PROCEDURE

Independent Electricity System Operator

Market Manual 5: Settlements

Metering Data Processing

Issue 30.0

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

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MDP_PRO_0033	Market Manual 5: Settlements, Part 5.5: Physical Markets Settlements Statement
MDP_PRO_0045	Market Manual 5: Settlements, Part 5.4: Prudential Support

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Reference (Paragraph and Section)	Description of Change
Throughout	Added reference to electricity storage participation where required.

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 "*Settlement*s Manual" is provided in "Part 5.0: *Settlement*s Overview", in Section 2, "About This Manual".

Structure of Market Procedures

Each market procedure is composed of the following sections:

"**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.

"**Procedural Work Flow**", which contains graphical representations of the steps and flow of information within the procedure.

"**Procedural Steps**", which contains a table that describes each step and provides other detail related to each step.

"**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* (**MSP**s) 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

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 is collected automatically by the *IESO's* meter data collection application[1], which attempts three interrogations of all *metering installations* daily.

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 two types of *metering installations*:

- *main/alternate metering installation*, which includes two revenue quality *meter*s: one main *meter* and one alternate *meter*;
- 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 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*) appear in Appendix A.1. Data channel assignments for conforming Main/Alternate *meters* appear in Appendix A.2. The *meter* data collection application performs some additional validation tests on *main/alternate* (Appendix A.3) *metering installations.*

[1] The *IESO's* meter data collection application is MDAS.

[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*.

"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 is substituted for main *metering data* that has 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. 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 has 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 C.1) and for *main/alternate* Appendix C.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 application[3]) 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* are identifiable and easily tracked. *Metering data* that passes validation and requires no editing or estimating will have a version number of 1. *Metering data* that fails validation, or contains 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* is no longer in a "failed validation" state.

Totalization

Metering data is 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

[3] The *IESO's* meter data viewing application is MDM Meter Data Reports. See the MDM Meter Data Reports User Guide on the Technical Interfaces page on the *IESO* Web site for more details on this application.

is agreed to by the *metering service provider* and the *IESO*. Once the appropriate edit is performed, the updated *metering data* is 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 participant*s may authorize other *market participants* to access their specific *delivery point* data.

The IESO will publish meter data from the metering database as confidential reports on the IESO reports site. Additionally, participants will be able to submit ad-hoc requests for meter data reports using Online IESO, and retrieve corresponding ad-hoc reports on the IESO reports site. Meter data reports from the IESO reports site can be downloaded either by participant users or by machine accounts using secure file transfer protocol (sFTP). Meter data reports will be compressed in ZIP format, containing one or more files in EDI-867 format. For more information please see the “MDM Meter Data Reports User Guide " available on the Technical Interface page at http://www.ieso.ca/Pages/Participate/Technical-Interfaces.aspx#.

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* (MSPs) who experience difficulties communicating with a *metering installation* or validating their data may also initiate a meter trouble report (MTR) through Online IESO – MTR application. Where the *IESO* determines that a meter trouble report is not required or one has already been issued for the same problem, the IESO will reject the MSP’s draft MTR with explanation through Online IESO – MTR application and the metering *service provider* will be notified 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 their *meter service provider*. if they believe the problem was caused by a hardware or software malfunction at the *metering installation.* The metering *service provider* will initiate a meter trouble report for the affected *meter* to report the results of their investigation, 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 and password, please ask your applicant rep to sign in at online.ieso.ca and register the individual with the IESO while performing the 'update contacts' action.

- "MSP – Meter Trouble Report Contact": Check the box for access to Meter Trouble Reports if you are a MSP organization.
- "MMP – Meter Trouble Report Contact": Check the box for access to Meter Trouble Reports if you are a MMP organization.

1.3.4.1 Meter Trouble Report Timelines

Meter trouble reports are initiated within the following timeframes:

- **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/malfunction or data irregularity at a *metering installation*. This will normally happen the first *business day* following a trade day, when the *IESO* processes failed validations from the Meter Data Acquisition System or after two business days of unsuccessful remote interrogation of meters.
- **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* after Post Meter Trouble Report Notification.** The *metering service provider* is required to resolve a meter trouble report within two *business day*s after the 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. However, MTRs can be resolved but not closed until later, if the repair will take longer to schedule/implement to due shortage of parts, weather, third party arrangements etc. As long as the root cause of the problem and plan to look after the data has been agreed upon with the IESO (MSP provided data files, copies from alternate, use of historical estimates), the MTR can be marked as resolved but not closed until all work is completed.

- 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 day*s post meter trouble report and inform the *IESO* of the plan through an EITRP MTR. The *market rules* then allow the *metering service provider* up to twelve weeks to rectify an *instrument transformer* malfunction and the resolution date on the MTR will be updated accordingly. As most EITRP failures occur in the investigation of a communication or validation (voltage/current issue) MTR, MSPs can either convert the original MTR into a EITRP MTR (with added details of the CT/VT phases affected and plan for temporary metering/data files) or create a new one in Online IESO – MTR application. An example of an EITRP MTR is contained in Appendix D.

- **Three *Business day*s Post Meter Trouble Report Notification.** Meter trouble reports that remain open three *business day*s 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* **Seven *Business day*s 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 to protect the market.

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 may 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. Editing also occurs frequently in the assessment and resolution of Power Outages.

1.3.4.3 Metering Outages

All *metering service providers* should inform the *IESO* of a scheduled or emergency facility or meter outage that will affect metering data by initiating a Metering Outage MTR through the Online IESO – Meter Trouble Report applicationThe *IESO and metering service providers* will use this information to resolve MTRs that have been issued. Appendix D shows a sample of the Metering Outage MTR.

1.3.4.4 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* MDAS system which interrogates the *meters* and validates the *metering data* early each morning will detect these flags, create a validation report.

All power outage validations will be assessed by the *IESO* and an MTR will be manually issued if necessary. For situations that meet the definition as Short Duration Power Outages, no MTR will be issued unless there is a difference of more than 2% between the main and alternate meters for the hour. For other power Outage situations, the MTR will contain the information outlined in the Decision Table in Appendix E. *Metering service providers* (with information from *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 exists within two intervals 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 two intervals 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

No MTR will be issued if a short duration power outage (SDPO) exists unless there is a 2 % difference in Main and Alternate meter data for the hour, then a copy from alternate edit will be made and a MTR issued. Instead, the *metering data* will be accepted as valid.

B. Potential power outages that are not Short Duration

1. 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.
2. 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 E–1 in Appendix E 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.

1.4 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* or an *electricity storage 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 day*s 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 participant*s. 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 Quarantining a Meter

In rare instances to resolve meter data disputes, the subject meter must be removed and physically quarantined to retrieve historical meter data related to the period in question. Refer to section 2.3 for the process workflow of steps required to quarantine a meter. For further information on the need to quarantine a meter refer to Market Manual Part 3.9 Conformance Monitoring.

1.4.5 Power Switching (PS) Operations

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

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

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

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

1. The *metering service provider* is required to submit a power switching plan that identifies all power switching devices that may affect the integrity and accuracy of *metering data*, and provide an alternate source of *metering data* and any previously-approved adjustment required to correct the affected data, including previously-approved loss adjustment factors. (See the "Market Rules", Appendix 6.2, Subsections 1.1.1.2 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. (Market Rules Appendix 6.2, Section 1.6.3.1)
3. The *metering service provider* submits the power switching information on "IMO-FORM-1464: Notification of Power Switching Form" and emails it to the *IESO* at meteringinstallations@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*. (Market Rules, 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* with a MDAS Master File. *Metering service providers must* create a MIRT Master File for each meter and attach it to the registration request (like for like meter change or new connection request) in the Online IESO – Register Revenue Meter Installation (RRMI) application where IESO staff will review it and upload it into the Meter Data Acquisition and Meter Data Management systems.

