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PRO-408



Style Definition

~~Market Manual 1: Connecting to Ontario's Power System~~

~~Part 1.5: Market Registration Procedures~~

~~Issue 1.0~~

~~This market manual contains procedures to be followed by entities wishing to apply for participation in the IESO-administered markets or programs. It also contains procedures to be followed by new or existing market participants wishing to register, maintain, or deregister facilities, or withdraw from the IESO-administered markets.~~

**Market Manual 1: Connecting to Ontario's
Power System**

**Part 1.5: Market
Registration Procedures**

Issue 1.1

October 13, 2020 Issue 1.1

This market manual is provided for stakeholder engagement purposes. Please note that additional changes to this document may be incorporated as part of future engagement in MRP or other IESO activities prior to this market manual taking effect.

This procedure describes the activities to be undertaken by the IESO and Market Participants to manage the prudential support required to participate in the real-time market.



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This ~~document~~ *market manual* may contain a summary of a particular *market rule*. Where ~~provided, the summary has been used because of the length of the market rule itself. The reader should be aware, however, that where~~ a *market rule* is applicable, the obligation that ~~needs to shall~~ be met is as stated in the *market rules*. To the extent of any discrepancy or inconsistency between the provisions of a particular *market rule* and the summary, the provision of the *market rule* shall govern. ~~Furthermore, all references in the market manual to provisions of the market rules have been included for the convenience of the reader only, and any such reference shall not be construed as an exhaustive list of provisions of the market rules applicable to a given section of the market manual. The IESO makes no representation or warranty, express or implied about the accuracy or completeness of any such reference.~~

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1.1	Draft published for stakeholder comment as part of MRP Implementation	October 13, 2020

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Related Documents

Document ID	Document Title
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IESO_REQ_0208	Market Manual 1.6: Performance Validation

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Reference	Description of Change
<u>Throughout</u>	Initial release "Batch 1" changes for Market Renewal Program, reflecting design elements in the following detailed design documents: <ul style="list-style-type: none">• <u>Authorization and Participation</u>• <u>Prudential Security</u>• <u>Facility Registration</u>

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Market Manuals

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

"Connecting to Ontario's Power System" is Series 1 of the *Market Manuals*, in which this document is "Part 1.5: Market Registration Procedures".

Conventions

The standard conventions followed for market manuals are as follows:

- The word 'shall' denotes a mandatory requirement;
- Terms and acronyms used in this market manual including all Parts thereto that are italicized have the meanings ascribed thereto in Chapter 11 of the "Market Rules";
- All user interface labels and options that appear on the IESO portals and tools are formatted with the bold font style;
- Double quotation marks are used to indicate titles of legislation, publications, forms and other documents; and
- Any procedure-specific convention(s) shall be identified within the procedure document itself.

– End of Section –

1. Introduction

1.1.1. Purpose

~~Market Manual 1.5: Market Registration Procedures~~ Market Manual 1: Connecting to Ontario's Power System Part 1.5: Market Registration Procedures is the second of three market manuals that cover the Connecting to Ontario's Power System process. The Connecting to Ontario's Power System process consists of six (6) stages, which are described in the following market manuals: listed in Table 1.1.

Table 0-1: Market Manuals Related to the Connecting to Ontario's Power System Process

Stage	Market Manual
1- Prepare application	Part 1.4: Connection Assessment and Approval
2- Obtain conditional approval to connect	<u>Market Manual 1: Connecting to Ontario's Power System Part 1.4: Connection Assessment and Approval</u> (formerly Market Manual 2.10)
3- Design and build	N/A ¹
4- Authorize market and program participation (also called Participant Authorization)	Part 1.5: Market Registration Procedures <u>Market Manual 1: Connecting to Ontario's Power System Part 1.5: Market Registration Procedures</u>
5- Register equipment	
6- Commission equipment and validate performance	Part 1.5: Market Registration Procedures, and Part 1.6: Performance Validation (formerly Market Manual 2.20) <u>Market Manual 1: Connecting to Ontario's Power System Part 1.5: Market Registration Procedures, and</u> <u>Market Manual 1: Connecting to Ontario's Power System Part 1.6: Performance Validation</u> (formerly Market Manual 2.20)

¹ The "Stage 3: Design and build" activities are determined between the *connection applicant* and its associated *transmitter* or *distributor* after the completion of Stages 1 and 2.

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This *market manual* contains the procedures related to Market Registration, which encompasses all of Stages 4 and 5 of the process, ~~as well as in addition to~~ Commission Equipment procedures for Stage 6.

The content of this *market manual* serves as a roadmap for ~~market participants or~~ program participants ~~(² collectively referred to as "Participants") and service providers³~~ and reflects the requirements set out in the *market rules* and in certain standards and policies established by the *IESO*.

As applicable, the procedures in this *market manual* ~~are to~~ must be followed by:

- ~~Any organization~~ any person wishing to apply for participation in the *IESO-administered markets* or programs, or wishing to apply as a service provider (Stage 4);~~);~~
- ~~Participants~~ any Participant wishing to register equipment (Stage 5);~~);~~
- ~~Participants~~ any Participant wishing to commission equipment (Stage 6);~~);~~
- ~~Participants~~ any Participant wishing to update their equipment data;
- ~~any Participant or service provider~~ wishing to update their registration or equipment data;
- ~~Participants~~ any Participant wishing to deregister equipment;~~);~~ and
- ~~Participants~~ any Participant or service provider wishing to withdraw their participation from one or more of the *IESO-administered markets* or programs.

The Market Registration Process Schedule provides estimated timelines for the completion of Stages 4 and 5 when a Physical Facility⁴ facility other than a boundary entity or virtual transaction zonal trading entity is involved. Listed timelines are for guideline purposes only.

Before starting the procedures described in this *market manual*, it is assumed that ~~an applicant for participation in the IESO-administered markets~~ prospective Participants⁵ or programs has prospective service providers⁶ have completed the following applicable ~~pre-requisite prerequisite~~ requirements ~~described in Section 2.2.1 of this manual;~~

- for prospective market participants, those described in section 2.2.1 of this manual;

² In this *market manual*, a program participant refers to a person that is authorized by the *IESO* to participate in one or more of the programs listed in section 2.3.2 of this *market manual*. A person authorized as a program participant may also be authorized as a *market participant* or service provider.

³ In this *market manual*, a service provider refers to a person that is authorized by the *IESO* to provide one or more of the services listed in section 2.4.2 of this *market manual*. A person authorized as a service provider may also be authorized as a *market participant* or program participant.

⁴ "Physical Facility" is described in Section 3: Register Equipment.

⁵ In this *market manual*, a prospective Participant refers to any person applying to be authorized by the *IESO* as a Participant but has not yet been authorized.

⁶ In this *market manual*, a prospective service provider refers to any person applying to be authorized by the *IESO* as a service provider but has not yet been authorized.

- for prospective program participants, those described in section 2.3.1 of this *market manual*; and
- for prospective service providers, those described in section 2.4.1 of this *market manual*.

Owners of new ~~Physical Facilities~~*facilities* connecting to the *IESO-controlled grid*, ~~or~~ providing an *ancillary services* service for the *IESO*, or modifying an existing *Physical Facilities* facility registered with the *IESO* are required to complete Stages 1 through 3 of the Connecting to Ontario's Power System process before starting the ~~market registration~~*Market Registration* procedures described in this *market manual*. Stages 1 and 2 are described in ~~Market Manual 1.4: Connection Assessment and Approval Procedure~~*Market Manual 1: Connecting to Ontario's Power System Part 1.4: Connection Assessment and Approval procedure*.

~~1.2~~ 1.2. Scope

This *market manual* covers the Market Registration procedures, which are comprised of²:

- ~~Authorize~~*authorize* market and program participation (described in ~~Section~~*section 2 of this manual*);
- ~~Register~~*register* and commission equipment (described in ~~Section~~*section 3*);
- ~~Maintain~~*maintain* Participant, *facility*, and equipment data registered with the *IESO* (described in ~~Section~~*section 4*); ~~and~~;
- ~~Deregister~~*deregister* *facility* ~~and~~ (described in section 5); and
- withdraw participation (described in ~~Section~~*section 5*).

In some cases, an *IESO* contract will require an organization to register as a program participant regardless as to whether it has a ~~Physical Facility~~, ~~or whether that facility that~~ is connected to the *IESO-controlled grid*.

- ~~Metering~~*Meter* registration must be completed for any ~~Physical Facility~~*facility* connecting to the *IESO-controlled grid* or where any financial transaction associated with such a *Physical Facility* facility is to be settled by the *IESO*. For information on ~~processes~~*procedures* relating to the registration of *meter points* and submission of *meter* totalization tables, refer to *Market Manual 3: Metering Part 3.0: Metering Overview*.

² ~~Identity management operations is also part of Market Registration, and is described in *Market Manual 1.3: Identity Management Operations Guide*~~*Identity Management Operations Guide*.

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1.3.1.3. Roles and Responsibilities

The following subsections describe how the responsibility for market activities including the Participant Authorization and program participant authorization and facility and equipment registration, Register Equipment procedures, and maintenance, and exit activities are shared between the Participant-Participants or service providers and the IESO, as follows:

1.3.1.3.1. Participant or Service Provider

The responsibilities of a Participant or a service provider include one or more of the following activities:

- read and comply with the applicable *market rules* pertaining to Participant participant authorization and equipment registration (Chapter 2 and equipment registration (Chapter 2 and Chapter 7, Section Chapter 7, section 2));
- Complete complete all applicable pre-application requirements;
- Provide provide all mandatory organization, Participant and facility contact information;
- Manage manage system access requests for users requiring access to the IESO information systems;
- Review review, sign, and submit the *Participation Agreement, participation agreement*;
- Submit submit facility and equipment registration data, supporting documentation, and supplemental information (*licence(s)*, Single Line Diagram, etc.) through the IESO's online registration system (*Online IESO*);
- Identify identify the relationship roles for each *Resource resource's* record created for the facility in Online IESO (see refer to Section section 3.1.4);
- Submit submit responses to IESO requests for incomplete information or clarifications;
- Submit submit appropriate registration data for participation in the *Day Ahead Commitment Process (see day-ahead market (refer to Sections sections 3.4 and 3.5))*;
- Participate participate in *market participant* and *facility* testing (see refer to Section section 3.3) as scheduled together with the IESO;

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- ~~Register~~register *variable generation facility*~~facilities~~ to provide data for the centralized forecasting service program (~~refer to Section~~section 3.9.78, Appendix C, and Appendix D)⁸; ~~;~~
- ~~Review~~review and maintain ~~market participant~~Participant or service provider, *facility, resource* and equipment registration data in Online IESO to ensure the accuracy of the data, and submit any changes, additions~~;~~ or deletions through Online IESO (~~see refer to Section~~section 4)~~;~~ ~~;~~
- ~~Submit~~submit a request to transfer the registration of a *facility* as a result of their intent to sell, lease, assign~~;~~ or transfer control of that *facility* (~~see refer to Section~~section 4.2.67)~~;~~ ~~;~~ and
- ~~Notify~~notify the *IESO* when they wish to deregister a *facility* or *facilities* that are being decommissioned (~~see refer to Section~~section 5).

~~1.3.2.1.3.2.~~ IESO

~~Acknowledge~~The responsibilities of the *IESO* include the following activities:

- ~~acknowledge prospective or existing~~ Participant ~~and service provider~~ submissions related to Market Registration activities;~~;~~
- ~~Manage~~manage records in Online IESO and Participant or service provider accessibility;~~;~~
- ~~Generate Participation Agreement~~generate the *participation agreement*, issue to the ~~applicant~~prospective Participant or service provider for signature~~;~~ and then execute at the *IESO* (~~see refer to Section~~section 2.1.1)~~;~~ ~~;~~
- ~~Issue~~issue requests for incomplete data or clarifications;~~;~~
- ~~Validate Participant's~~validate the completion of connection requirements coming from any applicable connection assessment;~~;~~
- ~~Assess~~assess *facilities* for their ability to deliver the services for which they are seeking to be registered;~~;~~
- ~~Based~~based on the ~~Participant's~~market participant's intended market operations, create appropriate setup of *facilities* and associated ~~Resources~~resources to enable ~~bidding dispatch data submission, dispatching, metering, and settlement~~⁹; ~~;~~

⁸ ~~Variable generators~~ that intend to connect directly to the *IESO-controlled grid* or participate in the *IESO-administered markets* are required to complete the requirements in Sections 2 and 3 of this *market manual*, along with the requirements in ~~Section~~section 3.9 and Appendices C and D. ~~Distribution-connected variable generators~~ that are not registering to become *market participants* may bypass ~~Section~~section 2 and all of ~~Section~~section 3 prior to ~~Section~~section 3.9⁸.

⁹ ~~Metering information~~ is contained in the Market Manual 3 series of manuals. ~~Settlements~~ information is contained in the Market Manual 5 series. Refer to the ~~IESO Market Rules & Manuals Library~~.

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- ~~Coordinate~~coordinate testing schedules with the Participant for Market Participant and Facility Testing (~~see refer to Section~~refer to Section 3.32.5);
- ~~Provide~~provide the Participant with assistance in executing applicable commissioning tests for new or modified equipment (~~see refer to Section~~refer to Section 3.19.1);
- ~~Validate~~validate a *facility's* compliance with data monitoring and communication requirements as defined in the *market rules* and applicable standards and policies established by the *IESO* and other governing bodies¹⁰;
- ~~Provide~~provide the Participant or service provider with appropriate operational *IESO* contacts; and
- ~~Issue~~issue Registration Approval Notifications (~~(“RANs”)~~) to the Participant relating to the Market Registration activities.

1.4.1.4. Recommended Reading

Before applying for participation in the *IESO-administered markets* or programs or as a service provider, the *IESO* recommends that ~~applicants~~each prospective Participant or service provider read the following information: related to market rules, manuals, and other training and reference documentation.

1.4.1.4.1. Market Rules

~~Chapter 2: Participation~~Chapter 2: Participation of the *market rules* contains material relevant to the Participant Authorization ~~Procedures~~procedures and should be thoroughly reviewed by ~~all applicants~~each prospective Participant or service provider for provision of services to the IESO as well as participation in the *IESO-administered markets* or programs; ~~as well as by potential service providers. Chapter 7: System Operations and Physical Markets. Chapter 7: System Operations and Physical Markets and Appendix 7.8: Market Power Mitigation of the market rules~~ should also be thoroughly reviewed by applicants for participation in the *IESO-administered markets*.

1.4.1.4.2. Market Manuals

Many of the procedures necessary for market involvement are interrelated, ~~therefore~~Therefore, it is strongly suggested that ~~applicants~~each prospective Participant or service provider review the entire set of *market manuals* before starting the Participant Authorization ~~Procedures~~procedures. Particular attention should be paid to the *market manuals* listed in the References page at the end of this manual.

¹⁰ Other governing bodies include the North American Electric Reliability Corporation (NERC), Northeast Power Coordinating Council, Inc. (NPCC), as well as the Ontario government.

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~~1.4.3~~ 1.4.3. Training and Reference Documents

The [Marketplace Training page](#) of the *IESO* website contains workbooks, training guides, and quick takes that *applicants* can use, specific to each participation type. [Instructor-led](#) courses are also available for applicants.

