PUBLIC

Detailed Design

Market Renewal Program: Energy

Revenue Meter Registration

Detailed Design

Issue 2.0

This document provides a detailed overview of the processes related to the Revenue Meter Registration that will be implemented for the Energy work stream of the Market Renewal Program, including related market rules and procedural requirements.

Disclaimer

This document provides an overview of the proposed detailed design for the Ontario Market Renewal Program (MRP) and must be read in the context of the related MRP detailed design documents. As such, the narratives included in this document are subject to on-going revision. The posting of this design document is made exclusively for the convenience of *market participants* and other interested parties.

The information contained in this design document and related detailed design documents shall not be relied upon as a basis for any commitment, expectation, interpretation and/or design decision made by any *market participant* or other interested party.

The *market rules*, *market manuals*, applicable laws, and other related documents will govern the future market.

Document Change History

Issue	Reason for Issue	Date
1.0	First publication for external stakeholder review.	November 28, 2019
2.0	Second publication after considering external stakeholder review.	January 28, 2021

Related Documents

Document ID	Document Title
DES-13	MRP High-level Design: Single Schedule Market
DES-14	MRP High-level Design: Day-Ahead Market
DES-15	MRP High-level Design: Enhanced Real-Time Unit Commitment
DES-16	MRP Detailed Design: Overview
DES-17	MRP Detailed Design: Authorization and Participation
DES-18	MRP Detailed Design: Prudential Security
DES-19	MRP Detailed Design: Facility Registration
DES-20	MRP Detailed Design: Revenue Meter Registration
DES-21	MRP Detailed Design: Offers, Bids, and Data Inputs
DES-22	MRP Detailed Design: Grid and Market Operations Integration
DES-23	MRP Detailed Design: Day-Ahead Market Calculation Engine
DES-24	MRP Detailed Design: Pre-Dispatch Calculation Engine
DES-25	MRP Detailed Design: Real-Time Calculation Engine
DES-26	MRP Detailed Design: Market Power Mitigation
DES-27	MRP Detailed Design: Publishing and Reporting Market Information
DES-28	MRP Detailed Design: Market Settlement
DES-29	MRP Detailed Design: Market Billing and Funds Administration

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Table of Changes

This detailed design document has been updated since version 1. For more detailed information about these changes, refer to the “MRP Energy Detailed Design - Version 2.0 Updates” document.

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1. Introduction

1.1. Purpose

This document is a section of the Market Renewal Program (MRP) detailed design document series specific to the Energy work stream. This document provides the details of the business design and the requirements for *market rules*, market facing and internal procedures, and the data flow required to support the Revenue Meter Registration process as related to the introduction of the future day-ahead market and *real-time market*. This design document will aid the development of user requirements, business processes, *market rules* and supporting systems.

As illustrated in Figure 1-1: Detailed Design Document Relationships, this document is part of the MRP detailed design document series and will provide the design basis for the development of the governing documents and the design documents.

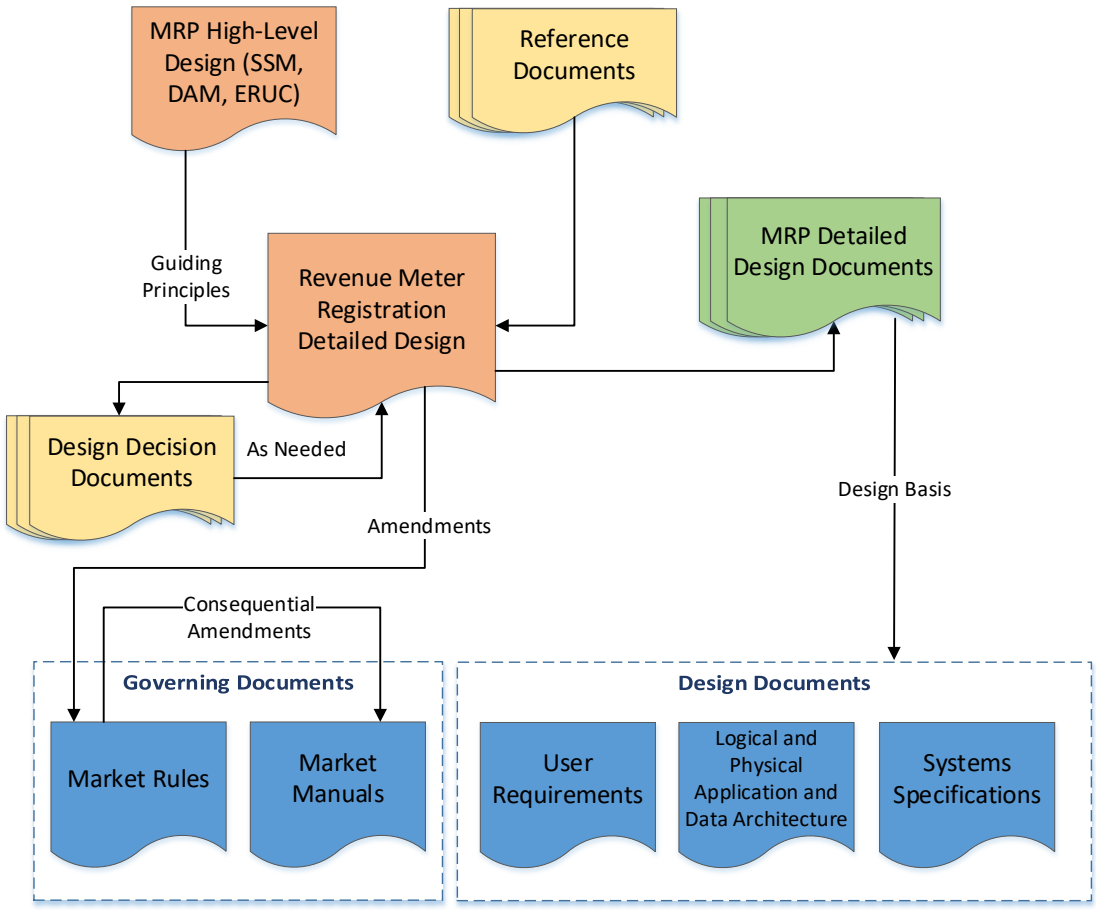

Figure 1-1: Detailed Design Document Relationships

1.2. Scope

This document describes the Revenue Meter Registration process requirements for the future *real-time market* and day-ahead market, in terms of:

- detailed functional design;
- supporting market rule requirements;
- supporting procedural requirements; and
- business process and information flow requirements.

Various portions of this document make reference to current business practices, *market rules*, procedures and processes of Revenue Meter Registration. However, this document is not meant as a restatement of the existing design of the *IESO* process. Rather, this document focuses on existing components only to the extent that they might be used in the current or amended form in support of the future day-ahead market and *real-time market*.

1.3. Who Should Use This Document

This document is a public document for use by the MRP project team, pertinent *IESO* departments and external stakeholders. Portions of this document that are only pertinent to *IESO* internal processes and procedures may not be incorporated into the public version.

1.4. Assumptions and Limitations

Assumptions:

While this document makes references to specific parameters that might be used in the Revenue Meter Registration process, this document may not determine what the value of all those parameters might ultimately be. The value of such parameters will be determined through the development of the *market rules* and *market manuals*.

Limitations:

The business process design presented in Sections 0 and 0 of this document provides a logical breakdown of the various sub-processes described the detailed business design presented in Section 6. However, factors such as existing and future system boundaries and system capabilities may alter the ultimate design of these sub-processes.

1.5. Conventions

The standard conventions followed for this document are as follows:

- Title case is used to highlight process or component names; and
- Italics are used to highlight market rule terms that are defined in Chapter 11 of the market rules.

1.6. Roles and Responsibilities

This document does not set any specific roles or responsibilities. This document provides the design basis for development of the documentation associated with the *IESO* project lifecycle that will be produced in conjunction with the MRP.

1.7. How This Document Is Organized

This document is organized as follows:

- **Section 2** of this document briefly describes the current context of the Revenue Meter Registration process, and its context for the future *real-time market* and day-ahead market;
- **Section 3** of this document provides a detailed description of the functional design inferred from sections relevant to the Revenue Meter Registration in the high-level designs for Single Schedule Market (SSM), Day-Ahead Market (DAM) and Enhanced Real-time Unit Commitment (ERUC);
- **Section 4** of this document describes how the Revenue Meter Registration process will be enabled under the authority of the *market rules* in terms of existing rule provisions, amended rule provisions and additional rule provisions that will need to be developed;
- **Section 5** of this document describes the requirements of the Revenue Meter Registration process for a system of market-facing and internal procedures in terms of existing procedures, amended procedures and additional procedures that will need to be developed;
- **Section 6** of this document provides an overview of the arrangement of *IESO* processes supporting the overall Revenue Meter Registration process described in Section 3. This section also outlines the logical boundaries and interfaces of the various sub-processes related to the Revenue Meter Registration process in terms of existing processes, amended processes and additional processes that will need to be developed.

End of Section –

2. Summary of Current and Future State

2.1. The Register Revenue Meter Installation Process in Today's Real-Time Market

Metering data is the basis for deriving *settlement* charges and payments that will be made or received by *market participants* for their *physical market* transactions. All quantities of *energy* bought or sold by *market participants* must be measured and recorded by *metering installations*. Chapter 6 of the *market rules* governs the requirements for *registered wholesale meters (RWM)* and thus the Register Revenue Meter Installation process.

Each *metering installation* must be registered with the *IESO* in order that the *metering data* collected from these *metering installations* is timely, accurate and can be settled with the associated *market participants*. Determination of *settlement* charges for a *registered facility* is deemed at the *delivery point.* The *RWM* associated with the *delivery point* measures and records all transfers of *energy* to and from the *IESO-controlled grid*.

The following interconnected processes occur concurrently during the Register Revenue Meter Installation process:

- *Facility* information including assignment of the *delivery point* for *energy* and the *delivery point* for *transmission tariff* relationships are established in the Customer Data Management System (CDMS). Once a *facility* has been created by the *IESO*, the *market participant* that is deemed the *owner* of the *facility* assigns the *metered market participant (*MMP*)* and the *registered market participant (*RMP*)* that is to be associated with that *facility*[1]. A *facility* with all applicable relationships is deemed a *registered facility* and referenced as a *delivery point* for the purpose of *settlement*. For *transmission tariff delivery points,* the *transmitter* establishes and assigns the *transmission customer* relationships[2]. These relationships are assigned during the Facility Registration process, which is addressed in the Facility Registration detailed design document.
- The Register Revenue Meter Installation process begins with the *metering service provider* (MSP) identifying the *metering installations* to be registered and associated

[1] The RMP is applicable to *facilities* for which *dispatch data* is to be submitted including *generation facilities, dispatchable load facilities, intermittent generator* and *variable generator facilities*, *hourly demand response* resources, and in the future day-ahead market price responsive load *facilities*.

[2] The *transmission customer* is referred to as the *metered market participant* for *transmission tariff* (MMPT) in IESO's On-Line System.

with the *registered facility*. During this process, the *IESO* assigns *meter point* IDs to the *metering installations* and the MSP begins submitting the required registration documentation. The end-to-end test confirms communication of the *metering installation* with the *IESO's* Meter Data Acquisition System (MDAS).