1.5.2 Meter Data Acquisition System (MDAS)

MDAS is employed by *IESO* in order to collect and validate *metering interval* data that is then transmitted to MDMS for further validation, estimating and editing. In addition, the MDAS RILOG will provide the information required to produce Communication meter trouble reports after 2 days of non-successful remote interrogation.

1.5.3 Meter Data Management System (MDMS) and MDM Meter Data Reports

Meter Data Management System (MDMS) receives *metering data* validated via Meter Data Acquisition System (MDAS) performs further validation, estimation and editing and calculates meter data at the meter, summary meter and delivery point level using registered totalization tables. MDM Meter Data Reports is the application *market participants* can use to view and download market transactions.

1.5.4 CDMS

The Customer Data Management System (CDMS) is designed to meet the business requirements for the following business groups: System Capability, Market Entry and Metering Installation. The CDMS system is used by the three groups for the creation and maintenance of *facility* technical data:

- Registration of *market participants* and other organization types
- Registration of *facilities* and resources
- Registration of *metering installations*

The CDMS system maintains relationships between *Metered Market Participants* (MMP), *Metering Service Providers* (MSP), *transmitters* and/or *distributors*, and a *delivery point* (Resource).

Once created and validated in CDMS, *metering*-relevant information, such as the *delivery point* relationships, is replicated to other *IESO* systems, such as MDMS.

1.5.5 Online IESO - Meter Trouble Report (MTR) Application

This application allows the *IESO* to issue a meter trouble report automatically with a failed communication two days in a row or manually with a failed validation as required in the VEE process. The *IESO* and the *metering service provider* can communicate to resolve an issue through the use of this application. *Metered market participants* can add comments to any Meter Trouble Report involving their meters. *Host metered market participants* can view any MTRs for meters that affect their settlement statements.

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*;
  - reviewing, *metering data to th*e extent *necessary to det*ermine its validity;
  - identifying through their *metering service provider* any *metering data* errors discovered via *metering database* queries; and
  - obtaining prior approval from the *IESO* if operating in s*egregated 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 reports issued by the *IESO* for *registered wholesale meters and initiating EITRP or Outage MTRS when required*.
- The ***IESO***, which is responsible for:
  - interrogating the *revenue meters*;
  - creating "*settlement*-ready" *metering data*;
  - issuing communication and validation meter trouble reports 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, applicant representativesare able to identify a range of contacts within their organization that address specific areas of market operations. For Metering Data management and responding to Meter Trouble Reports this contact will most likely be the MSP – Meter Trouble Report Contact or the MMP – Meter Trouble Report Contact role as indicated in CDMS, (Person/Section/Organization).

If a *market participant* has not identified a specific contact, the *IESO* will seek to contact the applicant representative in CDMS 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 CDMS 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 outside the *IESO* Customer Relations normal business hours, telephone messages or emails may be left in relevant voice or electronic *IESO* mailboxes (press 3), which will be answered as soon as possible by Customer Relations staff.

– 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 *IESO* 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*.

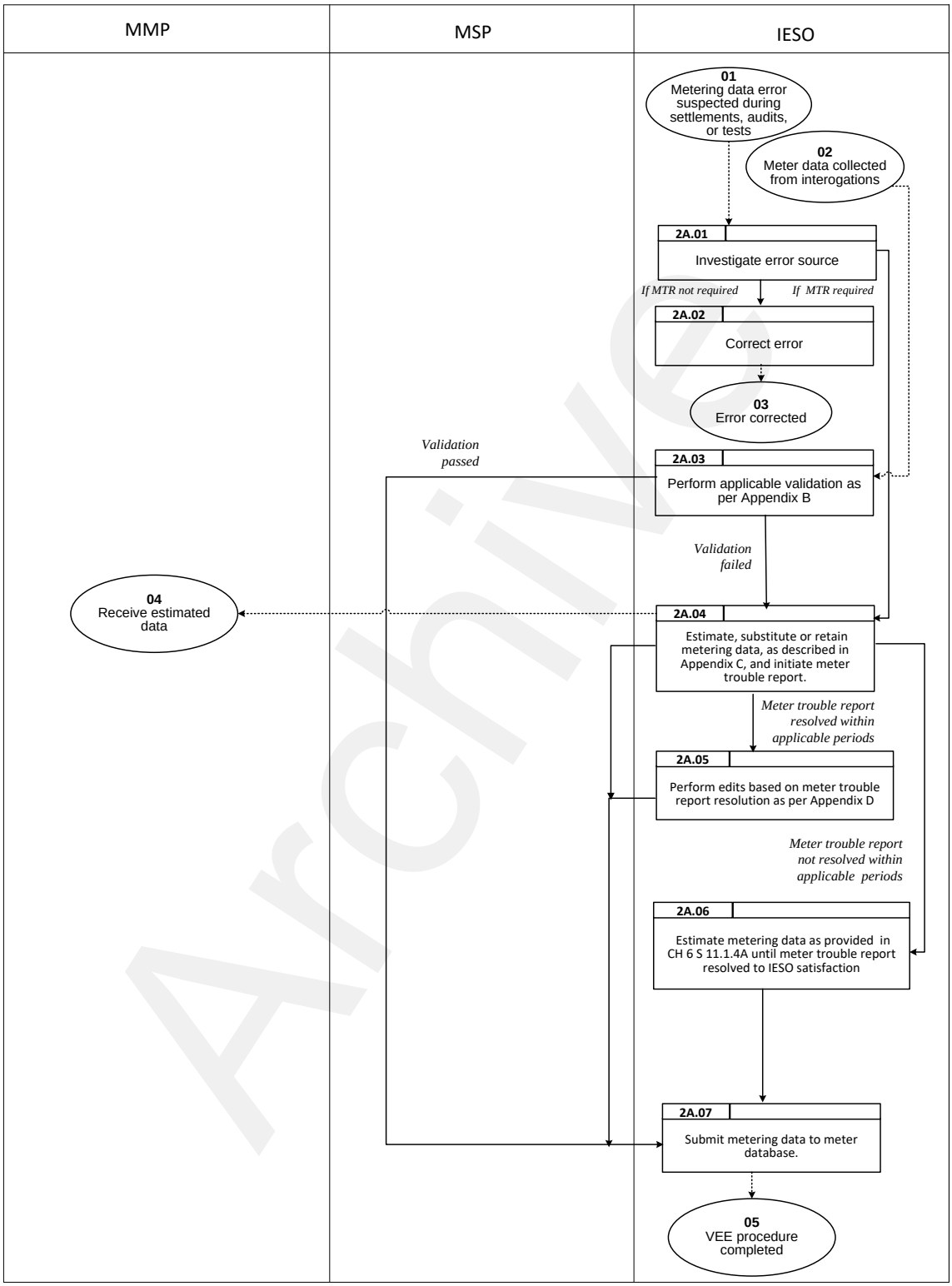


Figure 2–1: Work Wow Flow for Metering Data Validation, Estimation, and Editing (VEE)

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*.