~~1.5~~ 1.5. Contact Information

Changes to this *market manual* are managed via the [IESO Change Management process](#). Stakeholders are encouraged to participate in the evolution of this *market manual* via this process.

To contact the *IESO*, you can email *IESO* Customer Relations at customer.relations@ieso.ca or use telephone or mail. Telephone numbers and the mailing address can be found on the *IESO* website (<http://www.ieso.ca/corporate-ieso/contact>). *IESO* Customer Relations staff will respond as soon as possible.

– End of Section –

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2. Authorize Market and Program Participation

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Any ~~organization~~person planning to participate in the *IESO-administered markets* or programs, to cause or permit electricity to be conveyed into or out of the *IESO-controlled grid*, or to cause or permit electricity to be conveyed via an *IESO* contract requiring *settlement* by the *IESO*, must initiate with the *IESO* and complete a ~~request~~Request for authorization. ~~In particular, organizations must be authorized by the IESO if connecting a Physical Facility¹¹ to the IESO-controlled grid, providing via a Physical Facility an ancillary service for the IESO-controlled grid, or providing a specific service as a service provider.~~Authorization.

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~~The authorize market and program participation procedures ("Participant Authorization Procedures") allow the applicant organization and the IESO to identify the market(s) or program(s) in which the applicant intends to participate. It also ensures that the applicant will satisfy their prudential support requirements (if applicable) and registration application fee for participation in the IESO-administered markets.~~

~~The Participant Authorization procedures require prospective Participants or service providers to first register their organization by providing organizational information and signing the participation agreement to gain access to Online IESO. After prospective Participants or service providers have registered their organization, they can indicate their intent to the IESO to become authorized to participate as a Participant or service provider. Depending on the intent, the IESO will require additional information that the prospective Participant or service provider must complete in order for it to be authorized by the IESO. A prospective Participant or service provider will be considered authorized by the IESO only through the receipt of an authorization notification in the form of a RAN.~~

~~Before being authorized to participate in the IESO-administered markets, a prospective market participant, except for a market participant that is solely authorized as one or more of the participation types listed below, must complete the Register Equipment procedure described in section 3 of this market manual:~~

- ~~• capacity auction participant;~~
- ~~• TR participant;~~
- ~~• virtual trader; or,~~
- ~~• energy trader.~~
- ~~• Registration requirements for capacity market participants are found in Market Manual 12.0: Capacity Auctions, section 5. Registration requirements for capacity export requests are located in Market Manual 13.1: Capacity Export Requests, section 6.6.~~

¹¹ "Physical Facility" is described in Section 3: Register Equipment.

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2.1.2.1. Registering an Organization

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Before starting the Participant Authorization Procedures, ~~an applicant~~ prospective Participants or service providers should review the [Stage 4: Authorize market and program participation](#) page of the IESO website ~~before completing~~. After reviewing the information, prospective Participants or service providers should complete the ~~online application form~~ Online Application Form, which can be accessed from that page.

The ~~online application form~~ Online Application Form is divided into four parts, as described in ~~Table 2-1~~ sections, which ~~Table 0-2~~ describes.

Table 2-10-2: Online Application Form Descriptions

Part	Section	Contents and Description
1	Organization Information	<p>This section contains the following fields: Organization name, organization short name Name, Organization Short Name (maximum of eight characters), address, main phone number, web address, Address, Main Phone Number, Web Address and HST registration number. Registration Number (if applicable).</p>
2	Active Organization Evidence	<p>Two sections: Identify This section contains:</p> <ul style="list-style-type: none"> <p>Business Entity Type - prospective Participants or service providers identify the type of their business (e.g., corporation, LLP, proprietorship, etc.), business identification number (if applicable), and jurisdiction of registration.¹²</p> <p>Intent of Registration: Applicant identifies prospective Participants or service providers identify if they intend to register as a market participant, program participant, and Participant or a service provider. See Note below.</p>

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¹² The IESO will conduct a business registry search to confirm evidence of an active organization, including the registered officers, and current status.

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PartSection	Contents and Description
<p>3 Mandatory Organization Contacts</p>	<p>Identify <u>This section identifies</u> at least one person (preferably more) in the organization for each of the following contact types. Click the links for more information on each type.</p> <ul style="list-style-type: none"> • Authorized Representative: Person(s) responsible for contractually binding an organization with the <i>IESO</i>. The Authorized Representative is required to sign the <u>Participation Agreement</u> <i>participation agreement</i> (described in <u>Section 2.1.1</u> - <u>section 2.1.1</u>). • Primary Contact: Person(s) responsible for the organization's day-to-day <u>activities</u> <i>interactions</i> with the <i>IESO</i>. • Rights Administrator: Person(s) responsible for submitting and managing the organization's system access requests for users requiring access to <i>IESO</i> information systems. • Applicant Representative: Person(s) responsible for submitting registration requests for adding and updating contacts, <i>facilities</i>, organization, or different participations on behalf of the organization. <u>This</u> <u>The step-by-step guide to adding contact roles</u> will assist an Applicant Representative in adding and updating contact roles. Organization contact roles are listed and defined in <u>Appendix A</u>. <p>Mandatory organization information must always be kept up-to-date. For information on changing a mandatory contact, <u>see</u> <u>refer to Section</u> <u>section 4.1.4</u>.</p>
<p>4 Submitter's Contact Information</p>	<p>The <u>section collects the</u> name and contact information of the person who will be the <i>IESO's</i> point of contact for <u>Register an Organization</u> - <u>the registration process</u>.</p>

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The submitted data on the online application will be validated require validation and then approved approval by the *IESO*. In some cases, the submitted data may need to be revised by the applicant prospective Participant or service provider before it is approved. Once approved, the *IESO* will create organization and contacts records in Online IESO (see Section 2.1.3) refer to section 2.1.3) using the submitted data. These records will be the online repository for all of the applicant's prospective Participant or service providers' data and documents related to their participation in the *IESO-administered markets* or programs.

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Note: As of early mid 2020, the **Intent of Registration** section of the online application form is in a state of transition. By mid-2020 In the future, the *IESO* intends to have this section set so that it contains only the options of **"Market Participant"**, **"Program Participant"**, and **"Service Provider"** options. Until this change is in place, please select the checkbox checkbox(es) that best

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indicate the intended participation type. The options are explained in Sections sections 2.2.2, 2.3.2, and 2.4.2.

2.1.1.2.1.1. Participation Agreement

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(Market Rules: Chapter 2, section 1.2.2.3)

Once the organization and contact records in ~~Online IESO~~ Online IESO are established, a ~~Participation Agreement~~ participation agreement is generated, printed, and sent by courier to the ~~applicant's Authorized Representative~~ prospective Participant's authorized representative, who must sign it and return it to the IESO¹³. ~~A signed participation agreement is required for each person that intends to participate as a Participant or a service provider.~~

The ~~Participation Agreement~~ participation agreement formally binds a Participant or service provider to the market rules and other applicable standards, policies, or procedures established by the IESO and other governing bodies¹⁴. It also serves as certification by the ~~applicant~~ organization of readiness to participate in the IESO-administered markets or programs. ~~Once the IESO receives the signed participation agreement, the appropriate IESO representative reviews and executes the participation agreement, at which point it is considered to be official and final. The IESO sends a hard copy of the executed participation agreement to the prospective Participant or service provider for their records.~~

~~Once the signed Participation Agreement has been received by the IESO, it is reviewed and executed by the appropriate IESO management representative, at which point the Participation Agreement is considered to be official and final. The IESO sends a hard copy of the executed Participation Agreement to the applicant to have for their records.~~

2.1.1.2.1.2. Initial Access to Online IESO

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Once the ~~Participation Agreement is executed by IESO~~ executes the ~~IESO, participation agreement,~~ it provides initial access to Online IESO to all of the ~~applicant's~~ prospective Participant or service provider's mandatory organization contacts ~~will be provided with initial access to Online IESO, for which they will be notified of~~ via email from Online IESO. The initial access ~~will allow~~ allows applicable mandatory contacts to complete their assigned **Manage Participation** procedures (i.e., ~~tasks found in the~~ **Actions**) section in Online IESO.

~~The~~ This guide Logging in to Online IESO for the first time guide will assist users when logging into Online IESO for the first time.

¹³ Under extraordinary circumstances, the IESO may email the participation agreement to the prospective Participant's authorized representative.

¹⁴ Other governing bodies include the North American Electric Reliability Corporation (NERC), Northeast Power Coordinating Council, Inc. (NPCC), as well as the Ontario government.

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2.1.3.2.1.3. Manage Participation Tasks

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~~Applicants who~~ Prospective Participants or service providers that have registered their organization with the IESO, seek to participate in the IESO-administered markets or programs indicated their authorization intent and have received access to Online IESO can then authorize as a ~~market, program participant, and/Participant~~ or service ~~providerproviders~~.

The Applicant Representative ~~will need~~ needs to log in to Online IESO and initiate the Manage Participation action. Once initiated, the Applicant Representative will receive a series of emails, which contain assigned submission tasks that must be completed in Online IESO. These include identifying the specific ~~market participant~~, program participant, and/or service provider types for which the ~~applicant prospective Participant or service provider~~ is registering. ~~Market Participant participant~~ and ~~Program Participant program participant~~ types are defined in Sections 2.2 and 2.3-section 2.2.2 and section 2.3.2. Service ~~Provider provider~~ types are described in ~~Section section 2.4.2~~.

The majority of submission tasks are listed on the [Stage 4: Authorize market and program participation](#) page of the IESO website and are explained in further detail in [Section 2.2.1-section 2.2.1](#). Some of these tasks ~~will require review and~~ approval by the IESO, and may be rejected by the IESO, requiring further follow-up by the Applicant Representative before participation can be authorized.

2.2.2. Registering as a Market Participant

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(Market Rules: Chapter 2, sections 1, 2, 3, 4, 5, 6 and 10)

2.2.1.2.2.1. Prerequisite Requirements for a Prospective Market Participant-Applicants

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Before registering as a ~~Participant market participant~~ in the IESO-administered markets, the ~~applicant a prospective market participant~~ must submit the information described in Table 2-2 through Online IESO. ~~The applicant~~ The prospective market participant may contact the IESO at market.registration@ieso.ca for additional information about requirements that may be applicable for their intended participation type.

Table 2-2:0-3: Prerequisite Requirements for a Prospective Market Participant-Applicants

Type	Description
IESO Market Entry Application Fee	The IESO charges an application fee for authorization of market participation.
Ontario Energy Board Licence	The <u>Ontario Energy Board</u> ("OEB") is responsible for licensing all market participants in the IESO-administered markets. Applicants Prospective market participants must have an OEB licence for each market participation type (see Section 2.2.3) refer to

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Type	Description
	<p>section 2.2.2) for which they intend to conduct market activities: (market rules: Chapter 2, section 1.2.2.4). The only exception OEB licence required for each market participation type is for applicants having demand response resources participating solely described in the Capacity Auction (refer to Market Manual 12: Capacity Auctions). Table 0-4.</p>
Canadian Bank Account	<p>Applicants seeking authorization as a market participant, where Prospective market participants, for whom billing and effecting payment in respect of financial obligations or transactions will be processed by the IESO, are required to have Canadian bank account(s). Applicants Each prospective market participant to be paid or invoiced by the IESO must submit relevant bank account details.</p>
Import/Export/ e-Tag Data	<p>Applicants Prospective market participants seeking authorization to import, export or wheel electricity as an energy trader are required to identify any all interties between the IESO control area and adjacent control areas across which it wishes to they wish to import, export or wheel energy and import or export energy and/or operating reserve⁵ as stipulated stated in Market Rules Chapter 7, Section Chapter 7, section 2.2.7 of the market rules.</p> <p>Applicants These prospective market participants must obtain the relevant e-Tag¹⁶ capability and submit relevant data associated with the e-Tag. The e-Tag specifications and schema are maintained by the North American Energy Standards Board ("NAESB") and assist in providing facilitate the processes required by the NERC and NAESB standards related to interties.</p>
Canada Energy Regulator Permit	<p>Applicants Prospective market participants seeking authorization as a market participant energy traders to export or wheel electricity over interties between the IESO control area and adjacent control areas must obtain an export permit permits, issued by the Canada Energy Regulator ("CER").</p> <p>Applicants intending to export or wheel electricity and must submit a CER permit the permits to the IESO.</p>
Harmonized Sales Tax (HST) Registration Number	<p>Applicants Prospective market participants seeking authorization as a market participant participants, where billing and effecting payment in respect of financial obligations or transactions will be processed by</p>

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¹⁵ Market participants may import energy and operating reserve but can only export energy.
¹⁶ For information on e-Tags, refer to the [North American Energy Standards Board \(NAESB\) website](#).

Type	Description
	<p>the <i>IESO</i>, must obtain an Harmonized Sales Tax (HST) registration number¹⁷.</p> <p><i>Applicants</i> <i>Prospective market participants</i> to be paid or invoiced by the <i>IESO</i> must submit an HST registration number.</p> <p><i>Prospective market participants</i> that intend on solely participating as either a <i>TR participant</i>, a <i>virtual trader</i> or a <i>capacity auction participant</i> are not required to submit an HST registration number but must indicate their intent in the HST Registration Number field of the Online Application Form.</p>
Prudential Support	<p><i>Applicants</i> <i>Prospective market participants</i> seeking authorization to participate in real time the <i>IESO-administered markets</i> are required to meet the <i>prudential support obligations</i> set out in Market Rules Chapter 2, Section 5.2 of the market rules and in Market Manual 5: Settlements Part 5.4: Prudential Support.</p> <p><i>Applicants</i> <i>Each prospective market participant</i> must submit evidence of prudential support for approval by the <i>IESO</i>.</p> <p><i>Those seeking authorization as a capacity auction participant or TR participant</i> are excluded and do not need to meet these requirements. For more information, refer to the Guide to Prudentials at the IESO.</p>
Emergency Preparedness Plan	<p><i>Applicants</i> <i>Most prospective market participants</i> are required to prepare and submit an <i>emergency preparedness plan (EPP)</i> for approval by the <i>IESO</i>.</p> <p>Market Rules Chapter 5, Section 11 describes the content requirements for an <i>EPP</i>. For more information on <i>EPP</i> preparation, refer to:</p> <ul style="list-style-type: none"> • Market Manual 7.10: Ontario Electricity Emergency Plan (OEEP), Appendix C • Market Participant Emergency Planning Guidelines <p><i>Applicants that do not have Physical Facilities</i> are required only to submit a single page <i>EPP</i>, as provided in the template in Section 2 of the Market Participant Emergency Planning Guidelines document. Simply state "N/A" for any items that do not apply.</p> <p><i>Applicants</i> <i>Prospective market participants</i> intending to register <i>Physical Facilities</i>:</p>

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¹⁷ For information on HST registration, refer to the [Canada Revenue Agency website](#).