- The Register Revenue Meter Installation process includes the Totalization Table Registration task whereby the *IESO* enters the totalization table on behalf of the MMP or the *metered market participant* for *transmission tariff* (MMPT) in the *IESO's* Meter Data Management System (MDMS) for the purpose of *settlement*. The totalization table associates the *metering installations* with the *delivery point* for *energy* and the *delivery point* for *transmission tariff.* The information collected during the Register Revenue Meter Installation process forms part of the *IESO's metering registry*.
- The Meter Trouble Reporting (MTR) system uses the *registered facility* relationships as established in the CDMS. This information enables the MTR application to issue Meter Trouble Reports to the associated MSP and the MMP when a problem with the *metering installation* is identified. These problems are typically identified as part of the Validation, Estimation and Editing (VEE) process associated with the daily collection and management of *metering data*.
- The *metering registry* is updated each time a new *metering installation* registration information is introduced. All *metering registry* documentation is filed in the Electronic Records Management System.

Demand response market participants (DRMP) can deliver their *demand response capacity obligations* to the *IESO-administered market* via resources registered as a *dispatchable load resource* or as an *hourly demand response* (HDR) resource[3]. The implications for *revenue meter* installation are described in Section 2.1.2.

2.1.1. Metered Market Participants

The Facility Registration process assesses whether the registration information submitted by the *market participant* for *facilities* adhere to established *reliability*, performance and technical standards as defined in the *market rules*. The *market participant* identifies the MMP and RMP for each *registered facility*. The MMP is responsible for the financial *settlement* with the *IESO* of all quantities of *physical services* (including *energy* and *operating reserve*) allocated to that *registered facility* as part of the *IESO's settlement process*. The allocated quantities used for *settlement* are based on the *metering data*

[3] The *IESO* has replaced the *demand response auction* with a *capacity auction* to enable competition between additional resource types. All references to the *demand response auction* in this document should be read as reference to the *capacity auction*. Conforming changes required to align with the current or future *capacity auction* will be made during implementation via *market rules* and/or *market manuals*.

associated with the *RWM* associated with the *registered facility*, totalized and adjusted to the *delivery point*.

The Register Revenue Meter Installation process cannot begin until all relationships to the *registered facility* are assigned. The MMP and RMP relationship is assigned by the *market participant* who is the *owner* of the *facility*. After the *market participant* assigns the MMP for a *facility*, the MMP must then assign the MSP, local distribution company (LDC), Meter Data Associate (MDA) and other relevant relationships for that *facility*.

An MMP is responsible for all *metering installations* at the *registered facility* for which it is the MMP. The MMP is responsible for the following *metering installation* activities:

- Providing a *metering installation*;
- Accuracy of *metering data*;
- Identifying an associated MSP and/or any change of MSP to the *IESO*;
- Ensuring contracts entered into by the MMP with regard to each *metering installation* comply with the *market rules*; and
- Transferring documentation between an outgoing MSP and a new MSP for a *metering installation*.

2.1.2. Demand Response Resources

DRMPs must register their *facilities* in order to deliver their *demand response capacity obligation.* DRMPs deliver *capacity obligations* via *dispatchable loads* or HDR resources.

A *dispatchable load* resource delivering *demand response capacity* has a physical *demand response capacity obligation.* A physical *demand response capacity obligation* is provided for an associated node by a DRMP that is not aggregating load. A virtual *demand response capacity obligation* is provided for an associated zone by a DRMP that acts as an aggregator of load.

An HDR resource delivering *demand response capacity* has either a physical or a virtual *demand response capacity obligation*. An HDR resource is comprised of *demand response contributor(s)* that are categorized as either a physical or a virtual *demand response contributor,* which are defined as follows:

- A physical *demand response contributor* is a commercial, industrial, institutional and/or *non-dispatchable load* (C&I) resource designated to deliver *demand response capacity* to meet a physical or virtual *demand response capacity obligation.* A physical *demand response contributor* is metered by an *RWM*.

- A virtual *demand response contributor* is a C&I or residential resource that is not participating in the *IESO energy market;* it is designated to deliver *demand response capacity* to meet a virtual *demand response capacity obligation.* A virtual *demand response contributor* is metered by an LDC revenue meter.

An HDR resource is subject to *facility* registration and contributor management registration requirements, which includes contributor and *meter* registration and measurement data submission requirements as defined in Market Manual Part 12.0 for the *demand response auction*.

Facilities that are *revenue metered* by the *IESO* may be transmission-connected *load facilities* or *embedded load facilities* with *RWMs* and *metering installations* subject to Chapter 6 of the *market rules*. For such *registered facilities*, both the *demand response capacity obligation* and *energy* are settled by the *IESO* as described below:

- *Demand response capacity* delivered by transmission-connected or distribution-embedded NDLs are registered as *demand response contributors* and categorized as Physical C&I HDR Contributors. Such *load facilities* pay the *hourly Ontario energy price* (HOEP) for *energy*.
- *Demand response capacity* delivered by transmission-connected or distribution-embedded *dispatchable loads* is subject to *dispatch* and *settlement* based on the *energy market* price in the *real-time market* for each interval.

Facilities that are not revenue metered by the *IESO* and used to deliver *demand response capacity* are embedded in the *distribution system*. For such embedded loads, only the *demand response capacity obligation* is settled by the *IESO*. DRMPs register such *demand response contributors* categorized as:

- Virtual C&I HDR Contributors, or
- Virtual Residential HDR Contributors.

DRMPs delivering *demand response capacity* via physical and virtual *demand response contributors* must maintain a contributor registry with the *IESO*. DRMPs must also submit measurement data for the virtual *demand response contributors* registered with the *IESO* in accordance with the requirements defined in Market Manual Part 12.0 – Registration Requirements and Energy Market Participation.

The DRMP collects *metering data* for such virtual *demand response contributors* directly from the contributor's LDC *meter* and submits the *metering data* to the *IESO*. The DRMP must retain individual contributor *metering data* and supporting registration data for audit purposes by the *IESO*.

2.1.3. Metering Service Provider Assignment

The MSP registers, maintains and services the *metering installation* on behalf of the MMP. The registration process for MSPs is designed to enable the *IESO* to assess whether applicants meet the qualifications for registration as an MSP as specified in Chapter 6 of the *market rules.* The MSP is assessed for its technical abilities, knowledge, experience, educational requirements and equipment. The registration process verifies that the MSP, supported by documentary evidence, can meet all of the requirements and performance standards set out in the *market rules* and the relevant *IESO* standards and procedures.

Applicants for registration as a MSP are required to demonstrate their competencies in all of the above areas in order for registration to succeed. The MSP is responsible for the following activities:

- Registering *metering installations* with the *IESO*;
- Maintaining *metering installations*;
- Responding to *meter* trouble reports and investigating *meter* errors;
- Providing edited *metering data*; and
- Providing correction factors where necessary.

To register a *metering installation,* the MSP must perform the following activities/tasks:

- Submit a Single Line Diagram (SLD) to the *IESO* identifying the *metering installation* and its association to the *registered facility*;
- Determine *metering installation* compliance and submit registration documentation under the Declaration of Metering Installation Compliance or Alternative Metering Installation Standards Checklist;
- Submit relevant *meter point* documentation to the *IESO* including Site-Specific Loss Adjustments (SSLA), Measurement Error Correction (MEC), Emergency Instrument Transformer Restoration Plan (EITRP) and Totalization Table;
- Submit the MDAS Master File to the *IESO*;
- Complete the commissioning, communication and end-to-end tests including approving the *Engineering Units Report* for each *meter point* ID;
- Approve the Site Registration Report (SRR) for the *energy delivery point* and *transmission tariff delivery point*; and
- Provide any relevant *metering installation* information to the *IESO* upon request from the MMP.

The MSP registers and maintains each *metering installation* for which the MSP is assigned. A list of authorized MSPs is available on the *IESO* website. The completion of the Register Revenue Meter Installation process results in an *RWM* for the purpose of *settlement*.

2.1.4. Registered Wholesale Meter Requirements

RWMs must meet the *IESO* hardware standards as specified in Chapter 6 of the *market rules* and be registered with the *IESO* before being allowed into service in the *IESO-administered market*. Currently, the *IESO-administered market* permits the following two types of *metering installations*:

- Main/Alternate Installation – A *metering installation* consisting of two *revenue meters* to provide alternate sources of *metering data* to be used for *settlement* when the *metering data* from either the main or alternate *meter* has not passed validation procedures.
- Standalone Installation – A *metering installation* consisting of a single *revenue meter* meeting the alternative *metering installation* standard or Standards for Embedded Generation Facilities under 2 mega volt-amperes (MVA).

The *IESO* provides a Conforming Meter List, which lists the *meter* types approved for use in the *IESO-administered market*, and is available on the *IESO* website.

2.2. The Register Revenue Meter Installation Process in the Future Real-Time Market and Day-Ahead Market

2.2.1. Existing Market Participants

Participation in the future *real-time market* and the day-ahead market (DAM) will not introduce any change to the metering requirements or the *metering registry* information that is currently established as part of the Register Revenue Meter Installation process. The establishment of a day-ahead market will however entail additional information, or changes to existing information, for the Facility Registration process, and may include revisions to:

- *market participant* information;
- market type applications;
- market applications;
- class applications;
- *prudential support* information; and
- revised documentation.

In the context of the MRP, the Register Revenue Meter Installation process will continue to require the same types of information from *market participants* as it does today. Consistent with today's market, this process will continue to provide information and services to other *IESO* processes. New information flows will not be required in order to support the Register Revenue Metering Installation process.

2.2.2. Price Responsive Load Facilities

A price responsive load (PRL) is a new category of *load facility* that will be created as part of the day-ahead market. *Market participants* will be able to elect to change the registration of their *registered facility* from an NDL to a PRL. The designation of an MMP and the identification of the MSP will not be affected by the re-registration of an NDL as a PRL.

The registration of a PRL will include the designation of the *market participant* authorized to submit *dispatch data* as the RMP for the *registered facility*. The RMP for a PRL will have the ability to submit *bids* for *energy* into the day-ahead market for the PRL and receive DAM schedules.

The *market participant* election to change the registration of an existing NDL to a PRL will not result in any changes to the information contained in the record of the *metering installation*. If only a portion of the existing NDL is registered as a PRL, this may result in

changes to the *metering installation*. This will be determined during the Register Revenue Meter Installation process.

2.2.3. Demand Response Resources

As described in Section 2.1.2, *demand response capacity* may currently be delivered by DRMPs via a *dispatchable load* resource or an HDR resource.

A *dispatchable load* resource delivering *demand response capacity* has a physical *demand response capacity obligation.* An HDR resource delivering *demand response capacity* has either a physical *demand response capacity obligation* met by physical *demand response contributors* associated with an NDL, or a virtual *demand response capacity obligation* met by physical and/or virtual *demand response contributors*.

