix G: MMP Metering Outage Form

<u>Metering Outage Reporting Form - Notification</u>	
Form Completion Date:	
MMP Name:	
MMP ID:	
MMP Primary Contact Person/Phone #:	
MMP Alternate Contact Person/Phone #:	
Facility Name:	
Meter Point ID's Affected:	
Power System Outage Yes/No:	
Metering Outage Yes/No:	
Actual Outage Start Date:	
Actual Outage Start Time:	
Actual Outage End Date:	
Actual Outage End Time:	
Temporary Metering Required:	
Metering Data Estimate to IESO Required:	
IESO Email address:	metering.outages@ieso.ca
MSP Email Address:	
<u>Outage Verification</u>	
Outage Start Date:	
Outage Start Time:	
Outage End Date:	
Outage End Time:	
MTR Numbers:	
MTR Closed:	
MTR Close Date:	

Instructions to Metered Market Participants for completion of Metering Outage Form

This form will be used by your *metering service providers* to resolve issued MTRs. This will reduce the time spent by your *metering service providers* in confirming metering outages and the associated costs.

Metered market participants should complete the top portion only (*MSP Metering Outage Reporting Form - Notification*). This form should be completed on the start day of the metering outage. Please ensure all *meter points* affected are included.

If the outage is complete enter the end time.

Submit the form to your *metering service providers* with a copy to the *IESO* for reference purposes.

If the outage is ongoing, complete the end time on day of completion and resubmit form to your *metering service providers*.

The Outage Verification section is for the *metering service providers* only.

– End of Section –

Appendix H: Power Outage Meter Trouble Report Decision Table

Table H-1 describes the decisions and actions for power outage events lasting two or more internals.

Legend:	
PO =	power outage
LA =	lapsed data
Load =	apparent valid interval data
Zero =	interval is filled with measured zeroes
Not available =	no meter data due to communication or other problem

Table H-1: Power Outage Meter Trouble Report Decision Table

Case	Main	Alternate	MV90 auto edit, if any	Manual Edit of data in MV90	IESO action for created MTR	MSP action response to MTR
1	PO	PO	None	No edit required unless MSP provides data file	MAIN: Note the PO also affected the ALT, add the time of outage and issue. ALT: Add the MAIN MTR # and reject.	Confirm PO is valid for time specified or supply data file if invalid.
2	PO	PO+LA	None	No edit required	MAIN: Note the PO also affected the ALT, add the time of outage and issue. ALT: Add the MAIN MTR # and reject.	Confirm PO is valid for time specified or supply data file if invalid.

Case	Main	Alternate	MV90 auto edit, if any	Manual Edit of data in MV90	IESO action for created MTR	MSP action response to MTR
3	PO	LOAD	None	Copy from ALT (Channels 1 to 4)	MAIN: Add time of outage; indicate the edit performed, advise ALT has load and issue.	Accept edit unless data is incorrect (1)
4	PO	ZERO	None	No edit required	MAIN: Add time of outage and issue.	Confirm PO is valid for time specified or supply data file if invalid.
5	PO (2)	Not available	None	No edit required	MAIN: Note ALT not available; add time of outage and issue. ALT: Will get a Comm. MTR.	Confirm PO is valid for time specified or supply data file if invalid.
6	PO+LA	PO	Auto estimate	Copy from ALT (Channels 1 to 4)	MAIN: Add time of outage; indicate the edit performed and issue. ALT: Add the MAIN MTR # and reject.	Accept edit unless data is incorrect (1)
7	PO+LA	PO+LA	Auto estimate	Copying the MAIN over MAIN	MAIN: Add time of outage; indicate the edit performed and issue. ALT: Add the MAIN MTR # and reject.	Confirm PO is valid for time specified or supply data file if invalid.
8	PO+LA	LOAD	Auto estimate	Copy from ALT (Channels 1 to 4)	MAIN: Add time of outage; indicate the edit performed, advise ALT has load and issue.	Accept edit unless data is incorrect (1)
9	PO+LA	ZERO	Auto estimate	Copy from ALT (Channels 1 to 4)	MAIN: Add time of outage; indicate the edit performed and issue.	Confirm PO is valid for time specified or supply data file if invalid.