Type	Description
	<ul style="list-style-type: none"> authorize as a <i>capacity market participant, distributor, generator, wholesale consumer, electricity storage participant or transmitter</i> are required to complete and submit an <i>EPP emergency preparedness plan</i> that meets all applicable requirements in <i>Sections 2 and 3 of the Market Participant Emergency Planning Guidelines Market Participant Emergency Plan Guidelines & Requirements document</i>; authorize as an <i>energy trader</i> are required only to submit a <i>single-page emergency preparedness plan, as provided in the template in section 2 of the Market Participant Emergency Plan Guidelines & Requirements document</i>; <i>EPP</i> authorize solely as a <i>capacity auction participant, TR participant or virtual trader</i> are not required to submit an <i>emergency preparedness plan</i>. <p>Existing and prospective <i>market participants</i> seeking to register a <i>price responsive load</i> are subject to the same <i>emergency preparedness plan</i> requirements as a <i>non-dispatchable load</i>. <i>Emergency preparedness plan</i> signoff must be obtained by at least one of the following authorities: CEO, CFO, COO, CIO, President, Vice-President, or Legal Counsel/Secretary.</p> <p>Chapter 5, section 11 of the market rules describes the content requirements for an emergency preparedness plan. For more information on EPP preparation, refer to: Market Manual 7: System Operations Part 7.10: Ontario Electricity Emergency Plan (OEEP), Appendix C Market Participant Emergency Plan Guidelines & Requirements.</p>

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2.2.2.2. Market Participant Types

Applicants for participation in the IESO administered markets Prospective market participants select their applicable market participant types in Online IESO. Table 2-3 Table 0-4 lists the available market participant types and the markets in which they are eligible for participation.

Table 2-3:0-4: Market Participant Participation Types

Participation Type	Scope of Market Participation
Capacity Auction Participant	A <i>market participant person</i> who <i>wishes to participate participates</i> in the <i>capacity auction is required to authorize as and submits capacity auction participant offers</i> . For more information on <i>capacity auctions</i> , refer to Market

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Participation Type	Scope of Market Participation
	Manual 12: Capacity Auctions Market Manual 12.0: Capacity Auctions. <u>Capacity auction participants do not require an OEB license.</u>
Capacity Market Participant	A <u>capacity auction participant</u> , who secures a <u>capacity obligation</u> through a <u>capacity auction</u> shall apply to become authorized by and satisfies the IESO as a requirements contemplated in Chapter 7, section 18 of the market rules. <u>Capacity market participants may participate in the day-ahead market and real-time market. For more information on capacity market participant auctions, refer to Market Manual 12.0: Capacity Auctions. Capacity market participants participating using a demand response resource do not require an OEB license.</u>
Distributor	A <u>distributor</u> person who owns or operates a <u>distribution system</u> . <u>Distributors may participate in the energy market only. Distributors must hold an electricity distributor OEB license.</u>
Electricity Storage Participant	<u>Electricity storage participants may participate in the day-ahead market, real-time market and procurement market. An electricity storage participant may hold an electricity storage or electricity generator OEB license.</u>
Energy Trader ¹⁸	A person who may participate participates in the <u>energy and operating reserve</u> markets by importing, exporting, or wheeling electricity ¹⁹ must register as an <u>Energy Trader</u> . An Energy Trader who is exporting energy is represented as a wholesale seller-energy trader. Participation in the <u>operating reserve market is restricted to energy traders that intend to import energy. Energy traders must hold an electricity wholesaler OEB license. Energy traders are classified as wholesale sellers</u> (Chapter 2, section 2.1.1 of the <u>market rules</u>).
Generator	A generator may participate in both the energy and operating reserve markets.
Load Generator	A load person who owns or operates a <u>generation facility</u> . <u>Generators may participate in both the energy and market, operating reserve markets. A load facility that is importing energy is represented as a wholesale consumer-market and procurement market. Generators must have an electricity generator OEB license.</u>
Retailer	A retailer Retailers may participate in the financial markets for <u>settlement</u> purposes only. <u>They must have an electricity retailer OEB license.</u>

¹⁸ A generation facility owner who intends to pursue capacity export opportunities (either as a Prospective Capacity Seller or a Capacity Seller) must register as an Energy Trader ~~energy trader~~, or arrange for another Energy Trader ~~energy trader~~ to act on their behalf. For information on capacity exports, refer to Market Manual 13.1: Capacity Export Requests.

¹⁹ Imports and/or export trades are from or to the Ontario energy market. For example, a market participant seeking to export energy from a facility within Ontario will have to submit both an offer for that energy into the Ontario real-time market and a bid to export that energy into another control area. The first offer would be associated with the resource that is registered with the IESO. The second offer would be associated with a boundary entity resource. Refer to Market Manual 4: Market Operations Part 4.2: Submission of Dispatch Data for more information on this process.

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Participation Type	Scope of Market Participation
Regulation Service Provider	A regulation service provider may participate in the procurement market. A regulation service provider must also be authorized as a generator or electricity storage participant.
Transmitter	Transmitters may participate in the energy market. They must have an electricity transmitter OEB licence.
Transmission Rights TR Participant	Transmission rights participants are represented as financial persons who are authorized to participate in the TR market participants. For information on transmission rights the participation in the TR market, refer to Market Manual 4: Market Operations Part 4.4: Transmission Rights Auction and Market Rules Chapter 8, Section 4.8, and Chapter 8, section 4.8 of the market rules. TR participants do not require an OEB licence.
Transmitter/Virtual Trader	A transmitter may participate in the energy market. A person who is authorized to conduct virtual transactions. Virtual traders that are eligible to participate in the energy market. Market participants authorized solely as virtual traders shall not participate in the operating reserve market. Virtual traders may submit dispatch data in the day-ahead market only. Virtual traders do not require an OEB licence.
Wholesale consumer	A person who owns or operates a load facility. Wholesale consumers may participate in the energy market and operating reserve market. Wholesale consumers that participate in the operating reserve market must be dispatchable loads. Wholesale consumers must have an electricity wholesaler OEB licence.

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2.2.3.2.3. Organization Roles and Responsibilities

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Table 2-3 Table 0-5 describes the organization roles applicable to generators, loads/wholesale consumers, and capacity market participants (CMPs). One organization may fill one, more, or all of the roles, depending on its qualifications and responsibilities. In all cases, any organization fulfilling a role must be authorized as a market participant.

Table 2-4-0-5: Organization Roles and Responsibilities

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Role	Responsibility
Owner	The market participant who owns and maintains a Physical Facility facility or specific equipment within a Physical Facility facility. The Owner is responsible for completing the Register Equipment procedure and assigning the registered market participant, metered market participant and operator/Operator role relationships to equipment or Resources/resources if applicable.

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Role	Responsibility
Operator	The <i>market participant</i> responsible for operating the equipment within a <i>Physical Facility</i> <i>facility</i> in the real-time operations.
Registered Market Participant (RMP)	The <i>market participant</i> responsible for submitting <i>dispatch data</i> for an <i>energy Resource</i> it has <i>resource to which they have</i> been assigned to.
Metered Market Participant (MMP)	The <i>market participant</i> responsible for accessing <i>metering data</i> pertaining to, and to be settled at, the relevant <i>delivery point</i> . Each <i>delivery point</i> requires the assignment of a <i>MMP</i> <i>metered market participant</i> .
Metered Market Participant Transmission (MMPT)	The <i>market participant</i> responsible for paying for one or more transmission services to a <i>transmitter</i> relating to an owned <i>facility</i> .

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2.3.2.3. Registering as a Program Participant

2.3.2.3.1. Prerequisite Requirements for a Prospective Program Participant Applicants

Applicants *Prospective program participants* registering as a *Participant* in one or more *IESO* programs where billing and effecting payment in respect of financial obligations or transactions will be processed by the *IESO*, but who are not registering as a *market participant*, must submit the information described in *Table 2-5* Table 0-6 through Online IESO. *The applicant may* *Prospective program participant can* contact the *IESO* at market.registration@ieso.ca for additional information about requirements that *may* *might* be applicable for their intended participation type.

Table 2-5-0-6: Prerequisite Requirements for a Prospective Program Participant Applicants

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Type	Requirements
Canadian Bank Account	<i>Applicants</i> <i>Prospective program participants that need</i> to be paid or invoiced by the <i>IESO</i> must have a Canadian bank account and must submit relevant bank account details to the <i>IESO</i> .
Harmonized Sales Tax (HST) Registration Number	<i>Applicants</i> <i>Prospective program participants that need</i> to be paid or invoiced by the <i>IESO</i> must obtain an HST registration number ²⁰ and submit it to the <i>IESO</i> .

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²⁰ For information on HST registration, refer to the [Canada Revenue Agency website](#).

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2.3.2.3.2. Program Participant Types

If applicable, ~~the applicant selects their prospective~~ program participants can select the program participant type in Online IESO. ~~Table 2-6~~Table 0-7 describes the available program participant types.

Table 2-6-0-7: Program Participant Types

Type	Description
Centralized Forecasting Provider	An organization A person with wind and solar <i>generation facilities</i> (i.e., <i>variable generators</i>) connecting to the <i>IESO-controlled grid</i> , or connecting to a <i>distribution system</i> with an installed capacity of 5 MW or greater. These organizations persons must participate in the centralized forecasting program and be authorized as a Centralized Forecasting Provider. See Refer to Section 3.9: Variable Generation Facility Registration section 3.7 for more information.
Embedded Generator	An organization A person with embedded facilities (i.e., connected to a <i>distribution system</i>) that are not wind or solar generation. These organizations are An <i>embedded generator</i> is not required to be a <i>market participants</i> participant. An embedded generator that is an embedded market participant can participate in the operating reserve market only.
Embedded Load	An organization A person that participates with an <i>embedded load facility</i> that is not directly <i>connected</i> to the <i>IESO-controlled grid</i> , but is instead embedded within a <i>distribution system</i> . These organizations are This person is not required to be a <i>market participants</i> . Embedded participant. An embedded load is represented as an <i>embedded load consumer</i> .
Energy Performance Program	An organization A person that participates in the Province-wide Energy Performance Conservation and Demand Management Program for Multi-Site Customers.
Industrial Accelerator	An organization A person that is eligible to participate in the Industrial Accelerator Program (IAP), which is designed to assist eligible transmission-connected companies to fast track capital investment in major energy efficiency projects .
Program Non-Specific	For organizations A person participating in an <i>IESO</i> program that is not listed in Online IESO.
Smart Metering Cost Recovery	An organization A person that has a financial <i>settlement</i> with respect to the smart metering charge.
Smart Submetering Provider	An organization that A person who has a financial <i>settlement</i> with respect to Ontario Clean Energy Benefit Program Government electricity support program as a Smart Unit Sub-Metering Submetering Provider.

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2.4.2.4. Registering as a Service Provider

2.4.2.4.1. Prerequisite Requirements for a Prospective Service Provider Applicants

Applicants ~~Persons~~ registering as a service provider where billing and effecting payment in respect of financial obligations or transactions will be processed by the *IESO*, but who are not registering as a *market participant*, must submit the information described in **Table 2-7** Table 0_8 through Online IESO. ~~The applicant may~~ **Prospective service providers can** contact the *IESO* at market.registration@ieso.ca for additional information about requirements that ~~may~~ **might** be applicable for their intended participation type.

Table 2-7:0-8: Prerequisite Requirements for a Prospective Service Provider Applicants

Type	Description
Canadian Bank Account	Applicants Prospective service providers that need to be paid or invoiced by the <i>IESO</i> must have a Canadian bank account and must submit relevant bank account details to the <i>IESO</i> .
HST Registration Number	Applicants Prospective service providers that need to be paid or invoiced by the <i>IESO</i> must obtain a Harmonized Sales Tax (an HST) registration number ²¹ and submit it to the <i>IESO</i> .

2.4.2.4.2. Service Provider Types

If applicable, ~~the applicant selects~~ **prospective service providers can select** their service provider type in Online IESO. **Table 2-8** Table 0_9 describes the available ~~program participant~~ **service provider** types.

Table 2-8:0-9: Service Provider Types

Type	Description
Centralized Forecasting Provider	A forecasting entity that provides a centralized forecasting service relating to variable generation.
Metering Service Provider	A person that provides, installs, commissions, registers, maintains, repairs, replaces, inspects and tests <i>metering installations</i> associated with a Resource resource . For more information, refer to Market Manual 3: Metering Part 3.8: Creating and Maintaining Delivery Point Relationships .
Meter Data Associate (MDA)	A person, other than the metered market participant Metered Market Participant (MMP) that has access to metering data. Access The metered

²¹ For information on HST registration, refer to the [Canada Revenue Agency website](#).

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Type	Description
	<i>market participant assigns access</i> to this data is assigned by to the <i>MMP role</i> (seemeter data associate (refer to Section section 3.1.5, Table 3-2). Table 0-11).

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2.5.2.5. IESO Notification of Participant Authorization

2.5.2.5.1. Authorization Notification for a Market Participant

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Once ~~After~~ the Applicant ~~Representative~~ ~~Representatives~~ of an ~~applicant for prospective~~ ~~market participation has participants have~~ completed their assigned submission tasks in Online IESO, a ~~Registration Approval Notification (RAN)~~ will be emailed to the Applicant ~~Representative. Representatives.~~ The RAN is the confirmation that the ~~applicant has prospective market participants have~~ been approved by the IESO to participate in the IESO-administered markets they requested in their authorization tasks.

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~~The applicant~~ After the IESO issues the RAN, the person is ~~now~~ officially ~~deemed to be~~ a market participant. New market participants can now begin the Register Equipment ~~procedures procedure~~ described in ~~Section 3-section 3.~~

2.5.2.5.2. Authorization Notification for a Program Participant

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The Applicant Representative of an ~~applicant a prospective~~ ~~Participant~~ for participation as a:

- ~~Centralized a centralized~~ forecasting provider;_i
- ~~Embedded an embedded~~ generator;_i or
- ~~Embedded an embedded~~ load;_a

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who has completed their assigned submission tasks in Online IESO, will receive a RAN emailed from the IESO notifying ~~them of IESO their~~ authorization for participation.

~~Applicants Prospective program participants~~ for participation in other IESO programs (see ~~Section 2.3.2) refer to section 2.3.2)~~ are notified of their authorization by email from ~~IESO~~ Energy Efficiency.

2.5.2.5.3. Authorization Notification for a Service Providers Provider

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~~The~~ Applicant Representatives for service provider ~~applicants (see Section 2.4.2) (refer to section 2.4.2),~~ who have completed their assigned tasks in Online IESO, are notified of IESO authorization by ~~an~~ email from IESO Metering.

– End of Section –

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3. Register Equipment

The IESO uses the Register Equipment ~~procedures~~procedure to collect specific data. This data is used for various purposes that include assessing or validating whether ~~the facilities~~ a facility and its equipment meet all connection obligations identified in a related connection assessment ~~or~~and all requirements defined by the market rules. The Register Equipment ~~procedures are~~procedure is outlined on the [Stage 5: Register equipment](#) page of the IESO website (refer also to the [Register equipment process diagram](#)) ~~and~~). ~~The data that applicable Participants need to submit~~ are described in greater detail in the [Register Facility Registration Help File](#).