In the future, an HDR resource may meet a physical *demand response capacity obligation* through a physical *demand response contributor* associated with a PRL[4]*.* The RMP and MMP for the HDR resource must be the same as the RMP and MMP for the PRL.

The Revenue Meter Installation process requirements for *dispatchable loads* and physical *demand response contributors* will be unchanged for the future *energy markets* and the existing *demand response auction*, and the following will apply:

- *Demand response capacity* delivered by a transmission-connected or a distribution-embedded NDL with *demand response contributors* categorized as Physical C&I HDR contributors will be settled by the *IESO* for the *demand response capacity obligation,* and the *metered market participant* will pay the Ontario zonal price for *energy* based on the *metering data* from the *RWM*.
- *Demand response capacity* delivered by a transmission-connected or a distribution-embedded PRL with *demand response contributors* categorized as Physical C&I HDR contributors will be *settled* by the *IESO* for the *demand response capacity obligation* and, the *metered market participant* will pay the locational marginal price for *energy* based on *metering data* from the *RWM*.
- *Demand response capacity* delivered by a transmission-connected or a distribution-embedded *dispatchable load* will be settled by the *IESO* for the *demand response capacity obligation* and, the *metered market participant* will pay the locational marginal price for *energy* based on *metering data* from the *RWM*.

[4] The physical *hourly demand response* resource and associated price responsive load resource will be registered as separate resources with separate *delivery points* at the same *connection point* to the *IESO-controlled grid*.

The Revenue Meter Installation process requirements for virtual *demand response contributors* will be unchanged for the future *energy markets* and the existing *demand response auction,* and the following will apply:

- HDR resources categorized as Virtual C&I HDR contributors or Virtual Residential HDR contributors will be settled by the *IESO* for the *demand response capacity obligation* based on *metering data* for virtual *demand response contributors* collected and submitted to the *IESO* by the DRMP acting as aggregator.
- *Energy* will not be settled by the *IESO*. The Ontario Energy Board (OEB) will set the *energy* withdrawal price and the *energy* transaction will be settled by the LDC as per the current practice.

Further detail on demand response resources is provided in Section 3.4.5.

2.2.4. Participation in the IESO-Administered Markets

The introduction of the day-ahead market and the changes to the *real-time market* under the MRP will not impact the Register Revenue Meter Installation process. The nature of the key interfaces between the Register Revenue Meter Installation process and other *IESO* processes or between the Register Revenue Meter Installation process and *market participants* will remain unchanged.

To submit DAM physical transactions *dispatch data* involving *registered facilities* other than *boundary entities*, the *market participant* designated as the owner of the *facility* will be required to identify the RMP and the MMP that will be associated with the *registered facility*. The MMP may or may not be the same *market participant* entity as the RMP for the *registered facility*. However, only one MMP and one RMP can exist for a *registered facility* and they will participate in both the day-ahead market and the *real-time market*.

MMPs will be responsible for the financial *settlement* with the *IESO* for all day-ahead market and *real-time market settlement amounts* associated with each *registered facility*. The Register Revenue Meter Installation process forms part of the Facility Registration process. *Market participant*s will be required to register information for physical transaction privileges in the day-ahead market after they have met all of the registration requirements for the *real-time market*. Failure to do so will prevent the associated RMP entity from submitting *bids* and *offers* for the *registered facility* into the day-ahead market. Refer to the Facility Registration detailed design document for assignments of RMP and MMP in both the *real-time market* and the day-ahead market.

During the Authorization process, the *IESO* will need to grant separate authorizations for physical transactions and virtual transactions. For more information on these processes, refer to the Authorization and Participation detailed design document. Virtual trading in the

day-ahead market will not require the *market participant* to register *facilities* or *metering installations*.

No changes to the Register Revenue Meter Installation process are being proposed as a result of the MRP implementation. Section 6.1 provides an overview process diagram of the Register Revenue Meter Installation process.

Figure 2-1 provides a high-level overview of the Revenue Meter Registration process in the current and future markets.

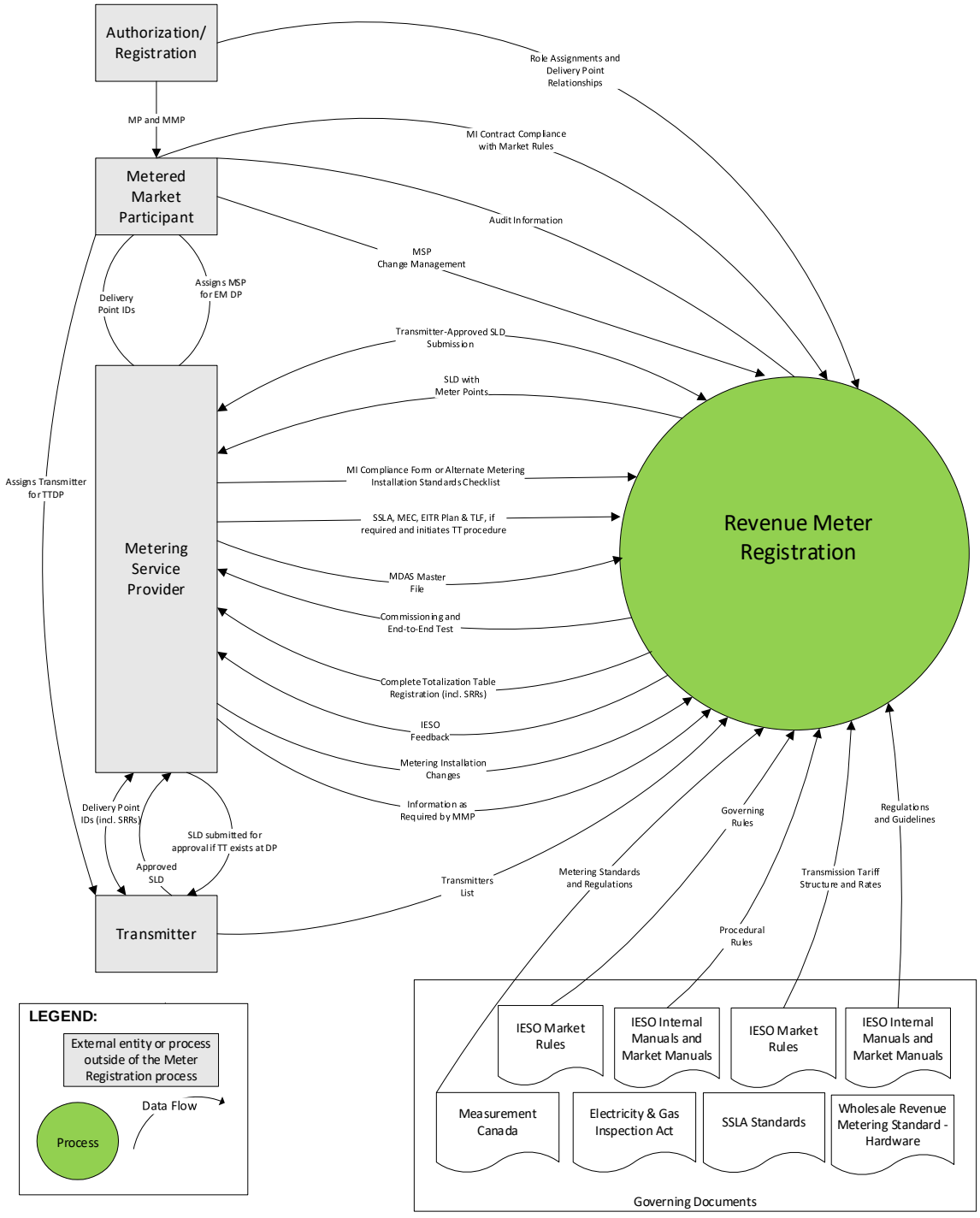

Figure 2-1: Register Revenue Meter Installation Process – Current and Future

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3. Detailed Functional Design

3.1. Structure of this Section

This section is divided into the major topic areas that are of particular interest to the Register Revenue Meter Installation process in support of the day-ahead market and *real-time market*. Over the course of this section, the design of the Register Revenue Meter Installation process will successively be discussed in terms of:

- Objectives;
- Facility Associations;
- Revenue Metering Requirements for Facility Classes Associated with the Future Market;
- Provision of Information to Related IESO Processes; and
- Provision of Information to Market Participants.

The above sub-sections generally cover the major topic areas of the DAM, ERUC and SSM high-level designs, and specifically, the design of the Register Revenue Meter Installation process in the context described in Section 2 of this document.

The establishment of a day-ahead market and the modifications to the *real-time market* will not introduce any changes to the existing Register Revenue Meter Installation process. However, an existing NDL might elect to register as a PRL. This may or may not require changes to the information contained in the record of the *metering installation*, as described in Section 3.4.4.

A *market participant* must meet all of the Register Revenue Meter Installation requirements in the *real-time market* before being authorized to participate in the day-ahead market.

3.2. Objectives

The objectives of the Revenue Meter Registration process for the future day-ahead market and *real-time market* include:

- Leveraging to the greatest extent possible any existing processes within the Revenue Meter Registration process;

- Identifying the particular data requirements and obligations specific to the introduction of a day-ahead market within the Revenue Meter Registration process; and
- Confirming that a *market participant* is bound by the *market rules.*

The Register Revenue Meter Installation process in the future market will allow for new PRL *facilities* and the provision of *demand response capacity* by PRL *facilities,* while staying consistent with these objectives.

With the exception of an NDL that a *market participant* elects to re-register as a PRL, the implementation of the MRP will not require any changes to the registration of existing *facilities* or the *metering installations* associated with these *facilities*.

Generation facilities, dispatchable load facilities, NDLs and PRLs that are enrolled in the *real-time market* will also be enrolled in the day-ahead market. However, NDLs enrolled in the *real-time market* will receive the Ontario zonal price, and the *IESO* will forecast their *demand*. PRLs will be non-dispatchable in real time but will be subject to nodal prices.

3.3. Facility Associations

Consistent with the current *real-time market* requirements, every *registered facility* will continue to be associated with an MMP. Any physical transaction *settlement amounts* from the day-ahead market and *real-time market* associated with the *registered facility* will be allocated to the *metered market participant* for that *facility.* Therefore, any authorizations for *market participants* to conduct physical transactions in the day-ahead market for *a registered facility* will be reflected in the current information flow from the Registered Revenue Meter Installation process. This process will also attach the totalization and adjustment of *metering data* to the *delivery point* associated with the *registered facility*.

3.4. Revenue Metering Requirements for Facility Classes Associated with the Future Market

Chapter 6 of the *market rules* identifies the rights and obligations of *market participants*, MMPs and the *IESO* as they pertain to *meter* registration, installation and requirements.

In order to apply the required *settlement* calculations to each type of *facility*, it will be necessary for the Facility Registration process to provide the appropriate classification(s) for each *registered facility*. These classifications must be constant for every *facility* over the course of all hours in the same *trading day*. These will also be associated to any classifications given to the *registered facility* for the purposes of settling the *real-time market*. As part of the MRP, the *IESO* will introduce a new *facility* type – the price responsive load (PRL) – in the future day-ahead market and *real-time market*.