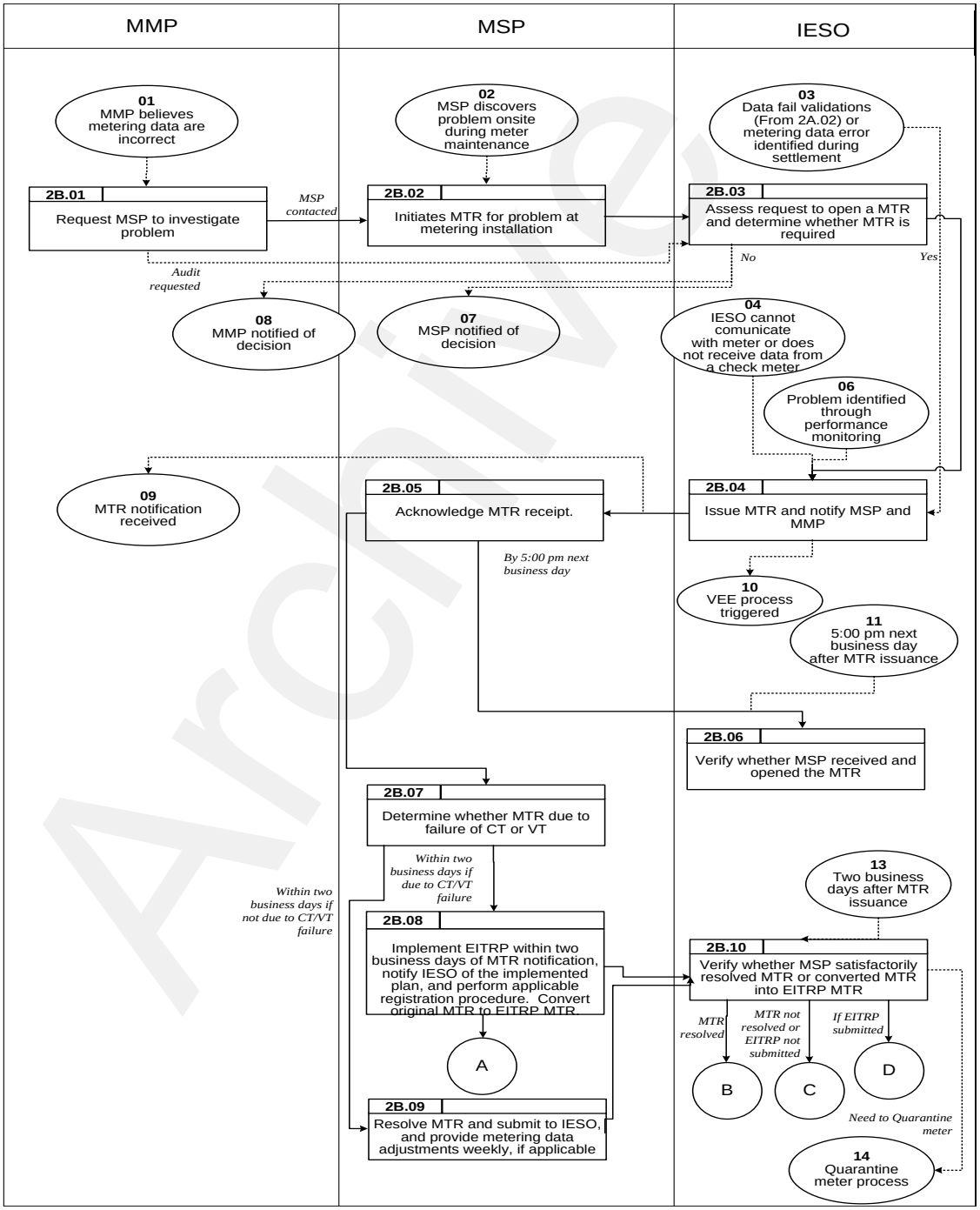


Figure 2–2: Work Flow for Meter Trouble Reports

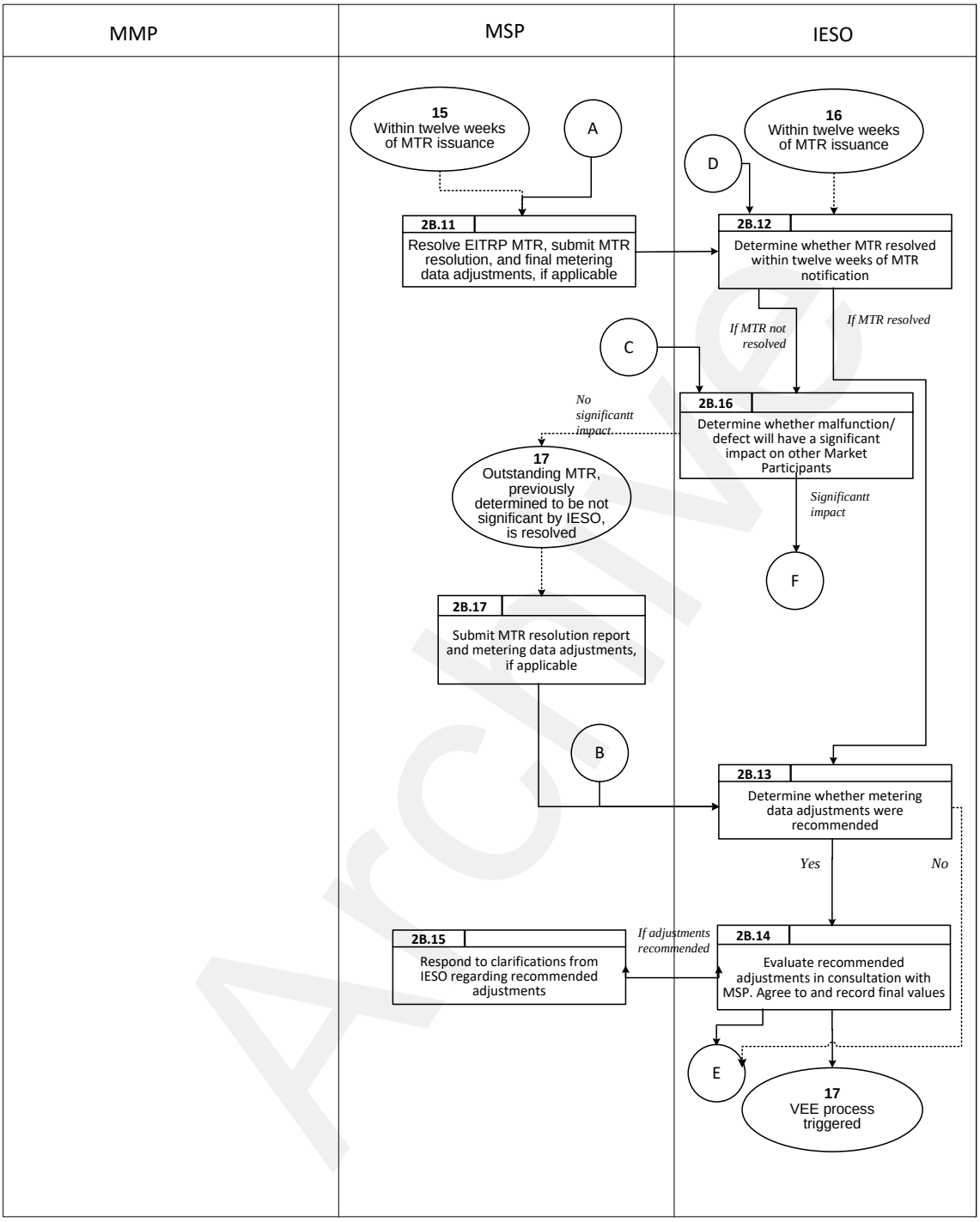


Figure 2–2: Work Flow for Meter Trouble Reports (continued)