~~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.~~ Subject to certain caveats in the market rules, the IESO requires that market participants register all ~~Physical Facilities~~facilities directly connected to the IESO-controlled grid, with a capacity of 1 MW or greater, providing an ancillary service, or having a contract with the IESO. ~~All market participants with the exception of market participants authorized solely as one or more of the participation types below must complete the Register Equipment procedure in order to participate in the IESO-administered markets or convey energy through, into or out of the IESO-controlled grid.~~

- ~~TR participant: market participants authorized as a TR participant do not have any facility or resource registration requirements. Upon receipt of the authorization RAN from the IESO, TR holders will be eligible to participate in the TR market as TR participants,~~
- ~~energy trader: boundary entity resources of market participants authorized as energy traders do not have any resource registration requirements. Boundary entity resources are created by the IESO. Each energy trader has access to the boundary entity resources associated with inerties identified by e-tag submission in the Participant Authorization process;~~
- ~~virtual trader: a virtual trader does not have any facility or resource registration requirements. Each virtual trader is granted access to submit virtual transactions into the day-ahead market at all virtual transaction zonal trading entities that are defined and maintained by the IESO; and~~
- ~~capacity auction participant: a capacity auction participant does not have any facility or resource registration requirements.~~

The Register Equipment ~~procedures enable~~procedure enables the IESO to complete all activities required to prepare their staff, systems, tools, or operational documentation to accommodate the new ~~or modified facility, equipment, and associated Resources~~resources. These activities include, but are not limited to:

- ~~Understanding~~understanding operational capabilities and impacts;;

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- ~~Maintaining~~maintaining operating limits;^z
- ~~Identifying~~identifying where compliance with *NERC reliability standards* and *NPCC* criteria is required;^z
- ~~Establishing~~establishing visibility via data monitoring;^z and
- ~~Establishing Resources~~establishing resources for market operations and *settlement* systems.

~~A "Physical Facility" is a facility that is a physical site containing equipment (e.g., generation unit(s), transformer, circuits, breakers, etc.). Such physical sites may include transmission, load, or generation connected directly to the IESO-controlled grid or an embedded load, or generation connected within a distribution system.~~

~~A "Resource" is a unique IESO representation of a part of or the entire Physical Facility. Each Resource is associated with a connection point. If a facility has more than one connection point, the facility will be represented by more than one Resource. The submission of bids, offers and/or schedules is done at the Resource level. To ensure that Resources do not negatively affect the reliability of the IESO-controlled grid, the IESO may require individual Resources to be created for each unit in a generation facility if additional Resources cannot be aggregated. See Section 3.1.4 for more information.~~

~~Throughout the Register Equipment procedure, the IESO will issue interim RANs to Participants upon the completion of an activity in the Register Equipment procedure. The Register Equipment procedure is completed when the Participants receive a final RAN from the IESO. The final RAN allows a facility to connect to the IESO-controlled grid and, for a market participant, allows it to participate in the IESO-administered markets in which one or more of its resources are authorized to participate. Additional details on RANs issued during the Register Equipment procedure are found in section 3.2.4 of this market manual.~~

~~3.1.3.1~~ 3.1.1. Register Equipment Overview

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The following subsections contain ~~pre-requisite~~prerequisite requirements, roles and responsibilities information, market participant and equipment relationships, market participant and resource relationships and other background information that organizations having an ~~owner~~Owner role (~~see refer to Section 2.2.3~~section 2.2.3) should review before starting the Register Equipment ~~procedures (which start in Section 3.2)~~procedure .

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~~3.1.1~~ 3.1.1.1. Prerequisite Requirements

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Depending on the scope of the equipment change (e.g., a new ~~Physical Facility~~facility or a modified facility), registered with the ~~organization~~IESO, the facility owner (~~see refer to Section 2.2.3.3~~section 2.2.3.3) must complete the applicable requirements described in ~~Table 3-1~~Table 3-1.
0-10.

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Note: — All of the requirements listed in ~~Table 3-1~~Table 0-10 (except for the CAA process and Participant Authorization procedures) are considered by the IESO to be "supporting documentation".

Table 0-10: Prerequisite Requirements for Register Equipment

Requirement	Description
Complete Connection Assessment and Approval (CAA) Process	<p>As per the requirements of Market Manual 1.4: Connection Assessment and Approval, applicantsMarket Manual 1: Connecting to Ontario's Power System Part 1.4: Connection Assessment and Approval, prospective and existing market participants and embedded generators must complete the CAA process and receive a Notification of Conditional Approval to Connect (NoCA) from the IESO.</p> <p>It is important, duringDuring the Connection Assessments-connection assessment process, that the market participant confirmsParticipants must confirm with the IESO on how many Resources are the number of resources required at their facility. The IESO will determine the number of resources based on the number of transformers at the facility.</p> <p>As the part of the Register Equipment proceduresprocedure, the proponentproponents or market participant is participants are required to provide evidence that they are meeting meet any connection obligations identified in the connection assessment before the IESO will issue issues a final Registration Approval Notification (RAN). See Refer to Section section 3.2.4.</p> <p>For more information on the CAA process, refer to the Stage 2: Obtain conditional approval to connect page of the IESO website.</p>
Complete Participant Authorization Procedures	<p>See Section 2.</p> <p>Refer to section 2.</p> <p>Note: — Once an applicant has been granted access to Online IESO (see refer to Section section 2.1.2), they may begin their applicable Register Equipment procedures, as described in Sections 3.2 sections 3.1 through 3.11-3.8. However, the Register Equipment procedures cannot be completed until the IESO has issued a RAN for participant authorization. See Participant Authorization. Refer to Section section 2.5.1.</p>
Prepare Single-Line Diagram (SLD)	<p>Each market participant must provide a station electrical diagram showing the new or modified facility and its connection path to the IESO-controlled grid must be prepared. It. The Single-Line Diagram must have enough detail to allow the IESO to establish data monitoring requirements (see Figure 3-1 refer to Figure 0-1) and to implement modeling changes in IESO systems and tools. An SLDA Single-Line Diagram is required for all facilities being registered for participation in the IESO-administered markets, and shall be annotated with data monitoring, including the location of the Dynamic Disturbance Recorder (DDR) and/or</p>

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Requirement	Description
	<p>equivalent. SLDs are submitted by market <u>Market participants can submit their Single-Line Diagrams</u> via <u>Online IESO</u>.</p> <p>Prior to submissionsubmitting a Single-Line Diagram to the IESO, the market participantparticipants shall ensureconfirm that the SLD:Single-Line Diagram:</p> <ul style="list-style-type: none"> • Isis accepted by their transmitter or distributor; • Containscontains the appropriate approved operating nomenclature, that is used by the market participant's transmitter, and not the engineering nomenclature; • Showsshows the electrical equipment at the facility and the connection points to the grid; • Showsshows as-built²² data approved for construction, and marked with an Ontario Professional Engineer's seal; and • Clearlyclearly references the market participant's name, and the facility name to be registered in Online IESO.
Prepare Protection Description Document (PDD)	<p>A <u>Market participants must prepare a</u> document marked with an Ontario Professional Engineer's seal containing written descriptions of all protections and settings (e.g., A, B, primary, or backup), communication schemes, and tele-protections for each protection group at the new or modified facility. The Protection Description Document includes local and remote estimated design fault clearing times, a tripping matrix, and (where applicable) describes the separation of redundant protection groups.</p> <p>A <u>The IESO can provide a template can be provided by the IESO</u> upon request.</p>
Prepare Operational Philosophy Document	<p>A <u>Market participants must prepare a</u> document attesting to facility's <u>their facilities'</u> operating conditions and limitations (e.g., common mode failures, high/low temperatures, high/low wind speed), and procedures for planned and forced outages, returning equipment to service, responding to IESO directives within five minutes, and training staff on IESO interaction.</p> <p>Variable generators must also provide a description of the power equipment and power curves. SeeRefer to Appendix C: Wind Facility Data Requirements.</p> <p>The IESO provides a template of what is required <u>in the operational philosophy document</u> when registering a new facility.</p>
Obtain Technical Data	<p>The Register Equipment procedures in Online IESO will require technical data for equipment to be submitted and then reviewed and approved by the IESO. These procedures maymight require some time and may require several iterations to</p>

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²² "As-built" data consists of the measurements and specifications of a ~~facility~~ prior to any modifications, and is submitted to the ~~IESO~~ on a single-line diagram. Confirming as-built equipment in some cases may be as simple as confirming nameplate values are provided during equipment registration. In other cases, data monitoring will be used to confirm model parameters.

Requirement	Description
	complete. Market participants should must start these tasks as early as possible. The specific technical data required is identified in the Register Facility Help File .
Review Operational and Performance Requirements	The technical requirements and associated performance standards for each type of facility are stipulated stated in the <i>market rules</i> (see refer to Appendix B) and in Market Manual 6: Participant Technical Reference Manual (PTRM) Market Manual 6: Participant Technical Reference Manual .
Execute Connection Agreement	For a Physical Facility facility to participate in the <i>IESO-administered markets</i> , the facility owner entity must submit an executed copy of their <i>connection agreement</i> with the applicable <i>transmitter</i> (if the connection is to the <i>IESO-controlled grid</i>) or with the applicable <i>distributor</i> (if the connection is to the <i>distribution system</i>).
Prepare Restoration Participant Attachment (if applicable)	Based on the criteria contained in Market Manual 7: System Operations Part 7.8: Ontario Power System Restoration Plan (OPSRP) Section (OPSRP), section 2.2 , and as identified in the applicable System Impact Assessment (SIA), certain market participants are designated as restoration participants . Restoration participants are entities that contribute to the <i>IESO-controlled grid</i> restoration process. Restoration participants are required to submit a Restoration Participant Attachment via Online IESO as outlined in Market Manual 7.8, Section 13: Market Manual 7: System Operations Part 7.8: Ontario Power System Restoration Plan, Section 13 .
Prepare Facility Description Document (FDD) (if applicable)	In some situations, as identified in a System Impact Assessment, a new or modified Physical Facilities facility may need to participate in Remedial Action Schemes (RASs), Special Protection Systems (SPSs) , special protection systems , or other specialized control schemes. This includes Generation or Load Rejection Schemes, Generation Run-back schemes, Capacitor Switching Schemes, or Breaker Backup Protections. These are not typical protection system installations. An FDD is prepared For such facilities, market participants must prepare Facility Description Documents , marked with an Ontario Professional Engineer's seal, and submitted submit them for review and approval by the owner of RASs , SPSs Remedial Action Schemes, special protection systems , or other specialized control schemes. It contains Facility Description Documents contain a description of how the RAS, SPS Remedial Action Scheme, special protection system , or specialized control scheme operates, when and under what conditions, and the estimated design operating times. A block diagram showing the configuration, and functions, and (where applicable) the separation of the redundant functions is also submitted.

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Requirement	Description
Other Supporting Documentation	Other supporting documentation may include such items such as nameplate photos, synchronous machine capability curves, manufacturer’s wind turbine power curves, or solar array power data.

3.1.2.3.1.2. Equipment Registration Specialist

The Applicant Representative ~~of the organization applicant owner (see (refer to Sectionsection 2.1) must assign an Equipment Registration Specialist (ERS) contact role if the Register. The~~ Equipment procedures need to be initiated and completed in Online IESO. The ERSRegistration Specialist is responsible for initiating and completing tasks, including submitting technical data through Online IESO for their Physical Facilityfacility, its equipment, and any applicable Resourcesresources. Online IESO will guide the Equipment Registration Specialist to submit the data that is required. As defined in the Register Facility Help File, this data may apply to some types of market participants and not others, and the IESO may require supporting documentation (see Table 3-1)refer to Table 0-10) to verify the data. Once the data is reviewed, IESO reviews and approved by approves the IESO, it is data, they are considered to be registered data with the IESO.

The ERSEquipment Registration Specialist is also responsible for assigning specific *facility* contacts, including:

- ~~The~~ the 24/7 contact responsible for operating equipment at the *facility* location; ~~;~~
- ~~If~~ if applicable, the *facility* contact responsible for carrying out *dispatch instructions*.

3.1.2.3.1.3. Market Participant/Equipment Role Relationship

The key role relationships between a market participant and equipment are Owner and Operator, as described in Sectionsection 2.2.3.

3.1.2.3.1.4. Physical Facility/Resource Relationship

~~ResourceThe IESO creates resource and facility are data record types that must be created in Online IESO for each facility to be registered. Resources are associated with a connection point.~~

it registers. Establishing relationships a relationship between a Physical Facilityfacility and an energy Resourceone or more resources ensures that a *facility* is properly represented in the IESO-administered markets and in the IESO systems and tools. This is illustrated in the Single-Line Diagram (SLD) in Figure 3-1, Figure 0-1, where a fictitious company GenCo owns a *generation facility* consisting of one combustion turbine (~~CT~~) and one steam turbine (~~ST~~) connecting to a common *connection point*.

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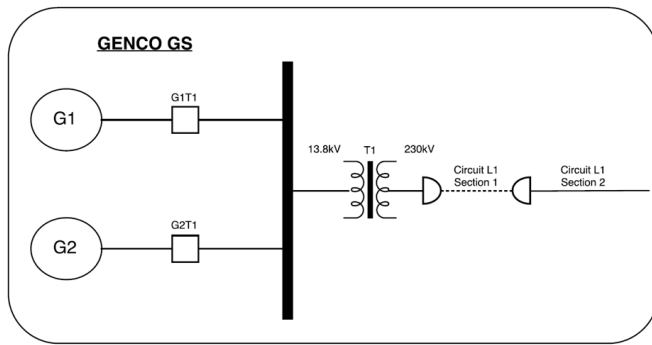


Figure 0--1: Single-Line Diagram Example

The *generation facility* would be registered in Online IESO as GenCo GS and would include all physical equipment that comprise the *facility* (e.g., *generation units*, transformers, circuits, and breakers) and their associated technical data. The *IESO* would create two *energy Resources/resources* for this *facility*. The first *Resource/resource* would be identified as Genco-LT.G1 and would include information *pertaining to generation unit G1*, information provided by the *generator that is the owner of generation unit G1*. The second *Resource/resource* would be identified as Genco-LT.G2. It includes information *pertaining to generation unit G2*, provided by the *generator that is the owner of generation unit G2*.

As per *Market Rules Chapter 7, Section the Chapter 7, section 2.3 of the market rules*, the *generator* may apply to the *IESO* to aggregate the *generation units* into a single *energy Resource/resource*, and must provide technical justification as to why the aggregation is necessary (*seerefer to Sectionsection 3.7*).

There *ismay be* a 'one-to-many' relationship between a *connection point* and a *Resource/resource* (i.e., one *connection point* can have many *Resources/resources* associated with it). For example, a *distributor* might own a *load facility* connected to the *IESO-controlled grid* and be registered with *an energy Resourceea resource* at that *connection point*. If a dispatchable *generation unit* is embedded in the same *distribution system*, that *generation unit* would be registered as a separate *energy Resource/resource* associated with the same *connection point*. In other words, the *generating Resource/generation resource* must be distinguished from the *load Resource/resource* even though the *generating Resource/generation resource* is embedded in the *distribution system*. Both *Resources/resources* have the same *connection point* because they both inject or withdraw *energy* into or from the *IESO-controlled grid* at the same physical *connection point*.

3.1.5.3.1.5. Market Participant/Resource Role Relationships

In addition to the *Physical Facility/Resource/facility/resource* relationships, establishing role relationships between *a market participant/participants* and *an energy Resource/resources* is also

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important. Various role relationships are possible, ~~some~~, Some are required by the *market rules* and others are determined by the business requirements of the owner.