A *registered facility* for a *generation facility* must have one of the following designations:

- *Dispatchable generation facilities*, including the following sub-classifications:
  - Non-quick start (NQS) *generation facility*
  - Quick start generation
  - Hydroelectric *generation facility*
  - Pump generation station facility
  - *Variable generator*
  - *Flexible nuclear generation*
  - *Generation facility* under *Automatic Generation Control (AGC) contract*
  - *Generation facility* under *Reliability Must Run (RMR) contract*
- Non-dispatchable *generation facilities*, including the following sub-classifications:
  - *Self-scheduling generation facility*
  - *Transitional scheduling generator*

- *Intermittent generator*

A *registered facility* for a *load facility* must have one of the following designations:

- *Dispatchable load*
- *Non-dispatchable load*
- Price responsive load

3.4.1. Facility Registration

Facilities are defined in the *market rules* as *generation facilities*, *load facilities*, *transmission systems* and *distribution systems* within the *IESO control area*, or any other equipment that is a component or part of the *electricity system*. A *facility* capable of supplying or withdrawing *physical services*, and which is registered with the *IESO*, is a *registered facility*. A *boundary entity* comprised of resources capable of supplying or withdrawing *physical services*, and which is registered with the *IESO*, is also a *registered facility*.

Subject to certain caveats in the *market rules*, the *IESO* requires that *market participants* register all *facilities*, unless a *facility* is embedded within a *generation facility*, a *load facility*, or a *distribution system*, and that:

- for *generation facilities*, the maximum rated *generation capacity*, net of auxiliary requirements, is less than 1 MW;
- for *load facilities*, the maximum load capacity is less than 1 MW; or
- for *distribution systems*, the maximum load capacity is less than 1 MW.

The process of registering a *facility* cannot begin until a *market participant* has started the procedure to become authorized as a *market participant*. After the participant authorization is complete, *market participants* have access to Online IESO and can submit the required information to register their *facilities*.

After the required information has been submitted, there are three stages to the Facility Registration process, which are:

1. Submission of the initial documentation components including the Register Revenue Meter Installation process.
2. Assessment of the *market participant's* registration submissions by the various *IESO* groups to verify the *facility's* compliance with the *market rules* and all *IESO* standards and policies related to *facilities*, and
3. Ability testing.

All *market participants* who register a *facility* will be required to identify the MMP for the *facility* during the Facility Registration process, and if applicable, the RMP. The MMP may or may not be the same *market participant* entity as the RMP for the *registered facility*. The MMP for the *registered facility* is the same entity across all markets and programs including the day-ahead market and the *real-time market*. Similarly, the RMP is the same entity across all markets and programs including the day-ahead market and the *real-time market*.

Consistent with the current practice, the Facility Registration process in the future market will not be completed until all required *facility* relationships have been assigned and the Register Revenue Meter Installation process has been completed.

3.4.2. Dispatchable Generation Facilities

Dispatchable generation facilities are *generation facilities* that provide *offers* into the *IESO-administered markets*, and are able to respond to five-minute *dispatch instructions* from the *IESO*.

The *dispatchable generation facilities* as listed and described below will continue to have the same *revenue metering* requirements in the future *real-time market* and day-ahead market as enforced in the current *real-time market*.

Non-Quick Start Generation Facility

NQS *generation facilities* are dispatchable *generation facilities* that incur the costs of:

- starting up, including providing *energy* to ramp up;
- operating at a minimum level to inject power into the grid without generating any output; and
- providing *energy* for at least a minimum period of time before shutting down.

These *generation facilities* will receive a unit commitment if scheduled in the day-ahead market or committed in the pre-dispatch timeframe.

Quick Start Generation Facility

Quick start facilities are dispatchable *generation facilities* that can synchronize and load to full capacity within five minutes. *Quick start facilities* will not receive a unit commitment.

Hydroelectric Generation Facility

Hydroelectric *generation facilities* are *quick start facilities* because they can provide *energy* within five minutes of an *IESO* request. Hydroelectric *generation facilities* may have a daily

energy limit. Other common operating characteristics include minimum output requirements and limited start-up cycles.

Pump Generation Station Facility

Pump generation station *facilities* are *facilities* that may be scheduled in pumping or generating modes. In the *real-time market*, these resources are linked and treated as a single *facility* and receive either a schedule to generate or a schedule to consume.

Variable Generation Facility

Variable generators are all wind and solar photovoltaic resources with an installed capacity of 5 MW or greater, or all wind and solar photovoltaic resources that are directly connected to the *IESO-controlled grid*. *Variable generators* will continue to have the same metering requirements as currently enforced for *generation facilities* in the current *real-time market*.

Variable generation connected through the *distribution system* will continue to provide operational and meteorological monitoring data for centralized forecasting. These resources are not subject to the meter registration processes defined in Chapter 6 of the *market rules*.

Flexible Nuclear Generation

A *flexible nuclear generator* is the component of a nuclear resource that has the flexibility for reductions without requiring a unit to shutdown.

Generation under AGC or RMR Contracts

An *AGC* contract binds a *generator* to adjust output based on signals in order to provide frequency control and to maintain load balance. *Reliability must-run* (RMR) *contracts* bind resources, other than *contracted ancillary services,* to provide generation when sufficient resources are not otherwise *offered* in the *IESO-administered markets*.

3.4.3. Non-Dispatchable Generation Facilities

Non-dispatchable *generation facilities* are *facilities* that are not capable of responding to *dispatch instructions* from the *IESO*.

The non-dispatchable *generation facilities* as listed and described below will continue to have the same *revenue metering* requirements in the future *real-time market* and DAM as enforced in the current *real-time market*.

Self-Scheduling Generation Facility

A *self-scheduling generation facility* is a *facility* located within the *IESO control area* that can operate independently of *dispatch instructions* from the *IESO*.

Transitional Scheduling Generation Facility

A *transitional scheduling generation facility* is a *facility* located within the *IESO control area* that is under contract with the *Ontario Electricity Financial Corporation* (*OEFC)* (effective April 1, 1999) and is registered as such in accordance with the applicable sections of Chapter 7 of the *market rules*.

Intermittent Generation Facility

An *intermittent generation facility* is a *facility* located within the *IESO control area* that generates on an intermittent basis as a result of factors beyond the *generators'* control.

3.4.4. Load Facilities

Load facilities are *facilities* that draw electrical *energy* from the *integrated power system*.

The *load facilities* that participate in the *IESO-administered market* as listed and described below will continue to have the same *revenue metering* requirements in the future *real-time market* and DAM as enforced in the current *real-time market*.

Non-Dispatchable Load

NDLs are *load facilities* for which the *IESO* will continue to *bid* quantities through demand forecasts. The *bid* prices will be submitted as the *maximum market clearing price* (MMCP) to reflect that NDLs are price takers.

Dispatchable Load Facility

Dispatchable load facilities are *load facilities* that provide *bids*, are capable of providing both *energy* and *operating reserve* and are able to respond to 5-minute *dispatch instructions* from the *IESO*.

Price Responsive Load

A PRL will be a new category of *load facility* for which *energy* withdrawals will be subject to nodal pricing. Re-registration as a PRL will enable an NDL to participate in the day-ahead market while remaining non-dispatchable in the *real-time market*.

A *market participant* can elect to register an existing NDL as a PRL for some of its associated resources, while its other resources remain NDLs. This might require changes to the information contained in the record of the *metering installation*. If the entire *facility* becomes price responsive, there will be no change to the record of the *metering installation*. This requirement will be determined during the Register Revenue Meter Installation process.

3.4.5. Demand Response Resources

Metering Registration

Dispatchable load facilities used to deliver *demand response capacity* are metered by the *IESO* with an *RWM*. *Metering installations* for *dispatchable load facilities* are subject to the requirements of Chapter 6 of the *market rules*.

Physical *demand response contributors* used to deliver *demand response capacity* via HDR resources are *metered* by the *IESO* with an *RWM*. Physical *demand response contributors* may be *transmission system-connected facilities* or *facilities* embedded in the *distribution system*.

Metering installations for these *facilities* are subject to the requirements of Chapter 6 of the *market rules*. The following requirements apply for physical *hourly demand response* resources:

- Totalization and loss adjustment for distribution-embedded *facilities* associating the *RWMs* with the *delivery point* utilize *OEB*-approved total loss factors to the associated LDC.
- *Demand response contributors* for transmission-connected or distribution-embedded NDLs are categorized as Physical C&I Contributors and are subject to the Contributor Management requirements of Market Manual Part 12.0 – Registration Requirements. This categorization will also apply to *demand response contributors* for transmission-connected or distribution-embedded PRLs.

A physical *demand response contributor* will continue to be an NDL *facility* designated to deliver *demand response capacity* and, in the future, may also be a PRL[5]. The RMP and MMP for the HDR resource must be the same as the RMP and MMP for the PRL.

Virtual *demand response contributors* used to deliver *demand response capacity* via HDR resources with LDC metering installations are subject to facility registration and contributor

[5] The physical *hourly demand response* resource and associated price responsive load resource will be registered as separate resources with separate *delivery points* at the same *connection point* to the *IESO-controlled grid*.

management registration requirements as defined in Market Manual Part 12.0 for the *demand response auction*.

Meter and Measurement Data Submission

Dispatchable load facilities and physical *demand response contributors* used to deliver *demand response capacity* are metered with *RWMs*. *Metering data* for these *facilities* is collected by the *IESO* using the *IESO* Meter Data Acquisition System (MDAS) and stored in the *IESO metering database*. Such *metering data* is not submitted by the DRMP.

Virtual *demand response contributors* embedded in the *distribution system* used to deliver *demand response capacity* are metered by an LDC *revenue meter*. *Metering data* for these HDR resources is submitted by the DRMP using the Online IESO system and stored in the *IESO metering database* as defined in Market Manual Part 12.0 for the *demand response auction*.

3.5. Provision of Information to Related IESO Processes

The *IESO's* responsibility in processing the submissions comprising a *metering installation* is facilitated by the Meter Data Management department and the information is shared between the following groups:

- CIS Department;
- Customer Relations;
- Information, Technology and Infrastructure;
- BIRM (through Citadel);
- Operation Integration;
- Settlements; and
- Participant Readiness Support – posting notices to public on the *IESO* website.

The Register Revenue Meter Installation process for the future *real-time market* and day-ahead market will not introduce any changes to the current *real-time market* Meter Registration process, and will continue to universally provide required information services to other processes within the *IESO* and to the broader marketplace.

3.6. Provision of Information to Market Participants

No changes to the *IESO* systems and tools related to *meter* registration in the existing *energy market* are proposed for the future day-ahead market and *real-time market*.

3.6.1. Metering Installation Registration Tool – MIRT

This tool enables the MSP to provide the *IESO* an MDAS Master File for each *meter* within the *metering installation*. As part of the Register Revenue Meter Installation process, MSPs create the MDAS Master File in MIRT and then send it to the *IESO*.

3.6.2. Meter Data Acquisition System - MDAS

Metering data is collected daily by the MDAS. Once communication with the *metering installation* is established, MDAS automatically collects *metering data* from the installation, performs validation through the initial VEE process and transfers the *metering data* to MDMS for further VEE processing.