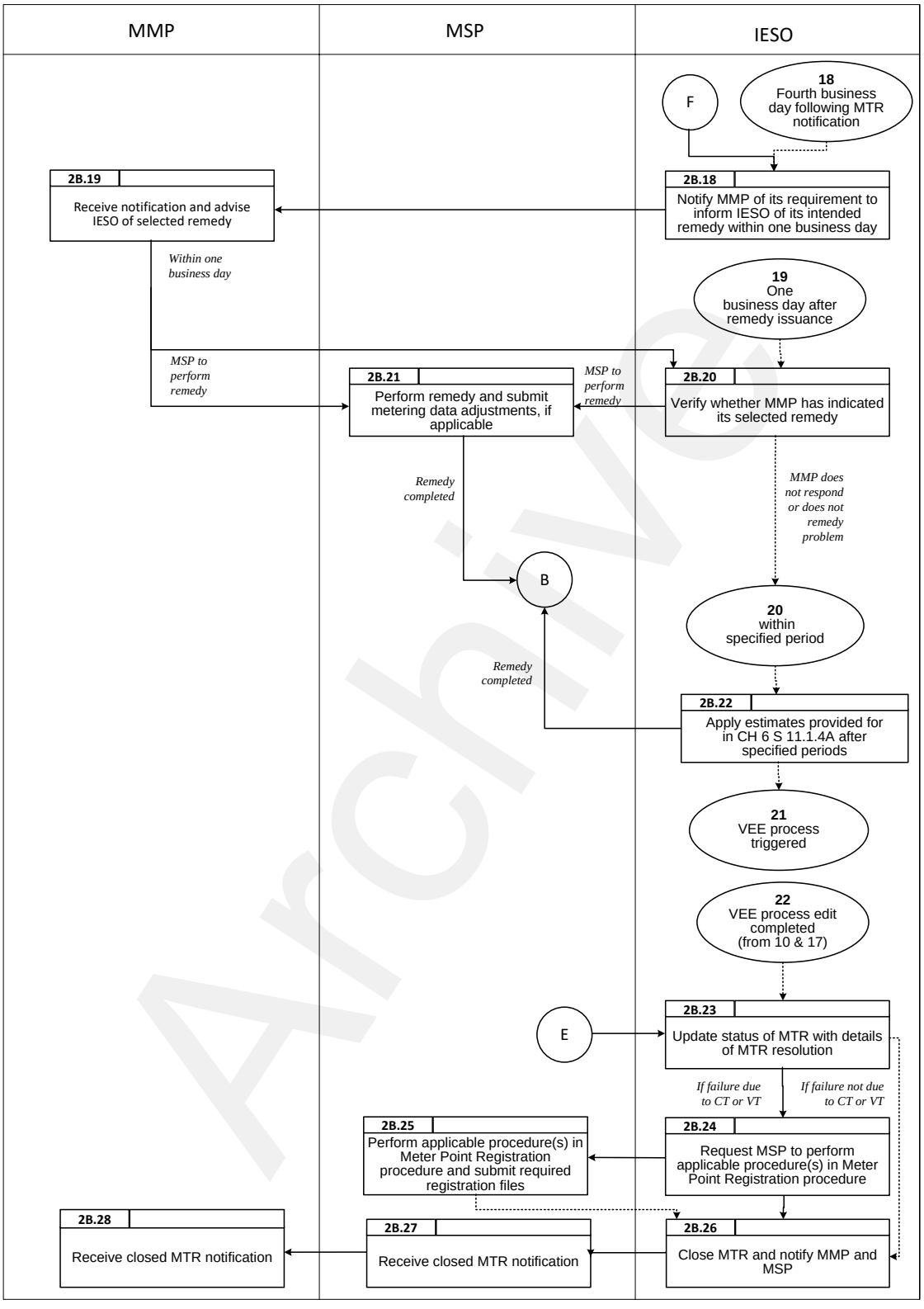


Figure 2–2: Work Flow for Meter Trouble Reports (continued)

2.3 Quarantining a Meter

The following diagram represents the flow of work and information related quarantining a *meter*.

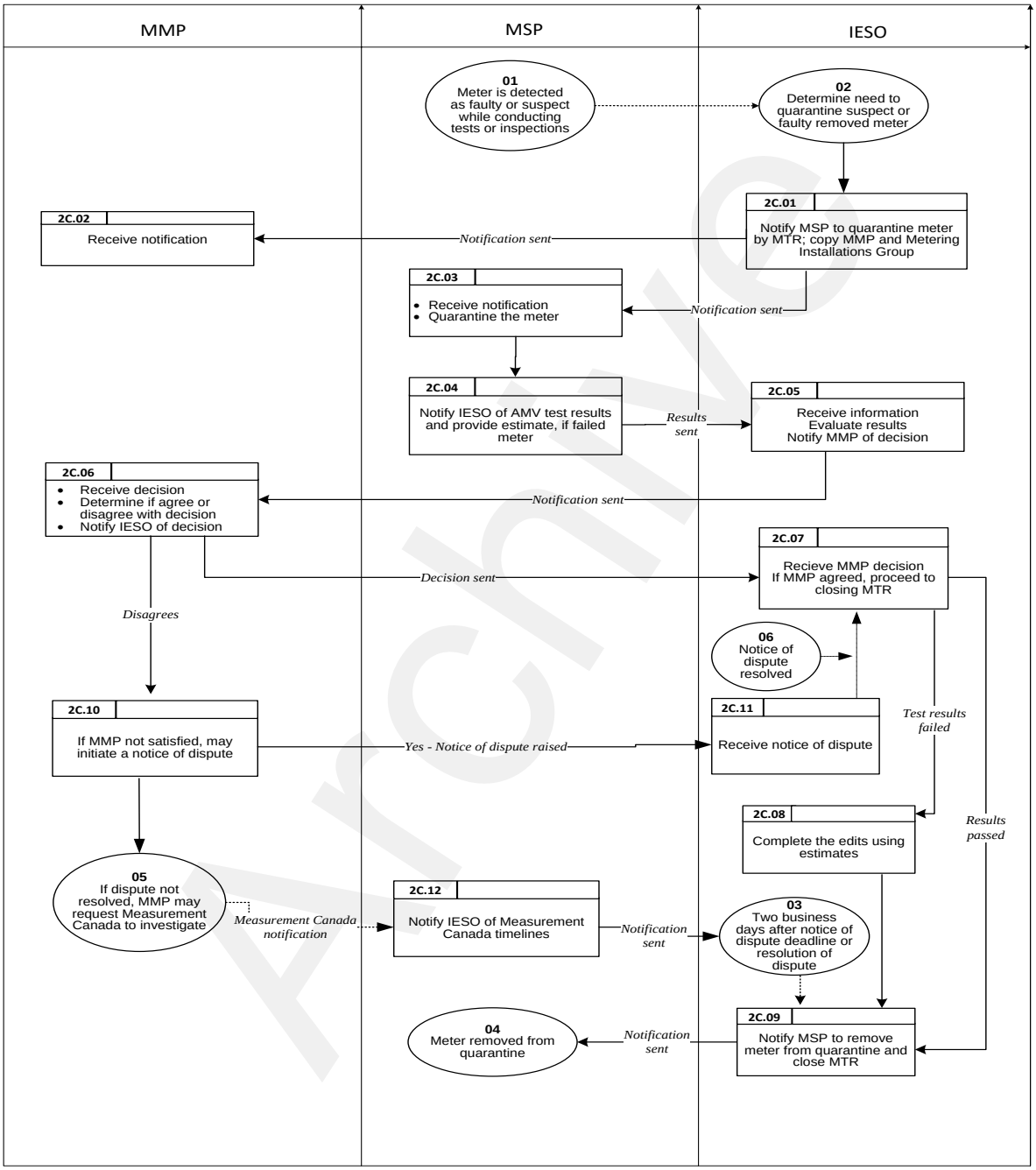


Figure 2–3: Work Flow for Quarantining a Meter

2.4 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*.