Each ~~Resource within a Physical Facility~~ resource may have role relationships ~~to~~ with several different *market participants*. However, each role relationship must be unique. For example, if a *market participant* has been designated as the *metered market participant (MMP)* for a ~~Resource~~ resource, a second *market participant* cannot be similarly designated as the ~~MMP~~ metered market participant for that same resource.

One *market participant* may fill one, more, or all of the role relationships, depending on ~~its~~ their qualifications and responsibilities.

The following market participant assigned as a registered market participant, metered market participant or metered market participant transmission must have that corresponding role assigned to its organization.

Table 0-11 lists the role relationships that are possible assigned by the market participant for a specific energy Resource each resource.

Table 0-2-11: Market Participant/Resource Role Relationships

Role	Responsibility Relationship to Resource
<p>Operator <u>Owner</u></p>	<p>The <i>market participant</i> that operates the Resource. The <i>market participant</i> who owns and maintains a <i>facility</i> registered with the <i>IESO</i> and any associated <i>resources</i>, including <i>hourly demand response resources</i> (Chapter 7, section 2.2.6.1 of the <i>market rules</i>). Only one owner may be assigned to each <i>resource</i>. The owner is responsible for completing the Register Equipment procedures and assigning the <i>registered market participant, metered market participant and operator</i> role relationships to equipment or <i>resources</i> if applicable. The owner is also responsible for assigning an Equipment Registration Specialist as described in section 3.1.2.</p>
<p>Operator <u>Owner</u></p>	<p>The <i>market participant</i> that owns <u>responsible for operating the Resource and assign</u> <u>equipment within a facility in the MMP, MSP, RMP and Operator relationships</u> <u>real-time operations</u> (Chapter 7, section 2.2.6.1 of the <i>market rules</i>). Only one operator may be assigned to a Resource <u>each resource</u>.</p>

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Role	Responsibility Relationship to Resource
<p>Metered Registered Market Participant (MMP)</p>	<p>The market participant assigned to a Resource to access metering data pertaining to, and to be settled at, the relevant delivery point. The metered market participant assigns further relationships required for the complete definition of a delivery point as detailed in Market Manual 3.8: Creating & Maintaining Delivery Point Relationships.</p> <p>MMPs must contract with an MSP for their metered Resources. The sole market participant responsible and authorized to submit dispatch data for the resource to which it has been assigned (Chapter 7, section 2.2.4 of the market rules).</p> <p>The registered market participant is also responsible for assigning registered market participant user-resource relationships that allow individual users to submit dispatch data for the assigned resource.</p>
<p>Metered Market Participant Distributor</p>	<p>The market participant that owns and operates a distribution system where the Resource's facility is connected. The market participant responsible for the financial settlement with the IESO of all quantities of physical services at the relevant delivery point for the resource as part of the settlement process.</p> <p>The metered market participant assigns further relationships required for a delivery point as detailed in Market Manual 3: Metering Part 3.8: Creating and Maintaining Delivery Point Relationships. Only one metered market participant may be assigned to each delivery point. The metered market participant assigned to the day-ahead market must be the same metered market participant assigned to the real-time market.</p> <p>Metered market participants must contract with a metering service provider for their metered resources. The metered market participant assigns the metering service provider relationships to the delivery point for the resource. Each delivery point requires the assignment of an metered market participant.</p>
<p>Metered Market Participant Transmission Transmitter</p>	<p>The market participant that owns and operates a responsible for paying for one or more transmission system where the Resource's facility is connected. The services to a transmitter may create a transmission network (TN) Resource or a transmission connection (TC) Resource for the facility for the purpose of collecting the applicable transmission tariff. relating to an owned facility.</p>
<p>Metering Service Provider Metered Market Participant Transmission Tariff (MMPT)</p>	<p>The market participant responsible to pay for one or more transmission services to a transmitter relating to an owned facility of a Resource. Provides, installs, commissions, registers, maintains, repairs, replaces, inspects and tests metering installations associated with a resource.</p> <p>For more information, refer to Market Manual 3: Metering Part 3.8: Creating and Maintaining Delivery Point Relationships.</p>

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Role	ResponsibilityRelationship to Resource
Meter Data Associate Metering Service Provider (MSP)	<p>Provides, installs, commissions, registers, maintains, repairs, replaces, inspects and tests <i>metering installations</i> associated with a Resource.</p> <p>A service provider appointed by an <i>metered market participant</i> to access <i>metering data</i> pertaining to the <i>resource's delivery point</i>.</p> <p>For more information, refer to Market Manual 3: Metering Part 3.8: Creating and Maintaining Delivery Point Relationships.</p>
Distributor Meter Data Associate	<p>A service provider appointed by a <i>MMP</i> to access <i>metering data</i> pertaining to the Resource's <i>delivery point</i>.</p> <p>For more information, refer to Market Manual 3.8: The market participant that owns and operates a distribution system where the facility associated with a resource is connected.</p>
Transmitter Register Market Participant (RMP)	<p>The <i>market participant</i> who has market control of the Resource under the definition of the <i>market rules</i>. The <i>RMP</i> (assigned by the owner) is authorized to submit <i>dispatch data</i>, and since <i>dispatch data</i> is actually submitted on each Resource, the <i>RMP</i> must be designated for each Resource.</p> <p>The <i>RMP</i> defines the users that will have the right to submit <i>dispatch data</i> for each Resource. The <i>market participant</i> that owns and operates a <i>transmission system</i> where the <i>facility</i> associated with a <i>resource</i> is connected. The <i>transmitter</i> may create a <i>transmission network (TN) resource</i> or a <i>transmission connection (TC) resource</i> for the <i>facility</i> for the purpose of collecting the applicable <i>transmission tariff</i>.</p>

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3-23.2. Registering Facility, Equipment, and Resource Data

Depending on the "equipment change" and in order to complete the Register Equipment procedures, procedure, the Equipment Registration Specialist might need to submit certain supporting documents and equipment data (as described in [Section 3.1.1](#)) may need to be submitted by the ERS) via [Online IESO](#). This also includes all data related to equipment changes. Online IESO will guide the Equipment Registration Specialist on what kind of supporting documents are required for all facilities to be registered, others and the specific documents that are only required only under certain circumstances. Online IESO will guide the ERS as to what needs to be submitted. The IESO will review and assess all submitted data. If any data is determined to be inaccurate, incomplete or missing, the IESO will reject it and the ERS Equipment Registration Specialist would need to resubmit updated data.

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It is critical that *market participants* review their registered data in Online IESO to ensure that it is accurate and current. The procedures

for changing *market participant, facility, equipment, and Resource data* are contained in [Section 4](#).

Important: It is critical that *market participants* review their registered data in Online IESO to ensure that it is accurate and current. The procedures for changing *market participant, facility, equipment, and resource data* are contained in section 4.

The required data attributes that need to be submitted when completing the Register Equipment procedures through Online IESO are detailed in the [Register Facility Help File](#). The IESO ensures that all *facility* data provided by owners ~~is~~ are referenced appropriately in Online IESO in the *facility* records that contain technical data related to the physical equipment within the *facility*.

~~Sections 3.4 through 3.11~~ Sections 3.3 through 3.7 identify additional registration data that the IESO may require depending on the *facility* and participation type.

~~3.2.1~~ 3.2.1. [_____](#) Metering Requirements

~~Once~~ After a *market participant* has applied to register a *facility* with the IESO, and one or more ~~Resource~~ *resource* records have been created in [Online IESO](#), the *market participant* ~~needs to~~ must identify the *metered market participant (MMP)* for each ~~Resource~~ *resource* record. ~~The metered market participant will assign a metering service provider to satisfy the metering requirements for the resource.~~

Information on ~~processes~~ *procedures* relating to metering registration can be found in the [Meter Registration](#) section of the IESO website, as well as in the Market Manual 3: Metering series, available at the [IESO Market Rules & Manuals Library](#).

The metering registration procedures cannot be completed until the ~~MMP~~ *Resource metered market participant-resource* relationship is created (~~see refer to Section~~ [section 3.1.5](#)) and the IESO has issued ~~an~~ a RAN via Online IESO.

~~3.2.2~~ 3.2.2. [_____](#) Data Monitoring Requirements

All *facilities* must comply with the applicable data monitoring requirements, which are listed in the [Market Rule Chapter 4 Appendices](#). Data monitor testing is explained in ~~Section~~ [section 3.3.2.5.3](#).

~~3.2.3~~ 3.2.3. [_____](#) Market Rule Exemptions

(Market Rules: Chapter 1, section 14)

The procedure for applying for an *exemption* from any applicable *market rule* requirement is contained in [Market Manual 2: Administration Part 2.2: Exemption Application and Assessment](#).

~~3.2.4~~ 3.2.4. [_____](#) Facility Registration Status

~~An ERS~~ [Equipment Registration Specialists](#) can track the progress of their Register Equipment procedures by [accessing the Manage Facility Requests Report in Online IESO](#), emailing

market.registration@ieso.ca, or by contacting the *IESO* Market Registration Specialist assigned to their *equipment change*.

A Register Equipment change is considered to be officially registered when the ~~ERS~~ **Equipment Registration Specialist** receives a final ~~Registration Approval Notification (RAN)~~ email from [Online IESO](#) verifying that the equipment change is completed and is registered with the *IESO*. A new ~~Physical Facility~~ *facility* cannot participate in the *IESO-administered markets* – nor cause or permit electricity or any *physical service* to be conveyed into, through or out of the *integrated power system* – unless a RAN has been issued by the *IESO*.

3.2.4.1 Interim RANs

Prior to issuing the final RAN, the *IESO* may issue interim RANs that allow certain register equipment change milestones to proceed. For example, for an equipment change involving a new ~~Physical Facility~~ *facility*, an interim RAN may be issued to allow the *facility* to:

- ~~Connect~~ *connect* and energize on potential only; ~~i~~
- ~~Connect~~ *connect* and energize as a ~~load~~ *facility*; or
- ~~Connect~~ *connect* for commissioning purposes.

The *IESO* Market Registration Specialist assigned to the ~~register equipment~~ **Register Equipment** change can provide assistance/guidance on when an interim RAN is needed.

3.2.4.2 RAN Extensions

A RAN may include conditions that are mandatory and must be met by an expiry date. If a condition cannot be met due to circumstances beyond the *market participant's* control, the ~~ERS~~ **Equipment Registration Specialist** may request a RAN extension by emailing either their *IESO* Market Registration Specialist or market.registration@ieso.ca, providing the reason for the extension request and a plan for meeting the RAN conditions. If a RAN extension is not granted by the *IESO*, or if the ~~market participant~~ **Equipment Registration Specialist** does not apply for an extension, the currently issued RAN will expire and ~~is~~ *will* no longer ~~be~~ *valid*. If a RAN extension is granted by the *IESO*, the RAN version number will increment by one.

~~3.2.5.~~ **Market Participant and Facility Testing**

(Market Rules: Chapter 2, section 6, Appendix 2.2)

For a new or modified ~~Physical Facility~~ *facility*, the *IESO* may conduct tests during the Register Equipment ~~procedures~~ *procedure* to confirm that the *operational aspects* of the *facility* can interoperate with *IESO* systems and tools. Tests include, but are not limited to:

- ~~Confirming~~ *confirming* capability of transmitting to the *IESO* interface; ~~i~~
- ~~Ensuring~~ *ensuring* the connectivity of the *dispatch workstation*; ~~i~~
- ~~Confirming~~ *confirming* that appropriate voice communications are in place; ~~i~~
- ~~If~~ *if* applicable, verifying that the *facility* responds to the *IESO* control signals; ~~i~~

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- ~~Assessing~~ assessing whether the *facility* complies with all applicable *market rules* and *NERC* and *NPCC reliability standards*; and
- ~~Performing~~ performing (at various Equipment Registration stages described in ~~Sections 3.4~~ Sections 3.1 through ~~3.10~~ 3.8) data monitoring tests of the required telemetry points with the *IESO* to ensure that statuses, magnitudes, and sign conventions are correct. All anomalies must be fixed and retested before the first energization of the *facility*.

Tests are scheduled as mutually agreed between the *IESO* and the *market participant*. In order to complete the Register Equipment procedures, all ~~market~~ participant and *facility* tests must be verified and approved by the *IESO*.



~~Market participants are responsible for ensuring that their staff receive appropriate training for all of the testing activities conducted by the IESO to ensure that they are able to interoperate with all applicable IESO systems. Market participants shall have the appropriate employee training and procedures in place to ensure they are prepared for participation in the IESO-administered markets as soon as they are authorized.~~

Important: Market participants are responsible for ensuring that their staff receive appropriate training for all of the testing activities conducted by the IESO to ensure that they are able to interoperate with all applicable IESO systems. Market participants shall have the appropriate employee training and procedures in place to ensure they are prepared for participation in the IESO-administered markets as soon as they are authorized.

~~3.3-1~~ 3.2.5.1 Participant Workstation Testing

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Transactions involving data exchanged with *IESO* systems are processed through the *participant workstation* via Online IESO, except for the transfer of real-time data, which is done through the *dispatch workstation* (~~see Section 3.3-2~~ refer to section 3.2.5.2). *Market participants* are required to install the necessary hardware and software infrastructure in accordance with the technical requirements contained in ~~Section~~ section 2 of Market Manual 6: Participant Technical Reference Manual (~~PTRM~~) (PTRM).

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Market participants are required to test and confirm that their *participant workstation* is functional and can interoperate and meet *IESO* technical requirements for non-real time data transfers. *Market participants* receive **Assign Contact Role(s)** and **Confirm System Access Role(s)** tasks from Online IESO, for which they self-confirm. Completion of these tasks, along with the rest of the Equipment Registration procedures through Online IESO is usually sufficient to prove that the *participant workstation* can interact with Online IESO and the *IESO Portal*.

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~~3.3.2.5.2~~ Dispatch Workstation Testing

Real-time data transactions are processed through the *market participant's dispatch workstation*. *Market participants with one or more resources that respond to dispatch instructions must install, test and maintain dispatch workstations that meet the requirements in the participant technical reference manual for real-time data transfers.* The technical requirements for the *dispatch workstation* are contained in ~~Section 3 of the PTRM~~ *Market Manual 6: Participant Technical Reference Manual*, section 3. Testing of the *dispatch workstation* is conducted in the *IESO Sandbox*. *IESO Information & Technology Services* issues test dispatch instructions for which *market participants* are required to respond. The combined time required to set up the *Sandbox* test and to complete the actual test is approximately one month.

~~3.3.2.5.3~~ Data Monitor Testing

Real-time data (i.e., telemetry point data) is required by the *IESO* to monitor and model the power system and operate the *real-time market*. ~~Market Rule Appendix 4, Sections~~ *Market Rule Appendix 4, sections* 4.15 through 4.18 specifies the points required and Sections 4.19 through 4.23 indicate the required timing performance. The data link ~~must be~~ configured and concurrently, the *IESO* Market Registration Specialist ~~will prepare~~ prepares a point list with the *market participant*. The link and points will be added to the *IESO* systems. The *market participant* will have to successfully test the link and points with the *IESO* before the *facility* is approved and a final RAN is issued. Incorrect or incomplete telemetry from ~~a market participants~~ *participant* shall invalidate the *facility's* approval.