3.6.3. Meter Trouble Reporting System – MTR System

When an issue is detected during the VEE process, either automatically or manually, the Meter Trouble Reporting (MTR) system issues meter trouble reports to the associated MSP and MMP as appropriate. The *IESO* metering staff can also manually issue *meter* trouble reports when metering problems are identified during the course of MDM processes.

3.6.4. Meter Data Management System - MDMS

Meter Data Management System (MDMS) receives *metering data* that has been validated by MDAS and is the *metering database* for all *metering data*. This data undergoes further VEE processing including further validation, as well as estimation and editing, and calculates *settlement*-ready *metering data* in accordance with the *settlement* calendar. The calculations include totalization, which is the process of summing each *RWM* for each specific *delivery point*, applying losses and measurement error correction factors, and allocating *station service* data.

3.6.5. Meter Data Distribution - MDD

Meter Data Distribution (MDD) is the tool *market participants* can use to download *metering data* from MDMS. MDD allows the user to create a profile to automatically download *metering data* on a scheduled basis and also has provisions for unscheduled requests. *Metering data* is provided in the EDI-867 file format.

3.6.6. Customer Data Management System - CDMS

The Customer Data Management System (CDMS) supports the creation and maintenance of records of technical data for a *facility*. The CDMS database maintains lists and profiles of *market participants*, *metered market participants*, MSPs, *transmitters, distributors*, and *facilities*. Relationships between these entities and user permissions are also maintained in the CDMS.

3.6.7. The IESO Website and Online IESO

The *IESO* website and Online IESO are utilized to communicate with the public about *IESO-administered market* issues and to provide access to information and documents related to activities carried out in the *IESO-administered markets*. Persons applying for authorization will find all of the information and documents they require to complete the *market participant* authorization process on the *IESO* website and through Online IESO. The *IESO* website provides the latest versions of:

- the *market rules*;
- the Participant Technical Reference Manual;
- metering *market manuals*; and
- all forms required for the Register Revenue Meter Installation and Facility Registration processes.

The *IESO publishes* on its website a list of all active *market participants* as well as a list of all applications for participation in the *IESO-administered markets*.

Additionally, the availability of new or revised forms are communicated to each *market participant*. For *market participants* wishing to participate in the DAM, these new or revised forms will be available for download from the *IESO* website.

3.6.8. Customer Relations

The IESO Customer Relations staff corresponds with *market participants* registering *metering installations*, communicating requirements and any further information required of the *market participant*.

3.6.9. Status of Meter Registration

The Register Revenue Meter Installation process will provide the Facility Registration process with ongoing information about a *market participant's* status in meeting metering requirements.

The above information is available within the Register Revenue Meter Installation process and can be resolved down to data elements, which can be made continuously available to the Facility Registration process. This information is available to *market participants* through Online IESO.

– End of Section –

4. Market Rule Requirements

The *market rules* govern the *IESO-controlled grid* and establish and govern the *IESO-administered markets*. The *market rules* codify obligations, rights and authorities for both the *IESO* and *market participants*, and the conditions under which those rights and authorities may be exercised and those obligations met.

This section is intended to provide an inventory of the changes to *market rule* provisions required to support the Revenue Meter Registration detailed design, and is intended to guide the development of *market rule* amendments.

This inventory is not meant to be an exhaustive list of required rule changes, but is a snapshot in time based on the current state of design development of this specific design document. Resulting *market rule* amendments will incorporate the integration of the individual design documents.

New and amended Chapter 11 defined terms: These terms will be consolidated in a single document at a later time as part of the *market rule amendment* process, and will support multiple design documents.

The inventory is developed in the following tables, which describe the impacts to the *market rules* and classifies them into the following three types:

- Existing – no change: Identifies those provisions of the existing *market rules* that are not impacted by the design requirements;
- Existing – requires amendment: Identifies those provisions of the existing *market rules* that will need to be amended to support the design requirements; and
- New: Identifies new *market rules* that will likely need to be added to support the design requirements.

The extent of required *market rule* amendments required to support the Revenue Meter Registration detailed design document are very minor, and limited to changes of introducing a day-ahead market and *market rules* clean-up items.

Table 4-1: Market Rule Chapter 6 Impacts

Market Rule Section	Type	Topic	Requirement
Section 1	Existing - requires amendment	Introduction	• This section sets out the purpose of this Chapter, including the rights and obligations of *market participants*, *metered market participants*, the *IESO*, and *metering service providers* relating to *metering* in the *real-time markets* or the *procurement markets*. • Section 1.2.1 - This section needs to be expanded to include the day-ahead market.
Section 2	Existing - requires amendment	Requirements for Metering Installations	• This section sets out the *market rule* obligations for *metering installations* to participate in the *real-time market* or the *procurement markets*. • Sections 2.1.1 and 2.1.2 - These sections need to be expanded to include the day-ahead market.
Section 3	Existing - no change	Metered Market Participants	• Provisions unaffected by the introduction of the MRP. The obligations of *metered market participants* remain unchanged.
Section 4	Existing - no change	Metering Installation	• Provisions unaffected by the introduction of the MRP. The standards for *metering installations* remain unchanged.
Section 5	Existing - no change	Metering Service Providers	• Provisions unaffected by the introduction of the MRP. The obligations of *metering service providers* remain unchanged.
Section 6	Existing - requires amendment	Registration of Metering Installations and Metering Registry	• This section sets the *market rule* obligations for *metering installations* and the *metering registry*. It includes the *metering installation* requirements for the measurement of *energy* for *settlement* purposes relating to the *real-time markets* or the *procurement markets*. • Sections 6.1.1 and 6.1.1A - These sections need to be expanded to include the day-ahead market.

Market Rule Section	Type	Topic	Requirement
Section 7	Existing - no change	Testing and Auditing of Metering Installations	• Provisions unaffected by the introduction of the MRP. The obligations for testing and auditing of *metering installations* remain unchanged.
Section 8	Existing - no change	Ownership of and Rights of Access to Data	• Provisions unaffected by the introduction of the MRP. The obligations related to the ownership of and rights of access to data remain unchanged.
Section 9	Existing - no change	Security of Metering Installations and Data	• Provisions unaffected by the introduction of the MRP. The obligations related to the security of *metering installations* and data remain unchanged.
Section 10	Existing - requires amendment	Processing of Metering Data for Settlement Purposes	• Provisions unaffected by the introduction of the MRP. The processing of *metering data* for *settlement* purposes remains unchanged. • As a matter of clean-up, delete section 10.3.2, which allows for *metering data* for legacy *metering installations* to be collated to 5 or 15 minute intervals. This section no longer applies as all legacy *metering installations* have been replaced.
Section 11	Existing - no change	Performance of Metering Installation	• Provisions unaffected by the introduction of the MRP. The obligations around the performance of *metering installations* remain unchanged.
Section 12	Existing - no change	Evolving Technologies and Processes and Development of the Market	• Provisions unaffected by the introduction of the MRP. The obligations around evolving technologies and processes and development of the market remain unchanged.
Section 13	Existing - no change	Responsibilities of the IESO	• Provisions unaffected by the introduction of the MRP. The responsibilities of the *IESO* remain unchanged.
Appendix 6.1	Existing - no change	Metering Obligations	• Provisions unaffected by the introduction of the MRP. The obligations of *metered market participants* and *metering service*

Market Rule Section	Type	Topic	Requirement
			providers in respect of *metering* remain unchanged.
Appendix 6.2	Existing - requires amendment	Alternative Metering Installation Standards	• Provisions unaffected by the introduction of the MRP. The alternative *metering installation* standards remain unchanged. • As a matter of clean-up, delete sections 1.1A.1.5 and 1.5.1.5, which allow for *metering data* for legacy *metering installations* to be collated to 5 or 15 minute intervals. These sections no longer apply as all legacy *metering installations* have been replaced.
Appendix 6.3	Existing - no change	Inspecting and Testing Requirements	• Provisions unaffected by the introduction of the MRP. The inspecting and testing requirements remain unchanged.
Appendix 6.4	Existing - no change	Metering Service Provider Qualifications	• Provisions unaffected by the introduction of the MRP. The *metering service provider* qualifications remain unchanged.
Appendix 6.5	Existing - no change	Metering Registry and Meter Point Documentation	• Provisions unaffected by the introduction of the MRP. The *metering registry* and *meter point* documentation remain unchanged.
Appendix 6.6	Existing - no change	[Intentionally left blank]	• This section was previously deleted, no change.

Table 4-2: Market Rule Chapter 7 Impacts

Market Rule Section	Type	Topic	Requirement
Section 19	Existing - no change	Demand Response Market Participants with Demand Response Capacity Obligations	• Provisions unaffected by the introduction of the MRP. Revenue Meter Installation requirements for transmission connected *load facilities* or *embedded load facilities* with *registered wholesale meters (RWMs)* will be unchanged for the future *energy markets* and existing *demand response auction*.

Table 4-3: Market Rule Chapter 9 Impacts

Market Rule Section	Type	Topic	Requirement
Section 2	Existing - no change	Settlement Data Collection and Management	• Provisions unaffected by the introduction of the MRP *rule* obligations for the determination of *delivery points* for *settlement* data collection and management remain unchanged.

– End of Section –

5. Procedural Requirements

5.1. Market-Facing Procedural Impacts

The existing *market manuals* related to the Register Revenue Meter Installation process will not require any changes. The documents most directly related to this process are:

Market Manuals:

- Market Manual 3.0: Metering, all parts; and
- Market Manual 12.0: Demand Response Auction, Part 12.0 - Demand Response Auction

The following tables identify sections within the *market manuals* that are related but will not require changes, as well as sections that require modification in the future market.

Table 5-1: Impacts to Market Manual 3.0: Metering

Procedure	Type of Change (no change, modification, new)	Section	Description
Part 3.1: Metering Service Provider (MSP) Registration, Revocation and De-registration	No change	All	All procedures will be retained
Part 3.2: Meter Point Registration and Maintenance	No change	All	All procedures will be retained
Part 3.4: Measurement Error Correction	No change	All	All procedures will be retained
Part 3.5: Site Specific Loss Adjustments Procedure	No change	All	All procedures will be retained
Part 3.6: Conceptual Drawing Review	No change	All	All procedures will be retained

Procedure	Type of Change (no change, modification, new)	Section	Description
Part 3.7: Totalization Table Registration	No change	All	All procedures will be retained
Part 3.8: Creating and Maintaining Delivery Point Relationships	No change	All	All procedures will be retained
Part 3.9: Conformance Monitoring	No change	All	All procedures will be retained
Part 3.10: Transmission Grid – High Voltage Metering	No change	All	All procedures will be retained

Table 5-2: Impacts to Market Manual 12.0: Demand Response Auction

Procedure	Type of Change (no change, modification, new)	Section	Description
Part 12.0: Demand Response Auction	No change	All	All procedures will be retained

5.2. Internal Procedural Impacts

Most of the internal procedures currently used by the Register Revenue Meter Installation process will continue to have relevance in the future markets. However, many of the existing procedures will be clarified to differentiate the registration of *facilities* for the *real-time market* and the day-ahead market.