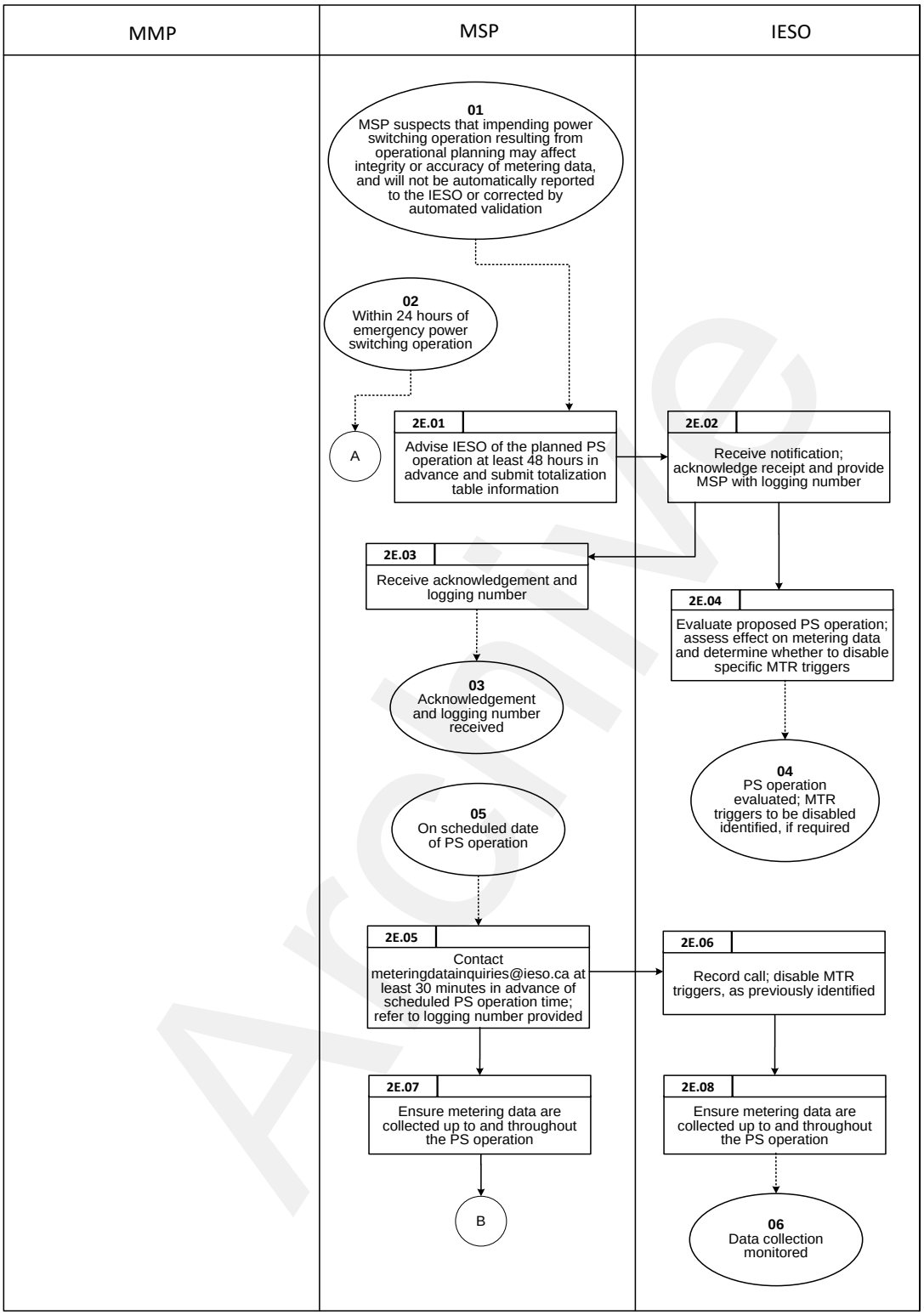


Figure 2–4: Work Flow for Managing the Effect of Power Switching (PS) Operations on Metering Data

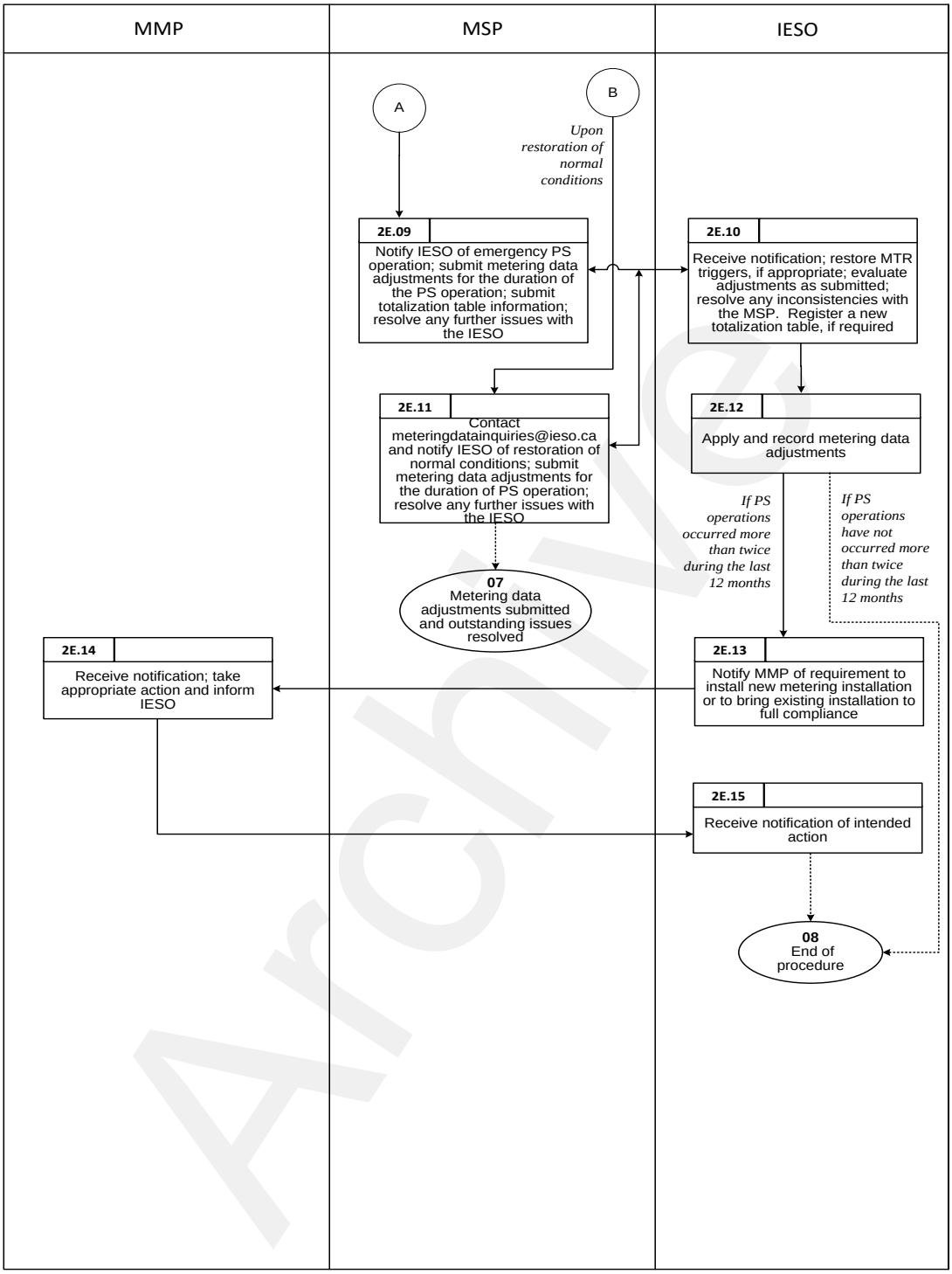


Figure 2–4: Work Flow for Managing the Effect of Power Switching (PS) Operations on Metering Data (continued)

– End of Section –

Appendix A: Validation Tests for Metering Installations

Appendices A, B and C 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*.)

A.1 Overview

- The validation process is configured to handle two types of *metering installations*: Main/Alternate Metering Installation consisting of a Main and Alternate meter
- Stand Alone Metering Installation consisting only of a Main meter

Only conforming *meters* (meters conforming to the requirements of the IESO Market as listed under the Registration tab on the public website) make up a Main/Alternate, and stand-alone *metering installation*s.