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~~3.4~~ Day Ahead Commitment Process Registration Requirements

~~3.3.~~ In order for a Physical Facility to participate in the Day Ahead Commitment Process (DACP), it must be registered with the *IESO* to participate in the *real-time markets*. There are specific registration requirements for *facilities* participating in the DACP, which are explained in Section 2 of the ~~Guide to the Day Ahead Commitment Process (DACP).~~ *Generators*

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~~Technical data, new or modified, will be processed during regular business days and within 10 business days of receipt. IESO requires a minimum of two business days for changes to become effective.~~

~~As part of the registration procedures for DACP, the ERS submits specific technical data through Online IESO, which the IESO uses to determine the facility's:~~

- ~~Day-ahead commitments and schedules, while respecting the facility's technical data;~~
- ~~Eligible energy limited Resource (EELR) status;~~

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- Eligibility for Day-Ahead Production Cost Guarantee (DA-PCG), and
- DA-PCG settlement amounts

The ERS must also indicate to the IESO whether the facility is intended for submitting three-part offers, and whether it is intended for participation in Real-Time Generation Cost Guarantee (RT-GCG). RT-GCG is covered in Section 3.8 of this market manual, Market Manual 4.6, and in Section 7 of the Guide to the Day-Ahead Commitment Process (DACP).

Note: Submission of combined cycle plant (CCP)²³ and pseudo unit (PSU) modeling technical data is covered in Section 3.5.

The applicability of these procedures to specific Resources is shown in Table 3-3:

Table 3-3: Applicability of Procedures

(Market Rules: Chapter 7, sections 2.1 and 2.2)

To participate in the IESO-administered markets, market participants authorized as generators are required to register one or more resources for each generation facility. How generation resources participate in the IESO-administered market varies by the groupings set out in Table 0-12. The bid/offer type is a mandatory field that differentiates a registered generation resource as either a dispatchable generation resource, a self-scheduling generation resource or an intermittent generator.

The Energy Market Interface uses the bid/offer type to identify the dispatch data parameters that a registered market participant will be eligible to submit for a resource.

Table 0-12: Generation Resource Classification by Bid/Offer Type Resource Data Parameter

Resource Type	Bid/Offer Type	Facility Type – Generation Resource Classification	Submit DACP Technical Data	Submit CCP and PSU Data
Generation	Dispatchable	Non-quick start Dispatchable non-quick start generation resource (nuclear)	X	X ²⁴
Generation		Dispatchable non-quick start generation resource (non-nuclear)	X	X
Generation		Variable generation resource		
Generation		Dispatchable hydroelectric generation resource	X	

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²³. Combined cycle plant (CCP) is identified in Chapter 11 of the Market Rules as enhanced combined cycle facility.

²⁴. Required for CCPs.

Resource Type	Bid/Offer Type	Facility Type-Generation Resource Classification	Submit DACP Technical Data	Submit CCP and PSU Data
Load		<i>Dispatchable Quick-start generation resource (other than hydroelectric)</i>	✗	
	<i>Self-scheduling generator</i>	<i>Self-scheduling generation resource</i>		
		<i>Transitional generation resource</i>		
Generation	<i>Intermittent generator</i>	<i>Intermittent generation resource</i>		
Generation	Self Scheduling			

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The Day Ahead Calculation Engine (DACE) respects the technical data of generation Resources. Static technical data (as defined in Appendices 4.5A and 4.6 of the Market Rules) are registered through Online IESO. Variable technical data are recorded as daily generation data (DGD) and may be overwritten daily if equipment or regulatory conditions warrant. Table 3-4 shows the technical data elements the ERS must provide prior to participating in the DACP, as determined by Resource or facility type.

As part of the registration procedures for the *day-ahead market* and *real-time market*, the Equipment Registration Specialist must submit equipment data parameters and resource data parameters using Online IESO, as shown in Table 3-4. The IESO requires a minimum of two *business days* to implement changes to these values. In addition to the data parameters submitted by the Equipment Registration Specialist, the IESO also uses the submitted data to derive additional resource data parameters. These parameters are further used to determine the following for a *generation resource*:

- commitments or schedules in the *day-ahead market* and *real-time market*,
- eligibility for *Generator Offer Guarantee* ("GOG"); and
- GOG settlement amounts.

Resource Data Description Parameter	Unit of	Resource Type Generation resource classification																		
		Dispatchable Non-quick Start					CC	PSU	Non-Dispatchable Load											
	ship M																			
Operating Reserve Class	M	X	X	X	X			X				X								
Elapsed Time to Dispatch	M	X	X	X	X				X			X								
Pseudo-Unit Modelling Election Flag	Q			X	X															
Steam Turbine Percentage Share	M						X													
ST Steam Turbine Minimum Loading Point ²⁶	MW Q		X	X	X															
ST Share (Applicable to each CT)		%				X														

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²⁶ Unlike the other data elements in this table, which have only associated one daily value, the ST MLP has multiple values — one for each CT configuration at the combined cycle plant (1 on 1 MLP, 2 on 1 MLP, 3 on 1 MLP, etc.).

Resource Data Description Parameter	Unit of	Resource Type Generation resource classification									
		Dispatchable Non-quick Start					CC	PSL	Non-Dispatchable Load		
Steam Turbine Duct Firing Capacity	MW by IES O			X	X						
Pseudo Unit Declaration Minimum Loading Point	Yes or No M		X	X							
Primary Fuel Type Minimum Generation Block Run Time	Type M	X	X	X	X	X					
Secondary Fuel Type Period of Steady Operation	Type M	X	X	X	X	X					
Three-Part Offer Requirement Number of Forbidden Regions	Yes or No Q	X	X	X			X				

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Resource Data Description Parameter	Unit of	Resource Type Generation resource classification												
		Dispatchable Non-quick Start					CCF	PSU			Non-Dispatchable Load			
Start Indication Value	Q							X						
Hourly Must Run Flag	Q							X						
Shared Daily Energy Limits	Q							X						
Time Lag	M							X						

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3.3.1. Operating Reserve Class

(Market Rules: Chapter 7, section 2.2.8)

The *operating reserve* class indicates which classes, if any, of *operating reserve* the *resource* may provide. The Equipment Registration Specialist submits this mandatory parameter for each *generation resource*.

All *dispatchable generation resources* are eligible to provide *operating reserve* with the exception of *resources* registered with a primary or alternate fuel type of wind or solar photovoltaic. The *IESO* uses this parameter to restrict *offers* submitted by the *registered market participant*.

The Equipment Registration Specialist submits a single value for the parameter by selecting one of the following values in Online IESO:

- **10 min non-spin and 30 min** to indicate election to provide in the non-synchronized *ten-minute operating reserve* and *thirty-minute operating reserve*;
- **30 min non-spin** to indicate election to provide *thirty-minute operating reserve*;
- **All type** to indicate election to provide synchronized and non-synchronized *ten-minute operating reserve* as well as *thirty-minute operating reserve*; or
- **No operating reserve** to indicate election not to provide *operating reserve*.

3.3.2. Quick Start Flag

The quick start flag indicates if a *resource* is capable of injecting *energy* into the *IESO-controlled grid* within five minutes of receiving a *dispatch instruction* from an offline state. The Equipment Registration Specialist must submit this mandatory parameter for all *dispatchable generation* classifications in Table 0-13. Some *resources* may be associated with *generation facilities* that have unique operating characteristics. As a result, the *IESO* will provide notification for how these *resources* are to be classified. A value for the quick start flag is only registered after the *IESO* approves the submission.

The *IESO* uses this parameter to determine which *generation resources* are *quick start resources* and are eligible to provide *10-minute operating reserve* when their breaker is open. The *settlement process* also uses the value set for this parameter to determine GOG and make-whole payment eligibility.

The *IESO* permits the submission of this data parameter using the following validation rules:

- the value of the *bid/offer type resource* data parameter for the *resource* is **Dispatchable**; and
- the value of the quick start flag equipment data parameter for each *generation unit* associated with the *resource* is **Yes**.

If the *resource* is deemed to be a non-quick start *resource* by the *IESO*, the *quick start* flag is **No**. If the *resource* is deemed to be a *quick start resource* by the *IESO*, the *quick start* flag is recorded as **Yes**. A *resource* with a registered quick-start value of **Yes** is eligible to provide

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values for the *resource* data parameters indicated in section 3.3.2 of this *market manual*. In all cases, the *IESO* also records a start date of the quick-start flag value to handle time dependent revisions that effect *settlement processes*.

3.3.3. Dispatchable Non-Quick Start Generation Resources

This section applies to *dispatchable generation resources* that have a value of **No** for their quick start flag *resource* data parameter and are accordingly classified as a *dispatchable non-quick start generation resource*.

Registered market participants have the ability to submit a *start-up offer* and *speed-no-load offer* as hourly *dispatch data* into the *day-ahead market* and *pre-dispatch scheduling process*.

Registered market participants submitting such *dispatch data* may do so only for a *dispatchable non-quick start generation resource* associated with a *generation unit* that has a primary or alternate fuel type value other than **Uranium** and a *pseudo-unit*.

The Equipment Registration Specialist for a *market participant* that intends to submit *start-up offers* and *speed-no-load offers* as *dispatch data* must submit a declaration of intent to submit these *offers* through Online IESO. The Equipment Registration Specialist will be provided with instructions to use the *offer* template file version with the according *start-up offer* and *speed no-load offer* parameters. Changes to the *start-up offer* and *speed no-load offer* declaration must be communicated via Online IESO.

Resource data parameters specific to the modelling of a *dispatchable non-quick start generation resource* are described in the subsections below. A *dispatchable non-quick start generation resource* that has indicated an alternate fuel source as **Steam** and a primary or secondary fuel type that is not **Uranium** is deemed as a *combined cycle generation resource* and subject to registration of the *resource* data parameters indicated in section 3.3.3 of this *market manual*.

3.3.3.1 Elapsed Time to Dispatch

(Market Rules: Chapter 7, section 2.2.6K)

The *elapsed time to dispatch* parameter represents the minimum amount of time, in minutes, between the time in which the start-up sequence is initiated for all *generation units* associated with a *dispatchable non-quick start generation resource* and the time in which the *resource* becomes *dispatchable* by reaching its MLP. The Equipment Registration Specialist submits this data parameter for its *dispatchable non-quick start generation resources*.

The *IESO* uses the *elapsed time to dispatch* data parameter to determine whether the *generation resource* qualifies for GOG status. The *IESO* approves this data parameter in accordance with the Elapsed Time to Dispatch supporting document as described in the Register Facility Help File.

The Equipment Registration Specialist submits a single value for this *resource* data parameter by submitting the number of minutes as a numeral.

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3.3.3.2 Period of Steady Operation

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The registered values of the *minimum loading point (MLP)* and *minimum generation block run-time (MGBRT)* that the ERS provides are assumed by the IESO to be relatively static. They represent the baseline that the IESO uses to validate changes through the DGD submissions. Submitted DGD values are used to schedule non-quick start Resources, determine the DA-PCG commitment actions, and to calculate the DA-PCG. For more information on DGD, refer to Section 5 of the *Guide to the Day-Ahead Commitment Process (DACP)*.

The ERS can view the Resource's registered *MLP*, *minimum run time (MRT)*, and *MGBRT* values in *Online IESO*.

Figure 3-2 shows an overview of the *dispatchable generator* technical data required for the DACP.

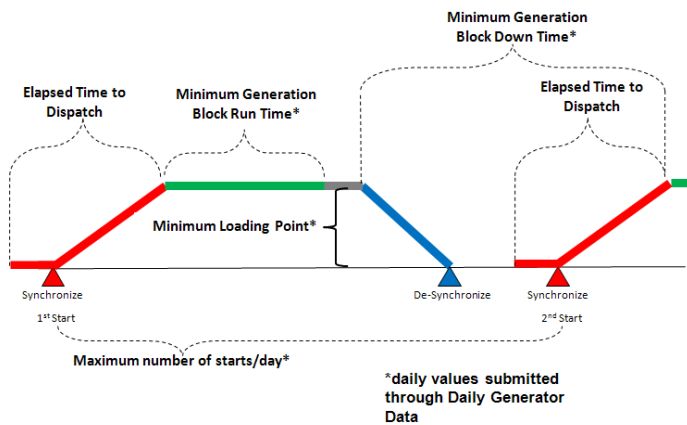


Figure 3-2: Dispatchable Generator Technical Data

(Market Rules: Chapter 7, section 2.2.6H.2)

The *period of steady operation resource* data parameter represents the number of *dispatch intervals* for which one or more *generation units* of a *dispatchable non-quick start generation resource* must maintain steady operation before changing direction of its *energy* output (either increasing or decreasing). Submission of this data parameter by the Equipment Registration Specialist in Online IESO is mandatory only for a *resource* registered as a *dispatchable non-quick start generation resource*.

Period of steady operation is used in the *real-time market* to maintain the direction of a *resource's dispatch instruction* for a minimum number of *dispatch intervals*. The Equipment Registration Specialist submits the data parameter, by providing a value of 0, 1 or 2 to reflect the number of *dispatch intervals*. The IESO will assign a default value of 0 if no value is submitted by the Equipment Registration Specialist.

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Depending upon the value submitted, it may be necessary for the IESO to adjust the *period of steady operation* value if there is a negative impact on overall system operation. The *market participant* will be notified through Online IESO of any changes to this value.

3.4.13.3.3 Minimum Loading Point

(Market ~~rules~~Rules: Chapter 11 defines the 7, section 2.2.6B)

The *minimum loading point* (“MLP”) reflects the minimum level of output of energy specified by the *market participant* that can be produced by a, in MW, where one or more *generation facility* under units associated with the *resource* is stable conditions without ignition support. Only *dispatchable non-quick start generation facilities* can submit an MLP and its value must reflect the actual performance of the *generation facility*.

The MLP reflects the level of output where the unit is stable while meeting the emissions performance standards of the Ontario government set forth by legislation.

For registration purposes, the ERS must submit a single MLP value. The Equipment Registration Specialist submits this parameter for each *dispatchable non-quick start generation Resource*. For a steam turbine (ST) at *resource* that does not have a registered primary or alternate fuel type of **Uranium**. The IESO uses the MLP registration parameter to approve the MLP submitted as *daily dispatch data* by the *registered market participant*. The IESO also uses the registered MLP to determine the GOG eligibility for a *resource*.

The Equipment Registration Specialist submits a single MLP for each eligible *resource* by providing a value in MW. The value registered must be greater than zero and less than or equal to the value of the maximum active power capability registered as equipment data for the *generation unit* corresponding to the *resource*. The IESO shall assign a default value of 0 MW if a value is not submitted by the Equipment Registration Specialist.

If a *resource* is part of a combined cycle plant (CCP), the ERS *generation resource* and associated with a *generation unit* that has an alternate fuel type of **Steam**, referred to as a steam turbine, the Equipment Registration Specialist may submit multiple MLPs, as values for the MLP. Submission of the MLP for a steam turbine is described in Section 3.5.23. During registration, the IESO uses the registered MLP in determining DA PCG eligibility.