Some of the internal procedures are related to other *IESO* processes that interact with the Register Revenue Meter Installation process. For the most part, changes to the Register Revenue Meter Installation process under the market renewal program do not impact other internal manuals. However, in some areas this may be contingent upon the tools impact of the day-ahead market. Moreover, there might be some modifications required to the existing procedures to group all of the procedural tasks within the Register Revenue Meter Installation process between physical and virtual transactions in the day-ahead market and physical transactions in the *real-time market*. In addition, some areas of the current procedures heavily reference relevant *market rules* and supporting tools, most of which will

be undergoing changes as a result of the new day-ahead market implementation and other solution enhancements. The existing procedures will be updated to account for the corresponding changes in the *market rules* and tools.

Changes or additions to internal *IESO* procedures are for internal *IESO* use as documented in Appendix B and are not included in the public version of this document. Appendix B details the impacts to internal procedures in terms of existing procedures that support the new market requirements, existing procedures that need to be updated, and new internal procedures that need to be created to support the future day-ahead market and *real-time market*

– End of Section –

6. Business Process and Information Flow Overview

6.1. Market-Facing Process Impacts

This section provides an overview to the arrangement of processes required in order to support the overall Revenue Meter Registration process and the critical information flows between them.

The context diagrams presented in Section 2 of this document are considered as level 0 data flow diagrams and represent the major flows of information into and out of the Revenue Meter Registration process. This section now presents the Revenue Meter Registration process at the next level of detail (level 1). A further break-down of the processes presented in this section (i.e. levels 2, 3, 4…) falls into the realm of systems design and is beyond the scope of this document.

The data flow diagram does not illustrate:

- Flow of time or sequence of events (as might be illustrated in a timeline diagram);
- Decision rules (as might be illustrated in Flowchart); and
- Logical architecture and Systems architecture (as might be illustrated in a Logical Application and Data Design, and/or Physical Application and Data Design).

What it does illustrate however, is a logical breakdown of the sub-processes that constitute a large and complex system such as the Revenue Meter Registration process. Specifically, the data flow diagram presented below illustrates:

- The Revenue Meter Registration process as a grouping of several major and tightly coupled sub-processes;
- The key information flows between each of the processes;
- External sources of key information required by the Revenue Meter Registration process;
- External destinations of key information from the Revenue Meter Registration process; and
- The same logical boundary of the Revenue Meter Registration process as illustrated in the level 0 context diagram presented in Section 2 of this document.

This section is not meant to impart information systems or technology architecture, but rather to capture the entire Revenue Meter Registration process as a series of interrelated sub-processes.

The functional design outlined in Section 3 of this document maps to the business process overview presented in this section. In any areas where there are inconsistencies between this section and the description of the business process provided in Section 3, the business process described in Section 3 will take precedence.

The data flow diagram illustrated in Figure 6-1 presents the Revenue Meter Registration process for registered *wholesale meter* (RWM) *metering installations*. The following sections of this document will provide an overview to each of the main sub-processes of the Revenue Meter Registration process.

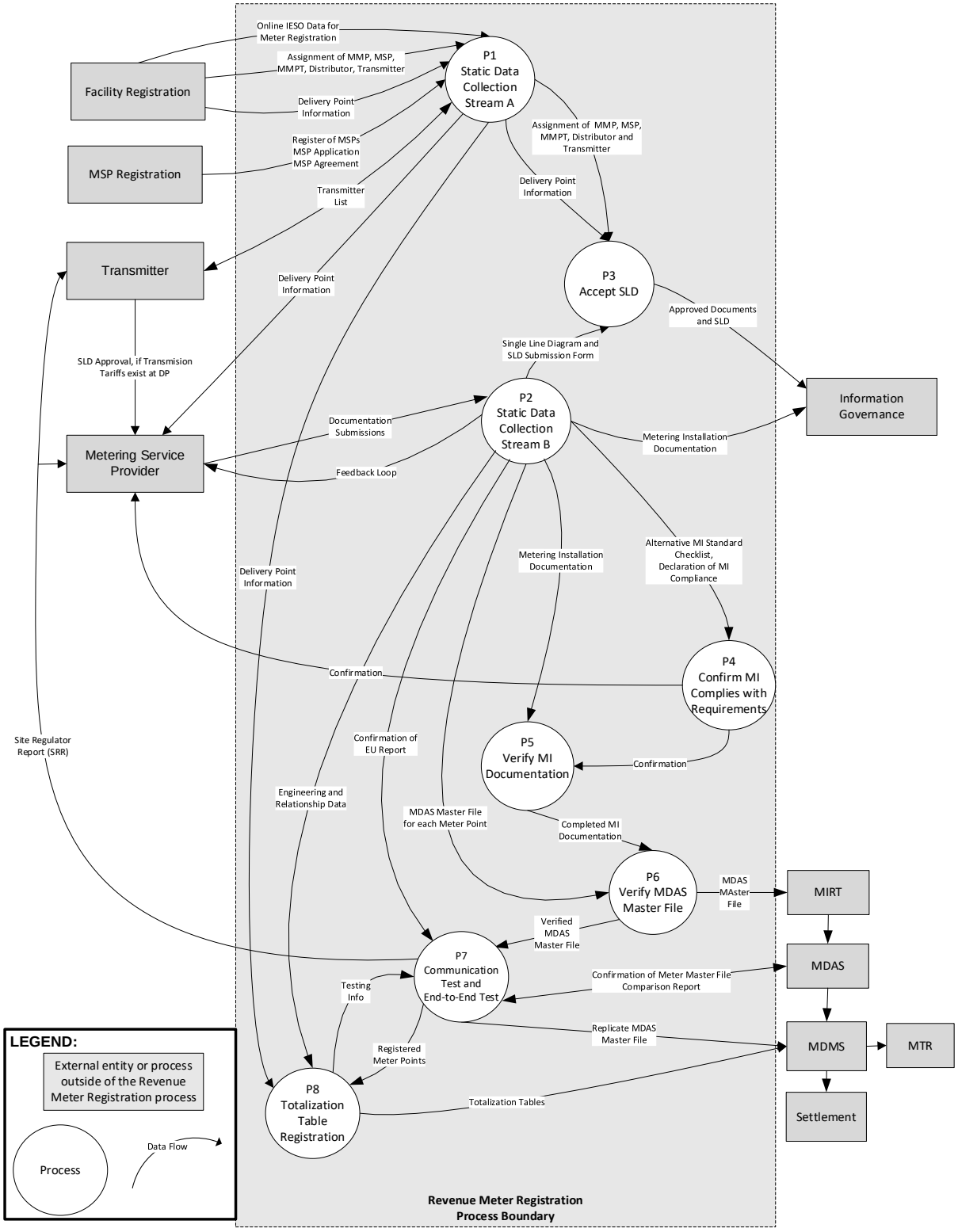

Figure 6-1: Meter Registration Process Data Flow Diagram – Level 1

6.1.1. Process P1 – Static Data Collection Stream A

Description

Process P1 collects various static data components form other upstream processes within the *IESO,* which are then used to set the context of registering *meter points* of *revenue meters*. Process P1 comprises the orderly receipt of static data from three external entities outside of the Meter Registration process as follows:

- *Market participants*;
- The *IESO* Facility Registration process; and
- *Metering service providers* (MSPs).

The key processing steps are to manage the collection process, validate data for correctness and completeness. Static data, by its nature, does not change on a regular basis. *Market participants*, *metered market participants (MMP)* and *metering service provider*s submit changes to authorization/registration information as it occurs. Static Data Collection Stream A reflects such items as the registration status of an RMP, an MMP, an MMPT, an MSP, a *distributor* or a *transmitter* associated with a *delivery point* (DP).

The Static Data Collection Stream A process will:

- collect static data from upstream processes;
- verify authorizations for accuracy and completeness;
- verify a complete set of static data is in effect for all association to *delivery points*, MSP registration, and *market participant* registrations; and
- disseminate portions of the static data to downstream sub-processes within the Revenue Meter Registration process.

This process largely relates to the collection of static data described in Sections 3.3.

Table 6-1 summarizes the various input and output data flows for Process P1.

Input and Output Data Flows

Table 6-1: Process P1 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Assignment of MMP, MSP, MMPT, *Distributor* or *Transmitter*	Facility Registration	Process P1	Once – changes triggered by new submissions

Description:

- This data flow has a number of assignments to a *delivery point* of authorized participants as described in the submitted online data described in the next flow.
- Every *delivery point* for a *registered facility* must have at least one of the following associations assigned to it:
  - One MMP, MSP and if the *delivery point* is embedded in a *distribution system* a *distributor* relationship with an *energy* market *delivery point*;
  - One transmission tariff (TT) *metered market participant* (MMPT), MSP and *transmitter* relationship for the Network TT *delivery point* if *transmission tariffs* exist at that *delivery point*;
  - One MMPT, MSP and *transmitter* relationship for the Connection TT *delivery point*, either for Connection-Line and/or Connection-Transformation;
  - Confirmation that each TT Network and TT Connection customer on the TT Customer List is registered as a *market participant* for *transmission tariff* and is associated with a *transmission tariff delivery point* (TT DP);
  - MSP and *distributor/transmitter* status is updated in CDMS;
  - MMP and MMPT-Resource relationship is in CDMS.
- Access to *IESO* systems is established with appropriate passwords.
- Data stream of *delivery points* for the *energy* market and *transmission tariff* is a sub-process described in Market Manual 3: Metering, Part 3.8: Creating and Maintaining Delivery Point Relationships and Internal Manual 3: Settlements, Part 3.3: Creating and Maintaining Delivery Point Relationships.

Flow	Source	Target Processes	Frequency
Online IESO Data for Meter Registration	Facility Registration	Process P1	Once – changes triggered by new submissions

Description:

- Assignment of entities:
  - Assigning a MMP for an *energy* market resource. The MMP association for every *energy* market *delivery point* is the same in the day-ahead market and *real-time market*, which are the same *delivery point*s in both markets.
  - Assigning a MSP and a distributor for an energy market delivery point if the delivery point is embedded in a distribution system.
  - Assigning a MSP and *transmitter* for a TT *delivery point*– this confirms an MSP and a *transmitter* for each TT *delivery point*.
  - Assigning an MSP to *meter points* where a *meter* contributes to multiple *delivery points* served by different MSPs.

Flows	Source	Target Processes	Frequency
Delivery Point Information	Facility Registration	Process P1	Once – changes triggered by new submissions

Description:

- The Static Data Collection Stream A includes the created *energy* market *delivery points* and *transmission tariff delivery points* that are identified in CDMS and associated as described in the first data flow.

Flows	Source	Target Processes	Frequency
Registration of MSPs, MSP Application Form and MSP Agreement	MSP Registration	Process P1	Once – changes triggered by new submissions

Description:

- Static data collected for the *metering installation* registration process must have an MSP who has completed the MSP Registration process in order to be associated with a *delivery point* and a *meter point*.
- MSP Operational Contact for issues relating to the *metering installation* is submitted in the MSP Agreement.