- The main *meter* in any of these installations transmits the data to be validated. There are two general methodologies for validating the main data: Comparing it to alternate meter ; or
- Comparing it to data previously gathered from the main which represents 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, direct comparison to alternate data provides assurance that the main data is correct.

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

Some validation criteria, deemed essential by the *IESO*, shall be mandatory. Threshold values for these criteria will be set by the *IESO*.

A.2 Data Channel Assignments for Main/Alternate Meters

A.2.1 Data from the Main Meter

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

A.2.2 Data from the Alternate Meter

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

A.3 Business Validation Tests

The MDAS/MDMS will carry out the following validation tests on the *metering data* immediately following the data collection and MSP data file import processes. These tests will be applied to data originating from main/alternate, and stand-alone *metering installations*

Main/Alternate Meter Comparisons

The main meter active energy (channels 1, 3) will be compared against the alternate meter, for each full hour of actual data. The comparison will not be performed on any hours where either of the two meters have estimated, edited or less than a full hours' worth of data. If the difference exceeds a predefined limit, validation fails and a meter trouble report shall be issued. The process shall be repeated for the reactive energy channels 2 and 4. The trigger level shall be changeable by the *IESO* and shall have a default value of ±2% and over 50 kWh for channels 1 and 3 (kWh Delivered and kWh Received respectively) and a default value of ±5% for channels 2 and 4 (kVArh Delivered and kVArh Received respectively).

Voltage Check

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

1. The V^2h check consists of three steps (example for a three element *meter*): 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 ± 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 have two voltage transformers instead of three. The voltage check is 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 type *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.
2. Validation shall succeed, if the calculated average I^2h value is less than 56.25 (7.5amps). This validation is termed I^2Havg.
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 ± 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 have two current transformers instead of three. The current check is carried out on two channels but the process is identical.

Combination of Voltage and Current Check

1. 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.

Data Not Collected

Missing Data failure validation is when data has not been collected through successful remote interrogation or uploaded from the Meter Data Acquisition System.

Meter Reading Vs Load Profile

Meter readings obtained from the meter at the end of Remote Interrogation are used to validate usage from the load profile data to usage from the meter readings.

Validation on all channels using either the Multiplier Method or the Percent Method is performed and differences beyond certain thresholds are investigated.

- Multiplier Method – This method compares the absolute value of the Metered Energy minus the Interval (recorded) Energy, and determines if the difference exceeds a percentage of the Meter Multiplier value.
- Percent Method – This method subtracts the total Interval (recorded) Energy from the total Metered energy. The difference will be compared as a percentage of the total Metered Energy.

Intervals Found Vs Intervals Expected

Calculates the number of intervals expected and compares to the number of intervals of data returned by remote interrogation of the meter.

Interval Data Overlap

Validation flags intervals where there is an overlap in data for the same time period in two different files.

High/Low Limit on Energy (kWh)

Validation compares the Energy (kWh) High/Low Limits entered on a meter channel basis in the Masterfile against the actual energy value collected from the meter. If actual energy is less than the Low Limit or greater than the High limit, the situation is investigated

High/Low Limit on Interval Demand (kW)

Validation compares the Demand (kW) High/Low Limits entered on a meter channel basis in the Masterfile against the actual demand value collected from the meter. If actual demand is less than the Low Limit or greater than the High limit, the situation is investigated.

A.4 Meter 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 by the MDAS during data collection process at the same time as the interval data. Messages vary in detail from meter to meter. The event log shall be checked for error messages that indicate a problem with current or voltage transformer or a critical hardware or internal electronics problem:

If any of the above error messages are detected, the event will be investigated prior to the IESO issuance of a MTR.

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

Power Outages

Power outage validation flags are shown in the interval data and their case type is based on the availability of actual meter data from the main and alternate meters and detection of power outages in each meter for the same corresponding time period. Table E–1 describes the decisions and IESO/MSP actions for power outage events lasting two or more intervals.

Time Tolerance

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

1. The meter time is within ± 5 seconds of system time, a time reset is not performed.
2. The meter time is greater than ± 5 seconds of system time but less than ± 60 seconds of system time, an automatic time reset is performed.[2]
3. Meter time is greater than 59 seconds of system time; a meter trouble report is issued.

Lapse in Data (Missing Intervals)

Indicates intervals where missing data has been detected in the pulse data file.

CRC/ROM RAM Checksum

Indicates a flag generated by the *meter* that hardware errors occurred during a status check or read/write function within the recorder.

Meter Clock Over Flow

Indicates a flag was generated by the *meter* that a failure of the internal electronics occurred.

Hardware Reset

Indicates a flag was generated by the *meter* that a failure of the internal electronics occurred.

Watch Dog Time Out

Indicates a critical firmware event has occurred e.g. watchdog register is tripped or activated.

[2] Numerous time resets may indicate a defective meter

Parity Error

Indicates a meter hardware error has occurred during an internal status check or an internal read/write function within the meter. Determined by a parity error bit that is set by a recorder on a channel of data during status check or read/write function.

Pulse Overflow

Indicates that the *meter* is creating more pulses than it can record in an interval or MDAS can accommodate in an interval

Test Mode

Indicates when a meter has been changed to test mode or other testing has occurred on the device during the recording period.

Time Reset

Indicates the interval in which the *meter* clock time has been changed, creating either a shorter or longer interval

A.5 Critical Data Change Validations

Recorder ID

Validation to see if the recorder ID is registered in the system.

Device ID (serial number)

Validation to see if the internal device identifier (serial number) matches the value registered in the data collector

Unit of Measure (UOM)

Validation to see if the main and alternate *meters* have the same unit of measure and direction of *energy* flow as the data collector. The UOM defines the engineering quantity for the channel and used to calculate quantities and display report values.

Number of Channels Validation to see if the actual number of data channels from the *meter* matches the number expected in the data collector.

Pulse Multiplier

Validation to see if the pulse multiplier attribute of the channel read matches the number expected in the data collector.

The Pulse Multiplier calculates engineering unit values for each interval of pulses. For KWH meters, the value is determined as follows: `KWH/Pulse = (Kh x CT x PT x Mp) /1000` *where:* Kh is meter Kh, CT is CT ratio, PT is PT ratio, and Mp is number of disk revolution per pulse

Meter Multiplier

Validation to see if the meter multiplier attribute of the channel read matches the number expected in the data collector.

The Meter Multiplier calculates total energy from the net meter readings. This value is normally determined from the meter faceplate.

Power Flow Direction

Validation to see if the power flow matches the direction in the data collector.

The Power Flow indicates the direction in which power flows through this channel. Delivered indicates the power flow is being consumed by the load customer or *electricity storage participant*. Received indicates the power flow is being generated from the generator customer or *electricity storage participant*.

A.6 IESO MDAS and MDMS Settings for Validation of Metering Data

The *IESO* uses these settings to validate *metering data* from *market participant*s. Some of the validations which use to be done in MV-90 (MDAS) will now be done in the new MDM system (power outages, missing data etc.).

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                No (done in MDMS)
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	No (done in MDMS)
Watchdog Timeout	Yes
Short/Long Interval	No
Time Reset Occurred	No
Clock Error	Yes
Test Mod	Yes
Reset Occurred	Yes
Load Control	No
CRC/ROM/RAM Checksum	Yes
Lapse/Missing Data	No (done in MDMS)

Validation - Channel Statuses

Edited Intervals	No
Parity Error	Yes
Pulse Overflow	Yes
Load Factor Limit	Yes but 0 in Masterfile
High/Low Limit (D)	Yes
Power Factor Limit	Yes but 0 in Masterfile
High/Low Limit (E)	Yes
Interval % Change	Yes but 0 in Masterfile
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 but 0 in Masterfile
Meter Change	No
Pwr Outage Int Tol	Yes
Critical Change	Yes
Correction Factor Tol	No
Redundant Channel	Daily

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 B: MDAS Actions When Metering Data Fail Validation

Appendices A, B, C 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 MDAS and MDMS 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 data*base 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 C.