The IESO validates the submitted MLP data based on the following validation rules:

- The *facility* type is *dispatchable generation*;
- The *facility* must NOT be *quick start*;
- Number format xxxx — unit is MW;
- $0 \leq \text{MLP} \leq$ Maximum generator capacity (MGC);
- Ontario government emissions standards for the *facility*, and
- Supporting data showing minimum loading (MW) meeting emissions levels allowed by the Ontario government.

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3.4.23.3.3.4 Minimum Generation Block Run Time

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(Market ~~rules~~Rules: Chapter ~~11~~ defines ~~7~~, section 2.2.6B)

The ~~minimum generation block run time (MGBRT) as~~ is the number of hours, ~~specified by the market participant,~~ that a ~~generation facility must be operating at minimum loading point in accordance with the technical requirements of the facility.~~ Only a ~~resource must operate at, or above, the MLP.~~ The Equipment Registration Specialist submits the ~~minimum generation block run time resource data parameter for a dispatchable non-quick start generation facilities can submit a MGBRT resource associated with a generation unit that does not have a primary or alternate fuel type registered as Uranium.~~ The IESO uses the ~~minimum generation block run time resource data parameter to determine the resource's eligibility for GOG status.~~

For registration purposes, ~~the ERS must submit~~The Equipment Registration Specialist submits a single value of ~~MGBRT~~the ~~minimum generation block run time~~ for each ~~eligible dispatchable non-quick start generation Resource,~~ and the ~~resource by providing a value must reflect the technical characteristics of the generation facility.~~ During registration, the IESO uses the registered ~~MGBRT~~ in determining DA-PCG eligibility.

from 0 to 24 hours. The IESO validates the data based on the following validation rules:

- ~~The facility type is dispatchable generation~~
- ~~The facility must NOT be quick start~~
- ~~Number format xx unit is hours~~
- ~~0 ≤ MGBRT ≤ 24~~

3.4.3 Elapsed Time to Dispatch

~~Elapsed time to dispatch (ETD) is the minimum amount of time, in minutes, between the time when a dispatchable generator initiates its start-up sequence and the time when it can respond to IESO dispatch signals under a hot start. For a non-quick start generation unit, this means that the generator has reached its MLP.~~ The ETD must be ~~approved submissions by using supporting documentation submitted by all dispatchable generation facilities and must reflect the technical characteristics of the Resource~~the Equipment Registration Specialist in Online IESO.

During registration, the IESO uses ETD only in determining DA-PCG eligibility. ~~A dispatchable generator that submits an ETD value equal to or less than 60 minutes will not be DA-PCG eligible.~~

3.4.4 Day Ahead Production Cost Guarantee

The Day Ahead Production Cost Guarantee (DA-PCG) program is described in Section 7 of the Guide to the Day Ahead Commitment Process (DACP). If a ~~generation facility meets all of the criteria listed in that section,~~ the IESO will register ~~it~~ in the DA-PCG program.

Concurrently to their registration in the DA-PCG program, a ~~market participant who owns a combined cycle facility that does NOT have an aggregation of the steam turbine (ST) generation unit and a combustion turbine (CT) generation unit must submit online Resource data that the~~

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IESO will use to apply the DA-PCG commitments to the ST based on the combined cycle facility configuration (e.g., 1CT on 1ST, 2CT on 1ST, etc.):

3.4.5 Daily Cascading Hydroelectric Dependency

A *dispatchable* hydroelectric generation facility has a *daily cascading hydroelectric dependency (DCHD)* if the facility has a Minimum Hydraulic Time Lag²² of less than 24 hours to or from an adjacent cascading hydroelectric generation facility controlled by the same *registered market participant*:

The *DCHD* is used to determine whether a *generation unit* is an EELR. Once defined as an EELR, a *generation unit* is deemed eligible to resubmit *dispatch data* after the initial run of the DACE, provided that a Daily Energy Limit (DEL) was submitted as part of the *day-ahead offer*. For registration purposes, the ERS must submit the following data for each *dispatchable* hydroelectric *generation unit*:

- A self-declaration that the *generation unit* has a DCHD
- The Resource Name and Resource ID of the cascading hydroelectric dependent *generation facility* (when a DCHD is declared)

The *IESO* validates the data based on the following validation rules:

- The *facility* is *dispatchable generation facility*
- The Primary Fuel Type is 'WATER' (i.e., a hydroelectric *facility*)
- Cascading hydroelectric dependent *generation facility* is controlled by the same *RMP*

3.4.6 Quick Start Flag

For registration purposes, the ERS must submit a *quick start facility* declaration for each *dispatchable generation facility*. The declaration is mandatory for all *dispatchable generation facilities* and must reflect the actual capability of the *facility*. The *IESO* uses this data to determine which *generation facilities* are set as quick start in the SCADA model (these generation Resources are eligible to provide *10 minute reserve* when their breaker is open):

The ERS determines if the *dispatchable generation facility* is a *quick start facility* based on the definition in Chapter 11 of the *market rules*. The *IESO* validates the data based on the following validation rules:

- The *facility* is *dispatchable generation*
- Operating characteristics of the *dispatchable generation facility* have been specified by the *market participant*

The *IESO* records the *quick start facility* flag along with a start date in order to handle time dependent revisions based on the following rules:

- If the *dispatchable generation facility* is deemed to be a non-quick start *facility*

Quick Start Facility Flag = NO

²² Minimum Hydraulic Time Lag is the minimum amount of time, in hours (rounded down to the nearest whole hour), that is required for water to travel to, or from, an adjacent hydroelectric *generation facility* on the same water system.

- ~~If the *dispatchable generation facility* is deemed to be a *quick start facility*
Quick Start Facility Flag = YES~~

~~3.4.7 Generator Primary and Secondary Fuel Type~~

~~The *IESO* records the Generator Primary and Secondary Fuel Type for reference by downstream processes. It is mandatory for the ERS to submit a single Generator Primary Fuel Type via Online IESO for each *generation unit*, for registration purposes. There is also an option to submit a single Generator Secondary Fuel Type. The fuel type must reflect the actual characteristic of the *generation unit*, and is not required for facilities that are not *generation facilities*.~~

~~3.4.8 Three Part Offer Eligibility Declaration~~

~~Three part *offers* are the incremental *energy* and fixed offered costs for operating a non-quick start *facility* during DACP.~~

~~*Market participants* intending to submit *dispatch data* for a Resource requiring new day ahead offer attributes for the three part offer (for *speed no load cost (SNL)* and *start up cost (SUC)*) must submit a declaration through Online IESO. The declaration includes positive confirmation that the *market participant* is a *registered market participant* participating in the *real time energy market*, and intends to submit three part *energy offers*. The IESO will 'Enable' a flag as part of registration that will allow the *market participant* to access the appropriate submit/retrieve features. A 'Disabled' flag allows the participant to submit/retrieve offer attributes that exclude *SNL* and *SUC*. The IESO will also assign a start date in order to handle time dependent revisions.~~

~~Any status change of the Day Ahead Offer Template Use Flag from 'Disabled' to 'Enabled', will be communicated via Online IESO, along with instructions to the *market participant* to use the offer template file version that allows for the submission of the day ahead offer attributes.~~

~~3.5 Day Ahead Commitment Process – Combined Cycle Plants Registration Requirements~~

~~3.3.4. Combined Cycle Facility~~

~~(Market Rules: Chapter 7, sections 2.2.6G)~~

~~A combined cycle *facility* is a *generation facility* that contains at least one *dispatchable non-quick start generation resource* registered with a generator turbine type value of combustion turbine and at least one *dispatchable non-quick start generation resource* registered with a generator turbine type value of steam turbine. The generator turbine type is a mandatory *resource data parameter* that the *IESO* specifies for a *resource* based on the equipment data parameters submitted by the~~

Equipment Registration Specialist for each *generation unit* associated with the *resource*. The *resource* registered with the *combustion turbine* value is deemed as a *combustion turbine resource*. The *resource* registered with the *steam turbine* value is deemed as a *steam turbine resource*.

Modelling of an combined cycle *facility* in the *day-ahead market* and *real-time market* allows *generators* to offer their dependent units into the market as one *pseudo-unit*, reflecting actual operation dependencies for each combustion turbine with the associated portion of the steam turbine capacity.

This section applies to a combined cycle ~~plants (CCPs)~~ *facility* whose *generation units* are represented by individual ~~Resources~~ *resources* and do not have physically aggregated ~~Resources~~ *resources*. Aggregation is explained in ~~Section 3.7~~ section 3.7 of this *market manual*.

In addition to any applicable registration requirements in ~~Section 3.4~~, ~~CCPs are required to submit data listed in Sections 3.5.1 and 3.5.2.~~ Market participants intending to the Register Facility Help File, the Equipment Registration Specialist is required by Chapter 7, section 2.2.6G of the *market rules* to submit all mandatory *resource* data parameters specific to a combined cycle *facility* as listed in this subsection. Registration of this data allows a *market participant* that intends to utilize a *pseudo-unit* (PSU) modeling to schedule their ~~CCP~~ *combined cycle facility* in the *day-ahead* ~~must also register the data specified in Sections 3.5.3~~ *market* and 3.5.4 *real-time market*.

To deregister ~~*pseudo-unit Resources*~~ *units*, the *market participant* must submit a written request to the IESO, at market.registration@ieso.ca. Deregistration must include all of the ~~*pseudo-unit Resources*~~ *units* at the *facility* (i.e., all of the ~~PSUs~~ *pseudo-units* associated with the ~~CTs~~ *combustion turbines* that share the same ~~ST~~ *steam turbine*). For *facility* deregistration procedures, ~~see refer to Section~~ section 5.1.

3.5.13.3.4.1 Combustion ~~and~~ Steam Turbine Configuration Relationships – Pseudo-Unit Modeling

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Potential *dispatch* configuration relationships between combustion ~~turbines (CTs)~~ *turbine resources* and a steam turbine (~~ST~~) *resource* at a combined cycle ~~plant (CCP)~~ *facility* must be established ~~in order to~~. These relationships will help ensure that ~~ST~~ *steam turbine resource* constraints, as a result of a ~~DACP~~ commitment in the *day-ahead market, pre-dispatch scheduling process or real-time market*, are applied to the correct *minimum loading point* (MLP) amount based on the ~~ST~~ *steam turbine resource's* schedule, and the scheduled configuration of associated ~~CTs in the day-ahead~~ *combustion turbine resources*.

For registration purposes, the ~~ER~~ Equipment Registration Specialist must provide the Resource Name and Resource ID of up to four physical ~~CTs~~ *combustion turbine resources* and one physical ~~ST~~ *steam turbine resource*, which make up the ~~CCP~~ *combined cycle facility*. The Resource Name and Resource ID are assigned by the IESO for each combustion turbine resource and steam turbine resource and are available in Online IESO. From this submission, the IESO ~~will be able to derive~~ derives relationships between the ~~CT(s)~~ *combustion turbine resources* and the ~~ST~~ *steam turbine resources* and ~~record~~ records their associations.

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For participation in PSU pseudo-unit modeling, PSU Resources pseudo-units are created and their relationship to a CT and ST combustion turbine resource and steam turbine resource is recorded. Each CCP will consist of one ST and at least one CT. The pseudo-unit modelling election flag resource data parameter is assigned by the IESO to each combustion turbine resource and steam turbine to indicate that the market participant has elected to enable pseudo-unit modelling for scheduling. The number of PSUs pseudo-units to be registered is equal to the number of CTs at the CCP (see Figure 3-3 below). For more information on PSU modeling, combustion turbine resource at the combined cycle facility (refer to Section 3 of the Guide to the Day-Ahead Commitment Process (DACP)-Figure 0-2).

Combined cycle relationship data for CCPs a combined cycle facility participating in PSU pseudo-unit modeling are used to:

- Calculate PSU DGD calculate pseudo-unit dispatch data values from physical unit submissions;_i
- Allocate allocate physical unit derating and transmission limitations to the PSU pseudo-unit level;_i
- Translate translate the PSU day-ahead schedule pseudo-unit schedules to physical unit (PU) level;_i and
- Enable DA PCG enable GOG settlement of PSUs pseudo-units on the PU physical unit level.

The IESO validates approves the data for all physical Resources (CTs and ST) combustion turbine resources and steam turbine resources based on the following rules:

- Each Resource each resource has been registered individually;_i
- Each Resource each resource is part of the same registered facility;_i
- Each Resource each resource has a Resource resource bid type of 'Dispatchable, Dispatchable';
- The Resources the resources are not part of a physically an aggregated Resource, resource;
- All Resources all resources are under the operational control of a single market participant;_i and
- All Resources all resources are assessed a settlement under a single metered market participant.

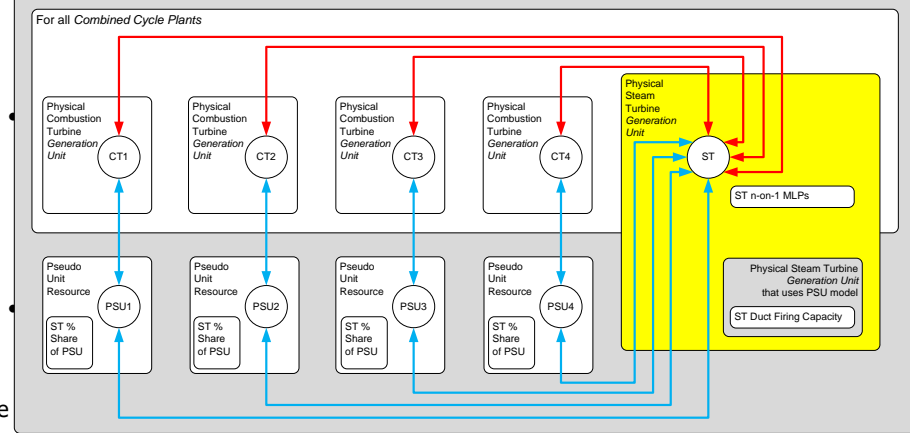
For participation in PSU pseudo-unit modeling as part of day-ahead scheduling of the CCP combined cycle facility in the day-ahead market and real-time market, further validation by the IESO includes:

- The the number of PSUs pseudo-units registered is equal to the number of CTs combustion turbine resources registered to the CCP combined cycle facility;
- Each PSU each pseudo-unit will have a unique CT combustion turbine resource;
- All CTs all combustion turbine resources at a CCP combined cycle facility that register as a PSU pseudo-unit must share the same ST steam turbine resource;

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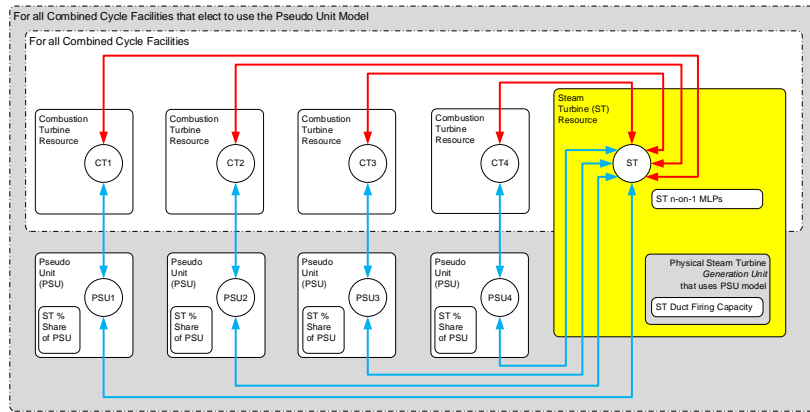
- **DA-PCGGOG** eligibility for each **PSU-Resource-pseudo-unit resource** will be based on **the physical CT-combustion turbine resource** unit technical data;
- **PSU-pseudo-unit** market type participation (i.e., *energy market, operating reserve markets/market*) shall be identical to that of the physical **CT-combustion turbine resource** unit registration data;

PSU-pseudo-unit de-minimizing relationship (i.e., BMD, MMD-registered market participant)



The requirements are summarized in **Figure 0-3: Figure 0-2**.