Attributes and usage are described in Market Manual 3: Metering, Part 3.1: Metering Service Provider (MSP) Registration, Revocation and De-registration and Internal Manual 3: Settlements, Part 3.2: Metering Service Provider (MSP) Registration, Revocation and De-registration.

Flow	Source	Target Processes	Frequency
Transmitter List	*Transmitter*	Process P1	Once – changes triggered by new submissions

Description:

- This data stream element is submitted by the *transmitter* for use by the *IESO* Revenue Metering group who:
  - Checks the Transmission Tariff Customer List for completeness including the customer type – Network and if appropriate, Connection-Line and/or Connection-Transmission;
  - Creates TT *Delivery Points* and relationships in MDAS;
- Information submitted by the *Transmitter* can follow a feedback loop if information is missing or clarification is required.

Flows	Source	Target Processes	Frequency
Assignment of MMP, MSP, MMPT, *distributor* or *transmitter*	Process P1	Process P3	Once – changes triggered by new submissions

Description:

- The following static data components of assignments to a *delivery point* of authorized participants are included for Process P3 and every *delivery point* for a *registered facility* must have at least one of the following associations assigned to it:
  - One MMP, MSP and if the *delivery point* is embedded in a *distribution system*, a *distributor* relationship with an *energy* market *delivery point.*
  - One MMPT, MMP and *transmitter* relationship for the Network TT DP if *transmission tariffs* exist at that DP.
  - One MMPT, MSP and *transmitter* relationship for the Connection TT DP, either for Connection-Line and/or Connection-Transformation.
  - Confirmation that each TT Network and TT Connection customer on the TT Customer List is registered as a *market participant* for *transmission tariffs* (TT MP) and is associated with a transmission *delivery Point* (TT DP).
  - MSP and *distributor/transmitter* status is updated in CDMS.
  - MMP and MMPT-Resource relationship is in CDMS and Totalization Table Reports have been signed by the MSP, to allow the *energy* account and/or transmission charges to be enabled.
  - Access to *IESO* systems is established with appropriate passwords.

Flows	Source	Target Processes	Frequency
Delivery Point Information	Process P1	Process P3, MSPs, and Process P8	Once – changes triggered by new submissions

Description:

- The above static data components of the created *energy* market and *transmission tariff delivery points* are included for Process P3 and communicated to MSPs. This information is used in the Totalization Table Registration process in order to map each *meter point* to a *delivery point* for *settlement*.

6.1.2. Process P2 – Static Data Collection Stream B

Description

Process P2 collects various static stream B data as submitted by the *metering service provider* in order to initiate and complete the *metering installation* registration process.

The key processing steps are to manage the collection process and validate data for correctness and completeness. Static data, by its nature, does not change on a regular basis. The associated *metering service provider* submits changes to any *metering installation* information as it occurs. Static data stream B entails the submission of *metering installation* documentation including:

- an SLD, SSLA, MEC and EITRP;
- *metering installation* (MI) compliance declaration or Alternate MI Standard declaration;
- Engineering units (EU) Report confirmation;
- Totalization Table Forms; and
- MDAS Master File submitted in MIRT format.

The Static Data Collection Stream B process will:

- collect static data from upstream processes;
- create the Meter Point ID;
- verify authorizations for accuracy and completeness;
- ensure a complete set of static data is in effect for each *metering installation*; and

- disseminate portions of the static data to downstream sub-processes with the Revenue Meter Registration process.

Table 6-2: Process P2 Input and Output Data Flows

summarizes the various input and output data flows for Process P2.

Input and Output Data Flows

Table 6-2: Process P2 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Documentation Submissions	MSP	Process P2	Once – changes triggered by new submissions

Description:

- The following static data components will be included in the data stream for Process P2:
  - Single Line Diagram (SLD) initiates the Meter Registration process.
  - Alternative Metering Installation Standard Declaration initiates the procedure for Alternative Standards, or Declaration of Compliance of Metering Installation confirms the MI is compliant with Chapter 6 of the *market rules.*
  - Measurement Error Correction Register (MEC) requires a registered Professional Engineer to prepare, sign and stamp this register submitted for the MI registration.
  - Site Specific Loss Adjustment Register (SSLA) requires a registered Professional Engineer to prepare, sign and stamp this register submitted for the MI registration.
  - Total Loss Factors (TLF) are approved by the *OEB* and communicated by the relevant LDC to the MSP and submitted to the *IESO* if these factors are applied at the *delivery point*.
  - Emergency Instrument Transformer Restoration Plan (EITRP) is submitted for each *instrument transformer* in the MI, which details the restoration process and access to *metering data* including correction factors to be applied in the event of the IT failure.
  - MDAS Master File submitted in MIRT format specifies the configuration information for a *meter* at a specific *meter point* ID.
  - *Connection station service* – Not Metered by a RWM specifies the station service factor in KW, if applicable.
  - Confirmation of Engineering Units Report – Type A completes the commissioning and end-to-end tests for registering a *metering installation*.
- Any of the information submitted by the *metering service provider* can follow a feedback loop if information is missing or clarification is required.

- Attributes and usage of this documentation is described in Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance and Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.

Flows	Source	Target Processes	Frequency
Feedback Loop	Process P2	Metering Service Provider	As required

Description:

- Each of these documentation data flows provides for a feedback loop for several feedback loops including acceptance of information, denial of process or clarification of information if the *IESO* Revenue Metering group determines that information is incorrect or missing.
- This data stream is achieved using Online IESO and includes the following actions.
  - Request for additional information on SLD Submission;
  - Returning SLD for the *facility*;
  - MIR-10 Notification of Incorrect/Incomplete MDAS Master File;
  - Notification of failure of end-to-end test; and
  - Reminder for returning the signed Confirmation of Engineering Unit Report.
- In addition, several data flows require sign-off by the MSP for the process to be completed. These data streams include:
  - Confirmation of Engineering Units Report – Type A flows between the *IESO* and the MSP until final sign-off by both parties is concluded.

Flows	Source	Target Processes	Frequency
SLD and SLD Submission Form	Process P2	Process P3	Once – changes triggered by new submissions

Description:

- The following static data elements are passed on to Process P3 (Accept SLD):
  - Single Line Diagram; and
  - Single Line Diagram Submission Form.
- The *IESO* Revenue Metering group must review and accept both documents in order to proceed to Process P4.

Flows	Source	Target Processes	Frequency
Metering Installation Documentation	Process P2	Information Governance (BIRM)	Once – changes triggered by new submissions

Description:

- The following static data elements are passed on the Process P3 (Accept SLD):
  - Records of all information submitted to P2 that are filed electronically for use by the *IESO* Revenue Metering group and Facility Registration.

Flows	Source	Target Processes	Frequency
Alternate *Metering Installation* Standard Checklist or Declaration of MI Compliance	Process P2	Process P4	Once – only if the *metering installation* is not fully compliant

Description:

- This data stream is activated if the *metering installation* is deemed not to be fully compliant with Chapter 6 of *market rules* or with applicable *IESO* policies and standards or, conversely, the MSP deems the MI is compliant.
- This data flow consists of one of the following two components:
  - The Alternate MI Standard declaration; or
  - Declaration of MI Compliance.
- The checklist and supporting documentation from Static Data Collection Stream B are reviewed and processed for compliance or the Exemption process. The outcome feeds into Process P5 (MI Documentation).
- Attributes and usage of this documentation is described in Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance and Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.

Flows	Source	Target Processes	Frequency
Metering Installation Documentation	Process P2	Process P5	Once – changes triggered by new submissions

Description:

- Components of this documentation stream are:
  - SSLA Register;
  - MEC Register;
  - EITRP;
  - TLF submission, if applicable;
  - Request for clarification on the submission of correction factors; and
  - Meter Point IDs.
- The attributes and usage of these documentation submissions are described in Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.

Flows	Source	Target Processes	Frequency
MDAS Master File for Each *Meter Point*	Process P2	Process P6	Once – repeated if changes triggered by new submissions

Description:

- This data stream from Process P2 to Process P6 (Verification of MDAS Master File) consists of the submitted MDAS Master File in the MIRT format by the *metering service provider*.
- This data stream is necessary to populate MDAS Registration and MDMS for the generation of totalization tables for the accurate *settlement* for a *delivery point*.

Confirmation of EU Report	Process P2	Process P7	Once – repeated if changes triggered by new submissions

Description:

- The Confirmation of EU Report comprises the data stream from Process P2 to Process P7 (Communication Test and End-to-End Test).
- This data stream is necessary for the accurate collection of *metering data* and *settlement* for each *meter point* ID.
- Attributes and usage of the field collection of *metering data* is described in Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance and Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.

Flows	Source	Target Processes	Frequency
Engineering and Relationship Data	Process P2	Process P8	Once – changes triggered by new submissions

Description:

- The data stream includes data required for input into the Totalization Table Registration process triggered by the submission of the following documentation:
  - SSLA Register;
  - MEC Register;
  - TLF, if applicable;
  - MMP identification;
  - Transmission Tariff data; and
  - Connection station service – Not Metered by an RWM.
- Attributes and usage of this documentation is described in Internal Manual 3: Settlements, Part 3.5: Totalization Table Registration and in Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.

6.1.3. Process P3 – Accept SLD

Description

The purpose of Process P3 is to review and accept the information for the *metering installation* utilizing data from various sources. The *meter* registration process cannot proceed if this process is not successfully completed.

Process P3 examines the SLD submission for each *facility* and MSP from Process P1 and P2 for the following quality control criteria using a combination of manual and automated verification procedures:

- Data used by processes P1 and P2 should correlate with process P3 output results.
- Manual verification procedures include a confirmation of information on both submissions, assisted by the *Checklist for Reviewing the SLD*.
- Process P3 submissions must be presented in the correct format.

In the event that the Process P3 output fails to meet the above criteria, a re-processing request is sent back through Process P2 outlining the nature of the problem.

Input and Output Data Flows

Table 6-3: Process P3 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Approved Documents and SLD	Process P3	Information Governance (BIRM)	As submitted
Description: • Data from processes P1 and P2 is stored in the *IESO* Information Governance system. • Includes the approved SLD and data submissions from Process P2.			

6.1.4. Process P4 – Confirm MI Complies with Requirements

Description

This data flow is initiated by the *metering service provider* through Process P2. The purpose of Process P4 is to determine that the *metering installation* (MI) is compliant with all *market rules*, *IESO* policies and standards before the MI can be used for participation in the Ontario electricity market.

This process is completed by the submission of the Declaration of Compliance of Metering Installation by the *metering service provider.* In the event the *metering service provider* determines that the MI is not compliant, the *metering service provider* submits the Alternative Metering Installation Standard declaration.

The outcome of the activities in this process is that the *metering service provider* receives confirmation that the MI is compliant or it meets the criteria for Alternative Standards.