Stand Alone Meter Configuration

1. Communication Failures

- MDAS creates an estimate of the *metering data*.

2. Other validation failures

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

Main/Alternate Configuration

1. Communication Failures

Main meter passes validation, but alternate fails validation

- MDAS uses the main *metering data* "as is" and flags the alternate *data* with an appropriate flag.

Main meter fails validation, but alternate passes validation

- MDAS substitutes the *metering data* from the alternate *meter* with an appropriate flag.

Main meter fails validation, and alternate fails validation

- MDAS creates an estimate of the *metering data*.

2. Other Validation Errors

Main meter passes validation, but alternate meter fails validation

- MDAS uses the main *metering data* "as is" and flags the alternate *metering data* with an appropriate flag.

Main meter fails validation, but alternate passes validation

- Meter Data Management group substitutes the *metering data* from the alternate *meter* with an appropriate flag.

Main meter fails validation, and alternate fails validation

- Meter Data Management group creates an estimate of the *metering data*.

– End of Section –

Appendix C: Editing Guidelines

Appendices A, B, C 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*.)

C.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 day*s 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.

C.2 Editing Guidelines for Main/Alternate Installations

Under normal circumstances the *metering service provider* will have carried out a site investigation within two *business day*s 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 data is correct.

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

Missing or Validation Failure of Alternate

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 –

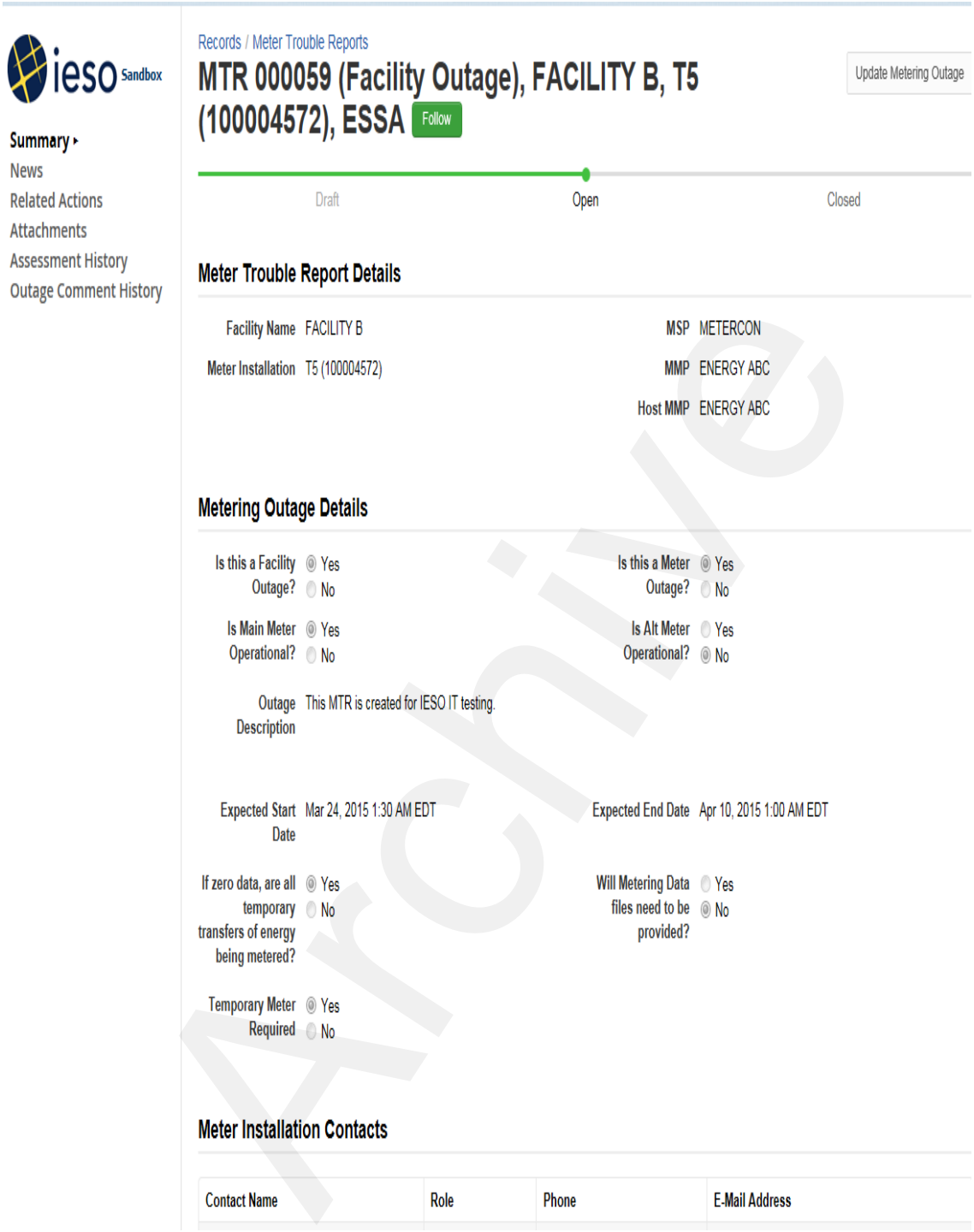
Appendix D: Metering Outage MTR and EITRP MTR

Metering Outage Reporting Form - Notification

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:	

Outage Verification

Outage Start Date:	
Outage Start Time:	
Outage End Date:	
Outage End Time:	
MTR Numbers:	
MTR Closed:	
MTR Close Date:	



ieso Sandbox

Summary ▸
News
Related Actions
Attachments
Assessment History
Outage Comment History

Records / Meter Trouble Reports

MTR 000059 (Facility Outage), FACILITY B, T5 (100004572), ESSA

Follow

Update Metering Outage

Draft — Open — Closed

Meter Trouble Report Details

Facility Name	FACILITY B	MSP	METERCON
Meter Installation	T5 (100004572)	MMP	ENERGY ABC
		Host MMP	ENERGY ABC

Metering Outage Details

Is this a Facility Outage?	(•) Yes ( ) No	Is this a Meter Outage?	(•) Yes ( ) No
Is Main Meter Operational?	(•) Yes ( ) No	Is Alt Meter Operational?	( ) Yes (•) No
Outage Description	This MTR is created for IESO IT testing.		
Expected Start Date	Mar 24, 2015 1:30 AM EDT	Expected End Date	Apr 10, 2015 1:00 AM EDT
If zero data, are all temporary transfers of energy being metered?	(•) Yes ( ) No	Will Metering Data files need to be provided?	( ) Yes (•) No
Temporary Meter Required	(•) Yes ( ) No		