Case	Main	Alternate	MV90 auto edit, if any	Manual Edit of data in MV90	IESO action for created MTR	MSP action response to MTR
10	PO+LA (2)	Not Available	Auto estimated	Copy the MAIN over MAIN	MAIN: Note ALT not available; add time of outage and issue. ALT: Will get a Comm. MTR	Confirm PO is valid for time specified or supply data file if invalid.
11	LOAD	PO	None	No edit required	ALT: Add time of outage; indicate MAIN has load and issue.	MSP to check alternate <i>meter</i> for proper operation and continued use. MSP to confirm whether PO in alternate <i>meter</i> is valid and that the main <i>meter</i> data as received is valid for <i>settlement</i> .
12	LOAD	PO+LA	None	No edit required	ALT: Add time of outage; indicate MAIN has load and issue.	MSP to check alternate <i>meter</i> for proper operation and continued use. MSP to confirm PO in alternate <i>meter</i> is valid and that the main meter data as received is valid for <i>settlement</i> .
13	ZERO	PO	None	No edit required	ALT: Add time of outage; indicate MAIN has zero measured load and reject.	None. No MTR will be issued.
14	ZERO	PO+LA	None	No edit required	ALT: Add time of outage; indicate MAIN has zero measured load and reject.	None. No MTR will be issued.

Case	Main	Alternate	MV90 auto edit, if any	Manual Edit of data in MV90	IESO action for created MTR	MSP action response to MTR
15	Not available	PO	Auto estimate with min/max for entire period with missing data	Copy from ALT (Channels 1 to 4) (ALT initially is rejected)	<p>Locate MTR for MAIN for communication failure, advise ALT has been copied, add time of PO and request confirmation.</p> <p>ALT: Add time of outage; indicate MAIN is not available, that confirmation of PO has been added to MTR and reject. Edit "Last Stop Time" field in MV-90 Master file for MAIN <i>meter</i> to be the stop time for the data file copied from ALT.</p> <p>If communication MTR for MAIN received from MSP before comments added, or fails to clarify PO, return to MSP.</p>	MSP to validate data file prior to providing to the IESO. Confirm PO is valid for time specified or supply data file if invalid.
16	Not available	PO+LA	Auto estimate with min/max	Copy from ALT (ALT initially is rejected) and change the last stop time on the master file for the MAIN	<p>Locate MTR for MAIN for communication failure, advise ALT has been copied add time of PO and request confirmation.</p> <p>Edit "Last Stop Time" field in MV-90 Master file for MAIN <i>meter</i> to be the stop time for the data file copied from ALT.</p>	MSP to validate data file prior to providing to the IESO. Confirm PO is valid for time specified or supply data file if invalid.

Case	Main	Alternate	MV90 auto edit, if any	Manual Edit of data in MV90	IESO action for created MTR	MSP action response to MTR
					<p>ALT: Add time of outage; indicate MAIN is not available, that confirmation of PO has been added to MTR and reject.</p> <p>If communication MTR for MAIN received from MSP before comments added, or fails to clarify PO, return to MSP.</p>	
17	Not available (2)	None	Auto estimate		<p>If MSP supplies data file and it has PO, add time of outage and return to MSP.</p>	<p>MSP must validate data files prior to providing them to the IESO. If the incoming data file from the MSP contains any PO or LA-flagged intervals, the MSP response to the MTR must include a statement that verifies the status flags in the attached data file have been checked and are valid.</p>

- 1) Alternate meter data is valid for *settlement*. Do not supply main meter data file; only provide data file if alternate data is incorrect.
- 2) This also applies if this is a stand alone *meter*.

End of Section –

References

Document ID	Document Title
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
MDP_PRO_0014	Market Manual 1: Market Entry, Maintenance & Exit, Part 1.1: Participant Authorization, Maintenance & Exit
MDP_MAN_0005	Market Manual5: Settlements, Part 5.0: Settlements Overview
MDP_PRO_0013	Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance
IMP_PRO_0047	Market Manual 3: Metering, Part 3.7: Totalization Table Registration
IMP_PRO_0058	Market Manual 3: Metering, Part 3.9: Conformance Monitoring
MDP_PRO_0017	Market Manual 2: Market Administration, Part 2.1: Dispute Resolution
Vendor document	MV-WEB User Guide
IPOP_PRO_0025	Internal Manual 3: Settlements Part 3.6: Processing Revenue Metering Data

– End of Document –