Input and Output Data Flows

Table 6-4: Process P4 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Compliant MI Confirmation	Process P4	MSP, Process P5	Once – changes triggered by new submissions

Description:

- The following static data components that the *metering installation* may proceed to Process P5 or is not acceptable for registration may include:
  - Request for additional information for the Application for Waiver Level 1;
  - Notification on Waiver Level 1 denied;
  - Notification on Waiver Level 1 granted;
  - Request for additional information for the Application for Waiver Level 2;
  - Notification on Waiver Level 2 denied; and
  - Notification on Waiver Level 2 granted.

6.1.5. Process P5 – Verify MI Documentation

Description

Metering installation documentation is submitted through Process P2 and verified in Process P5 using a combination of manual and automated verification procedures:

- Data submitted is verified using Excel spreadsheets for:
  - SSLA: Spreadsheets for Checking Submitted Loss Adjustments
  - MEC: verifications using spreadsheets
  - TLF: manual verifications (list from *OEB*)
  - EITRP: Guidelines in Appendix H of Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance

In the event that the Process P5 output fails to meet the above criteria, communications are followed as documented in the feedback loop of Process P2.

Input and Output Data Flows

Table 6-5: Process P5 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Completed MI Documentation	Process P5	Process P6	Once – changes triggered by new submissions

Description:

- This data flow contains the verified and completed MI documentation from upstream data from Process P2.
- This data flow initiates Process P6.
- This data flow also triggers the continuation of the Totalization Table Process by building the tables according to Market Manual 3: Metering, Part 3.7: Totalization Table Registration.

6.1.6. Process P6 – Verify MDAS Master File

Description

The data flow of the MDAS Master File submission is processed for completeness in the Meter Installation Registration Tool (MIRT) system and subsequent import into the Meter Data Acquisition System (MDAS) in order to carry out processes downstream.

Input and Output Data Flows

Table 6-6: Process P6 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Verified MDAS Master File	Process P6	Process P7	Once – changes triggered by new submissions

Description:

- This data flow contains the verified MDAS Master File complete with upstream data from Processes P1 and P2.
- This data flow initiates Process P7.
- This data flow also triggers the continuation of the Totalization Table process by building the tables according to Market Manual 3: Metering, Part 3.7: Totalization Table Registration.

6.1.7. Process P7 – Communication Test and End-to-End Test

Description

Process P7 includes the following activities:

- Communication test in which the *metering installation* is interrogated using MDAS and data is confirmed for communications, meter time and synchronizing time via manual reset. This process is described in Appendix E of Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.
- End-to end test completes data that both parties must agree to on the Confirmation of EU Report for each relevant *meter point* ID. The *IESO* interrogation is compared to the "field test" data using acceptance criteria described in Appendix F of Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.
- The end-to-end test also generates a detailed EU Report that becomes part of this data stream.
- If there are changes to the MDAS Master File already in MDAS Production system, this process captures a confirmation of a meter master file comparison as part of the data stream using acceptance criteria described in Appendix F of Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.

In the event that the Process P7 output fails to meet the above criteria, communications are followed as documented in the feedback loop of Process P2.

The Meter Registration process is finally completed when MDMS is populated with totalization tables.

Input and Output Data Flows

Table 6-7: Process P7 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Comparison of MDAS Master File	Process P7	MDAS	Iterate as required based on test results
Description: • This data flow provides the confirmation of a meter master file comparison as part of the data stream sent to the MDAS production system. • If there are changes required to the MDAS Master File resulting from the end-to-end test, these changes are recorded in the MDAS production system.			

Flow	Source	Target Processes	Frequency
Replicate MDAS Master File	Process P7	MDMS	Once – changes triggered by new submissions

Description:

- This data stream provides accurate system data for *settlement* of the

Flow	Source	Target Processes	Frequency
Registered Meter Points	Process P7	Process P8	Once – changes triggered by new submissions

Description:

- Before all processes are complete for meter registration, accurate totalization tables must also be completed in MDMS. This data stream triggers the completion of the Totalization Table Registration process with the output data of the competed *meter point* registration.
- The Totalization Table process maps *meter point* IDs to a *delivery point*. This process is described in Internal Manual 3: Settlements, Part 3.5: Totalization Table Registration.

Flow	Source	Target Processes	Frequency
Totalization Tables	Process P7	MDMS, MSP, *Transmitter*	Loaded daily

Description:

- Load correct totalization tables into MDAS and produce a Site Regulator Report (SRR). This report goes to the MSP and *transmitter* (for *transmission tariff* and *energy* point *delivery points*) to sign and return, and to the *transmitter* (for *transmitter*-only *delivery points*) to sign and return.

6.1.8. Process P8 – Totalization Table Registration

Description

Process P8 includes the following activities:

- The *IESO* enters the totalization table on behalf of the MMP or the MMPT in the *IESO's* MDMS for the purpose of *settlement*.
- The totalization table associates the metering installations with the *delivery point* for *energy* and the *delivery point* for transmission tariff.
- The information collected during the Register Revenue Meter Installation process forms part of the *IESO's metering registry*.

Input and Output Data Flows

Table 6-8: Process P8 Input and Output Data Flows

Flow	Source	Target Processes	Frequency
Engineering and Relationship Data	Process P2	Process P8	Once – changes triggered by new submissions
Description: • The data stream includes data required for input into the Totalization Table Registration process triggered by the submission of the following documentation: o SSLA Register o MEC Register o TLF, if applicable o MMP identification o Transmission Tariff data o Connection station service – Not Metered by an RWM • Attributes and usage of this documentation is described in Internal Manual 3: Settlements, Part 3.5: Totalization Table Registration and in Internal Manual 3: Settlements, Part 3.4: Meter Point Registration and Maintenance.			
Flow	**Source**	**Target Processes**	**Frequency**
Registered Meter Points	Process P7	Process P8	Once – changes triggered by new submissions

Description:

- Before all processes are complete for meter registration, accurate totalization tables must also be completed in MDMS. This data stream triggers the completion of the Totalization Table process with the output data of the competed *meter point* registration.
- The Totalization Table process maps *meter point* IDs to a *delivery point*. This process is described in Internal Manual 3: Settlements, Part 3.5: Totalization Table Registration.

Flow	Source	Target System	Frequency
Totalization Tables	Process P8	MDMS	changes triggered by new submissions

Description:

- This data stream contains Totalization Tables implemented by the *IESO* to feed into MDMS.

6.2. Internal Process Impacts

The internal processes currently used for *revenue meter* registration will continue to have relevance in the future *real-time market* and day-ahead market.

Internal processes related to Revenue Meter Registration include:

- Register Revenue Meter Installation
- Register Virtual Revenue Meter Installation
- Register Meter Service Provider
- Register Revenue Meter Model
- Audit Revenue Meter Installation
- Audit DR Virtual Resource Contributors
- Produce Settlement Ready Delivery Point Data

Some of the internal processes are related to various *IESO* processes that interact with the Revenue Meter Registration process. For the most part, Revenue Meter Registration process under the market renewal program do not impact the internal procedures that address these related areas. However, in some areas this may be contingent upon the tools impact of the future *real-time market* and day-ahead market.

The design of internal *IESO* processes are for internal *IESO* use as documented in Appendix C, and are not included in the public version of this document. Appendix C details the impacts to internal processes in terms of existing processes that support the new market requirements, existing activities that need to be updated, and process and information

models that may need to be updated to support the future market. There are no process or activity changes required for the future *real-time market* and day-ahead market for the internal processes.

– End of Section –

Appendix A: Market Participant Interfaces and Forms

The following table provides a description of the changes and additions to *IESO* technical interfaces and forms with *market participant*s that may be required to support the Revenue Meter Registration process design of the future day-ahead market and *real-time market*.

Table A-1: Impacts to Market Participant Interfaces and Forms

MP Interface Name	Interface Type	Description of Impact
Meter Trouble Report	Web Client	No changes required.
Meter Data Report Profiles	Web Client	No changes required.
IMO_FORM_1540 Transmission Rights Certification as an Eligible Commercial Entity	Form	No changes required
IMO_FORM_1390 Assigning a Meter Service Provider to a Meter Point	Form	No changes required
MSP_TPL_0001 Application Form for the Registration of Metering Service Providers in the IESO-Administered Market	Form	No changes required
IMO_AGR_0012 Metering Service Provider Agreement	Form	No changes required
IESO_FORM_1663 Application to Retain Registration under the Alternative Metering Installation Standard	Form	No changes required
IMO_FORM_1488 MIRT Update Form	Form	No changes required
IMO-FORM-1310 Totalization Table Form	Form	No changes required
IMO-FORM-1358 Change of MSP Registration Details	Form	No changes required

MP Interface Name	Interface Type	Description of Impact
IMO-FORM-1043 Conceptual Drawing Review Submission Form	Form	No changes required
FORM-78 Connection Facility Station Service Not Metered by an RWM	Form	No changes required
IESO-FORM-1665 Acceptance of Meter Disaggregation Model	Form	No changes required
IESO-FORM-1660 Acceptance of Compliance Aggregation Model	Form	No changes required
IMO-FORM-1563 Registration of an Embedded Generation Facility	Form	No changes required
IMO-FORM-1179 Conforming Meter List Application	Form	No changes required
IMO-FORM-1411 Meter Read Reconciliation Form and Instrument Transformer Spot Check Form	Form	No changes required
IMO-FORM-1464 Notification of Power Switching Form	Form	No changes required

– End of Appendix –

Appendix B: Internal Procedural Requirements *[Internal only]*

This section is confidential to the *IESO*.

– End of Appendix –

Appendix C: Internal Business Process and Information Requirements *[Internal only]*

This section is confidential to the *IESO*.

– End of Appendix –

References

Document Name	Document ID
MRP High-level Design: Single Schedule Market	DES-13
MRP High-level Design: Day-Ahead Market	DES-14
MRP High-level Design: Enhanced Real-Time Unit Commitment	DES-15
MRP Detailed Design: Overview	DES-16
MRP Detailed Design: Authorization and Participation	DES-17
MRP Detailed Design: Facility Registration	DES-19
Conforming Meter List	MDP_LST_0001
Market Rules for the Ontario Electricity Market (Market Rules)	MDP_RUL_0002
Market Manual 3: Metering, Part 3.1: Metering Service Provider (MSP) Registration, Revocation and De-registration	MDP_PRO_0007
Market Manual 3: Metering, Part 3.2: Meter Point Registration and Maintenance	MDP_PRO_0013
Market Manual 3: Metering, Part 3.4: Measurement Error Correction	MDP_PRO_0010
Market Manual 3: Metering, Part 3.5: Site Specific Loss Adjustments Procedure	MDP_PRO_0011
Market Manual 3: Metering, Part 3.6: Conceptual Drawing Review	MDP_PRO_0012
Market Manual 3: Metering, Part 3.7: Totalization Table Registration	IMP_PRO_0047
Market Manual 3: Metering, Part 3.8: Creating and Maintaining Delivery Point Relationships	IMP_PRO_0057
Market Manual 3: Metering, Part 3.9:Conformance Monitoring	IMP_PRO_0058
Market Manual 3: Metering, Part 3.10: Transmission Grid – High Voltage Metering	IESO_PRO_0573
Market Manual 12: Demand Response Auction, Part 12.0: Demand Response Auction	MAN-44

– End of Document –