Meter Installation Contacts

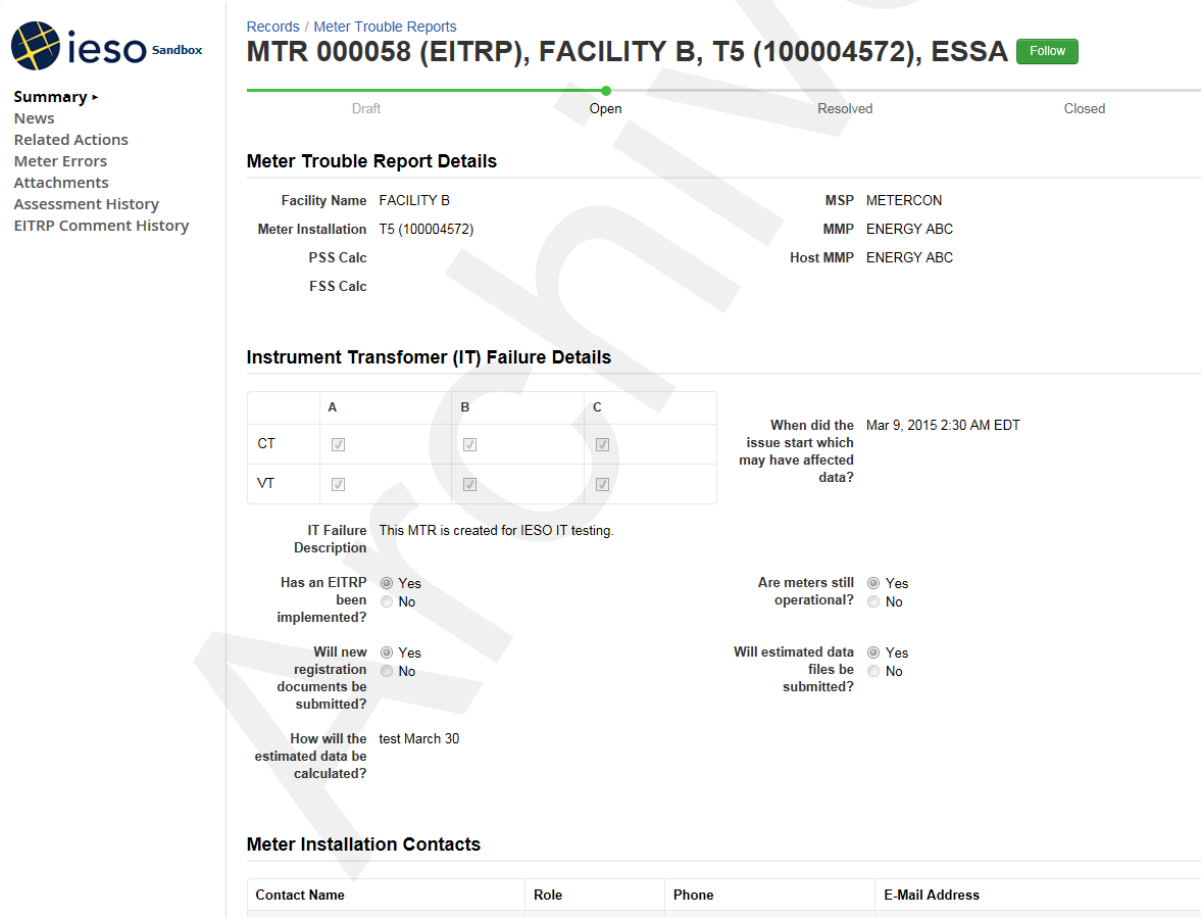
Contact Name	Role	Phone	E-Mail Address

Instructions to MSPs for completing Metering Outage MTR

The Metering Outage MTR will be used by *MSPs and IESO staff* to resolve outstanding MTRs and prevent unnecessary communication and validation MTRs to be issued during the outage. This will reduce the time spent by your *metering service providers* in confirming metering outage related failed validations/communication MTRs and their associated costs.

MSPs should create this Metering Outage MTR before the start day of a scheduled metering outage (facility or meter outage) and the first day upon hearing of an emergency metering outage. One MTR for each metering installation affected should be opened. .

Submit the MTR through the Online IESO – MTR application. Changes to scheduled outage start and end dates can be made at any time through a Meter Outage Schedule Update task. Since the IESO will suppressing issuance of communication or validation MTRs based on the nature of the outage and the MSP answers to the questions in the MTR, if the schedule changes for any reason, MSPs must update the scheduled outage dates to ensure proper issuance of MTRs for real problems.



Instructions to MSPs for completing an EITRP MTR

The EITRP MTR will be used by *MSPs and IESO staff* to resolve issues whee there has been a failure to an instrument transformer. The EITRP can be created on its own or converted from an existing validation or communication MTR, when the MSP investigation determines an instrument transformer is the cause of the issue. To ensure the situation out in the field is very clear and a plan to ensure accuracy of meter data during the restoration period is agreed upon between the MSP and IESO, very specific questions have been added to the EITRP MTR:

- Full description of the IT Failure; what current and voltage phases are impacted; when did the issue start which could affect data; has the EITR plan been implmented; will new registration documents be submitted; will estimated data files be submitted; how will the estimated data be calculated.

Once the EITRP MTR has been received and accepted by the IESO, the resolution date will be changed to 12 weeks after the MTR creation date. If more time is required, then the MSP can request an extension.

Finally the EITRP MTR will allow data files to be submitted on a weekly basis if needed and further discussion on the progress of the repairs to be carried out and documented.

– End of Section –

Appendix E: Power Outage Meter Trouble Report Decision Table

Table E–1 describes the decisions and actions for power outage events lasting two or more intervals. Short Duration Power Outages (less than 2 intervals) will not have MTRs issued unless difference between Main and Alternate meters are more than 2% within the hour

Legend:

PO = power outage

Load = apparent valid interval data

Zero = interval is filled with measured zeroes

Not available = no meter data due to communication or other problem

Note:

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*

Table E–1: Power Outage Meter Trouble Report Decision Table

Case	Main	Alternate	Manual Edit of data in MDAS	IESO action for created MTR	MSP action response to MTR
1	PO	PO	No edit required unless MSP provides data file	**MAIN:** If either MAIN or ALT are powered by phase voltage and have same outage (within 1 interval), then no MTRs are issued. Otherwise note the PO also affected the ALT, add the time of outage and issue MTR on main.**ALT:** Add the MAIN MTR # and reject.	Confirm PO is valid for time specified or supply data file if invalid.

Case	Main	Alternate	Manual Edit of data in MDAS	IESO action for created MTR	MSP action response to MTR
3	PO	LOAD	**Copy from ALT (Channels 1 to 4 and zero out ch 5-8 (10)	**Before copying- ensure it is not just a time drift between main and alt for a few intervals. If main/alt graph looks good, then consider it as Case 1 PO instead (ie no copy from alt required). **MAIN:** Add time of outage; indicate the edit performed, advise ALT has load and issue.	Accept edit unless data is incorrect (1) then provide data file.
4	PO	ZERO	No edit required	**MAIN:** Add time of outage and issue. If confirmed zeros (previous MTR says facility on outage and there are zeros before and after PO for many hours) then do not issue MTR on zero load.	Confirm PO is valid for time specified or supply data file if invalid.
5	PO (2)	Not available	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.
11	LOAD	PO	No edit required	**ALT:** Add time of outage; indicate	MSP checks alternate *meter* for proper operation

Case	Main	Alternate	Manual Edit of data in MDAS	IESO action for created MTR	MSP action response to MTR
				MAIN has load and issue.	and continued use. MSP to confirm whether PO in alternate *meter* is valid and that the main *meter* data as received is valid for *settlement*.
13	ZERO	PO	No edit required unless current presence, then apply Min/Max to Ch 1-4 and zero out channel 5-8(10).	Main: Check channels for current presence- if so apply min/max to ch 1-4, zero out channels 5-8(10). Create and issue Current Presence MTR and reference Alt has Case 13 PO. **ALT**: Add time of outage; indicate MAIN has zero measured load and reject.	None. No MTR will be issued unless Current Presence MTR and then edit must be accepted or data file provided.
15	Not available	PO	Copy from ALT (Channels 1 to 4) (ALT initially is rejected)	Locate MTR for MAIN for communication failure, advise ALT has been copied, add time of PO and request confirmation. **ALT:** Add time of outage; indicate MAIN is not available, that confirmation of PO has been added to MTR and reject.	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	Manual Edit of data in MDAS	IESO action for created MTR	MSP action response to MTR
				Edit "Last Stop Time" field in MDAS Master file for MAIN *meter* to be the stop time for the data file copied from ALT. If communication MTR for MAIN received from MSP before comments added, or fails to clarify PO, return to MSP.	
17	Not available (2)	None		If MSP supplies data file and it has PO, add time of outage and return to MSP.	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.

- 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	MDM Meter Data Reports User Guide
IMO_FORM_1310	Totalization Table Form

- End of Document -