Legend: Combined cycle plants require all "red line" relationships shown to be established. Combined cycle plants that elect to use the pseudo unit model require all "red line" and "blue line" relationships shown to be established.



Legend: Combined cycle facilities require all "red line" relationships shown to be established. Combined cycle facilities that elect to use the pseudo unit model require all "red line" and "blue line" relationships shown to be established.

Figure 0-3-2: Combined Cycle Plant/Facility Relationships and Registration-Resource Data Parameter Requirements

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3.5-23.3.4.2 Steam Turbine Minimum Loading Point

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The *MLP* of an *ST* at a *CCP* may differ depending on the steam turbine *MLP* reflects one or more *resource* data parameters for a steam turbine *resource*. It is the *MLP*, in *MW*, that is required for a steam turbine *resource*, given its relationship with one or more combustion turbine *resources*. The number of steam turbine *MLPs* that must be registered corresponds to the number of combustion turbine *resources* at the same combined cycle *facility* that share a steam turbine *resource* (Figure 3-3). The *IESO* uses the steam turbine *MLP resource* data parameters to accept daily *dispatch data* submissions of steam turbine *resource MLPs*. The Equipment Registration Specialist must submit one or more of the following *resource* data parameters:

- steam turbine *MLP* – when 1 or more combustion turbines associated with the steam turbine;
- steam turbine *MLP* (2 on 1) – when 2 or more combustion turbines are associated with the steam turbine;
- steam turbine *MLP* (3 on the number of *CTs* that obtain a schedule from the *DACP*. For registration purposes, $n-1$ additional *ST MLPs* are required for all combined cycle configurations) – when 3 or more in-service combustion turbines are associated with the steam turbine;
- steam turbine *MLP* (4 on top of the *MLP* 1) – when 4 or more in-service combustion turbines are associated with the steam turbine.

The value submitted for a 1-*CT* on 1-*ST* configuration, where n is equal to the number of *CTs* at the *CCP*. Each value by the Equipment Registration Specialist for the steam turbine must reflect the actual capability of the associated *generation unit*. In the day-ahead timeframe, the additional registered *ST MLPs* will be used to validate *DGD* submissions of *ST MLPs*.

- The *IESO* will validate/accepts the submission based on using the following validation rules:
 - Must be an *ST* a steam turbine part of a *CCP*, combined cycle *facility*;
 - Number format $xxxx.x$ – unit is *MW*; and
 - $0 < MLP(i-1)\text{-on-1} < MLP(i)\text{-on-1} =< MGC_x$

In the above formula, " i " represents an index for the *ST MLP* to indicate its relationship to the *CCP* configuration. The " i " is defined as a variable $2 \leq i \leq n$, where " n " is the number of *CTs* at the *CCP*.

- where:

Variable	Description
<i>MLP</i>	is the minimum loading point.
<i>MGC</i>	is the <i>pseudo-unit</i> maximum generator capacity as determined by the <i>IESO</i>
i	is an index for the steam turbine <i>MLP</i> to indicate its relationship to the <i>CCP</i> configuration. The " i " is defined as

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a variable $2 \leq i \leq n$, where "n" is the number of combustion turbines at the combined cycle facility.

3.5-33.3.4.3 Steam Turbine Percentage Share of a Pseudo-Unit

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The ~~ST~~steam turbine percentage share of a PSU is the amount of ~~ST~~steam turbine capacity associated with each ~~PSU~~pseudo-unit, expressed as a percentage. ~~For the purpose of registration, the number of share~~This data parameter must be submitted by the Equipment Registration Specialist for each ~~pseudo-unit~~. The IESO uses this parameter to determine the steam duct firing capacity of a ~~pseudo-unit~~ and the maximum generator resource active power capability equipment data parameter for the ~~generation unit~~ associated with the steam turbine.

~~The Equipment Registration Specialist must submit a percentage values to be submitted by the market participant is equal, from 0% to 100%, that correlates to the number of CT Resources in the CCP being combustion turbines registered— for the combined cycle generation facility.~~

~~The values are captured only for market participants intending to use PSU modeling and must reflect the technical characteristic of the generation unit. The registered ST Percentage Share of a PSU value is used to calculate the Maximum Generator Capacity (MGC) and Duct Firing Operating Region of a PSU.~~

~~The data will be validated by the IESO on The IESO accepts the submission based on using the following validation rules, which are mandatory for all PSUs:- :~~

- ~~Number of share percentage values provided must equal the number of CT Resources in the CCP being steam turbine percentage share values registered must equal the number of registered combustion turbines elected for PSU pseudo-unit modeling;~~
- ~~Each each steam turbine percentage share value must have number ≥ 0 and in the format xxx.x% %;~~
- ~~Each value must be a non-negative value~~
- ~~Each value (of ST Share %) multiplied by the ST MGC must be greater than or equal to the ST MLP1 on 1 [ST Share % * ST MGC \geq ST MLP1 on 1]~~
- ~~Sumsum of all steam turbine percentage share percentages must equal values = 100.0% %; and~~
- ~~each steam turbine percentage share value * (registered maximum generator resource active power capability for the steam turbine generation unit associated with the steam turbine) \geq (MLP for a 1 combustion turbine to 1 steam turbine relationship).~~

3.5-43.3.4.4 Steam Turbine Duct Firing Capacity

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~~Duct~~The steam turbine duct firing capacity ~~is represents~~ the capacity, in MW, available from the duct firing of a physical ST. For registration purposes, a single value of duct firing capacity will be provided and captured for an ST Resource associated with a CCP that has indicated the desire to use PSU modeling.

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The value must reflect the *generation unit* associated with a steam turbine *resource*. This data parameter may be submitted by the Equipment Registration Specialist for each *generation unit* associated with a steam turbine *resource* and reflects the actual capability of the *generation unit*. The registered ST If the *market participant* has elected to model the steam turbine *resource* as part of a *pseudo-unit*, the IESO will use this parameter to derive the steam turbine duct firing capacity value will be parameter for the associated *resource*. The *resource's* data parameter is used to calculate the duct firing operating region of a PSU when scheduling a *pseudo-unit* in the *day-ahead market*, *pre-dispatch scheduling process* and *real-time market*.

The data will be validated by the IESO on accepts the submission based on using the following validation rules:

- Must be an ST from a CCP;
- Number the *generation unit* must be associated with a steam turbine that is part of a *combined cycle facility*;
- number format xxxx.x – unit is MW_{7i}; and
- $0 \leq \text{Duct Firing} \leq \text{ST MGC} - [(\text{Registered Number of Combustion Turbines at a Combined cycle plant/Cycle Plant}) * (\text{Registered ST MLP1-on-1})]$

3.3.5. Dispatchable Hydroelectric Generation Resource Registration Requirements

This section applies to a *dispatchable generation resource* associated with one or more *generation units* whose primary fuel type is registered as **Water**. This *resource* is deemed a *dispatchable hydroelectric generation resource*. The parameters discussed in this section allow the IESO to generate schedules in the *day-ahead market* and *pre-dispatch scheduling process* that respect the technical characteristics of the hydroelectric *generation units* associated with the *resource*. This allows the *dispatch* of these *resources* to respect safety, legislative and environmental considerations.

3.3.5.1 Time Lag

(Market Rules: Chapter 7, sections 2.2.6H.1)

The *time lag resource* data parameter represents the amount of time, in hours, it takes for the water discharged from an upstream *dispatchable hydroelectric generation resource* to reach a downstream *dispatchable hydroelectric generation resource* on the same cascade river system. These *generation resources* on the same cascade river system with a registered *time lag* are known as linked *resources*.

This optional parameter may be submitted by the Equipment Registration Specialist of a *dispatchable hydroelectric generation resource*. The IESO uses this parameter in the *day-ahead market* and *pre-dispatch scheduling process* to approve submissions of the time lag *dispatch data* parameter by the *registered market participant* for the *resource*. Additionally, the IESO uses the *time lag resource* data parameter to determine if the *registered market participant* is permitted to submit linked *resources*, time lag and MWh ratio as *dispatch data* in the *day-ahead market* and

pre-dispatch scheduling process. A registered market participant is not permitted to submit these dispatch data parameters if a resource does not have a registered time lag value.

The Equipment Registration Specialist submits a single value for this resource data parameter by submitting a whole number that is greater than or equal to 0 hours and less than 24 hours. The time lag resource data parameter can only be submitted by an Equipment Registration Specialist when both the upstream resource and downstream resource on the same cascade river system have the same registered market participant.

3.3.5.2 Number of Forbidden Regions

(Market Rules: Chapter 7, sections 2.2.6A.1)

The number of forbidden regions parameter represents the predefined operating ranges within which the generation unit associated with the resource cannot maintain steady operation without causing equipment damage. The Equipment Registration Specialist may submit this optional parameter for its dispatchable hydroelectric generation resource. This parameter is used by the IESO to approve submissions of the forbidden regions dispatch data parameter by the registered market participant of a dispatchable hydroelectric generation resource in the day-ahead market, pre-dispatch scheduling process and real-time market.

The Equipment Registration Specialist submits forbidden regions into Online IESO by providing the upper and lower limit, as measured in MW, for each forbidden region. Registered values for the number of forbidden regions meet the following criteria:

- Forbidden Region 1 Lower Limit shall be greater than or equal to 0;
- Forbidden Region 1 Upper Limit shall be greater than Forbidden Region 1 Lower Limit;
- Forbidden Region 2 Lower Limit shall be greater than Forbidden Region 1 Upper Limit;
- Forbidden Region 2 Upper Limit shall be greater than Forbidden Region 2 Lower Limit;
- Forbidden Region 3 Lower Limit shall be greater than Forbidden Region 2 Upper Limit;
- Forbidden Region 3 Upper Limit shall be greater than Forbidden Region 3 Lower Limit;
- Forbidden Region 4 Lower Limit shall be greater than Forbidden Region 3 Upper Limit;
and
- Forbidden Region 4 Upper Limit shall be greater than Forbidden Region 3 Lower Limit.

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The IESO will review the submitted data and may request additional technical data to support the values submitted. The IESO may deny registration of the submitted values if it believes that the technical data does not support the request.

If no values are submitted or approved, then the IESO shall assign default values of zero for the number of forbidden regions (Chapter 7, section 2.2.6E of the market rules).

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3.3.5.3 Hourly Must Run Flag

(Market Rules: Chapter 7, sections 2.2.6A.3)

The *hourly must run* flag indicates if a *dispatchable hydroelectric generation resource* is eligible to submit the *hourly must run dispatch data*. Submission of the flag is optional and available only to *dispatchable hydroelectric generation resources*.

The Equipment Registration Specialist may submit a single value for the *hourly must run* flag into Online IESO. A value of **Yes** indicates that the *registered market participant* for the *resource* intends to submit the *hourly must run dispatch data* parameter in the *day-ahead market* and *pre-dispatch scheduling* processes. The IESO will not permit *registered market participants* to submit the *hourly must run dispatch data* parameter if the *hourly must run* flag is registered with a value of **No**.

3.3.5.4 Start Indication Value

(Market Rules: Chapter 7, sections 2.2.6A.2)

The *start indication value* represents the minimum quantity of *energy*, in MW, that a *generation unit* for a *resource* must be scheduled to in the *day-ahead market* and *pre-dispatch scheduling* processes. The Equipment Registration Specialist submits this optional parameter for each *generation unit* associated with a *dispatchable hydroelectric generation resource*.

The IESO uses this parameter to determine whether the *generation units* associated with the *resource* have used up one or more of their maximum starts per day. If a *start indication value* is not registered, the *registered market participant* of the associated *resource* will not be permitted to submit the *maximum number of starts per day dispatch data* parameter.

The Equipment Registration Specialist may submit a single value, in MW, for each *generation unit* associated with a *dispatchable hydroelectric generation resource*. Submitted values must be greater than 0 MW and less than or equal to the maximum generator *resource* active power capability value registered for the *generation unit*. The Equipment Registration Specialist of a *resource* without a minimum scheduling requirement is not required to submit the *start indication value* equipment data parameter.

3.3.5.5 Shared Daily Energy Limits

(Market Rules: Chapter 7, sections 2.2.6A.4)

The *shared daily energy limits* parameter indicates whether one or more *resources* registered by the same *market participant* draw water from the same forebay. The Equipment Registration Specialist submits this optional data parameter for its *dispatchable hydroelectric generation resource* in Online IESO.

The *day-ahead market* and the *pre-dispatch scheduling* process use this parameter to verify that all *resources* registered to share this parameter are evaluated such that the sum of their hourly schedules respect *registered market participant* submissions of the maximum daily *energy limit* and minimum daily *energy limit dispatch data* parameters.

The Equipment Registration Specialist may submit the shared daily *energy* limit parameter for each *dispatchable* hydroelectric *generation resource* by submitting the Resource ID of all other *resources* that share the same forebay. The maximum daily *energy* limit and minimum daily *energy* limit of the *resource* will then be evaluated with the limits of *resources* that correspond to the Resource IDs submitted. If no value is submitted, the *day-ahead market* and *pre-dispatch scheduling* processes will evaluate the maximum daily *energy* limit and the minimum daily *energy dispatch data* on an individual *resource* basis.

3.4. Requirements for Generator Offer Guarantee Status

The GOG status represents whether a *resource* registered as a *dispatchable* non-quick start *generation resource* (including those at a combined cycle *facility*) or *pseudo-unit* is eligible for GOG payments when the *day-ahead market* or *pre-dispatch scheduling* process commits the *resource*.

A *resource* is eligible for the GOG status if they register the following information for their *dispatchable* non-quick start *generation resource*:

- an *elapsed time to dispatch* greater than sixty minutes;
- an MLP greater than zero;
- a *minimum generation block run-time* greater than sixty minutes; and
- a primary or secondary fuel type that is not **Uranium**.

The Equipment Registration Specialist for an eligible *resource* must submit the GOG election flag *resource data* parameter to request the GOG status in the *day-ahead market* and *real-time market*.

Upon receipt, the *IESO* processes GOG status requests by reviewing the data. The *IESO* may request additional technical data to support the values submitted. The *IESO* may deny registration of the submitted values if it believes that the technical data does not support the request. If approved, the *IESO* assigns the GOG *resource data* parameter to all eligible *resources*.

3.5. Registration Requirements for Wholesale Consumers

(Market Rules: Chapter 7, sections 2.1, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.6 as applicable, 2.2.8)

Wholesale consumers may participate in the *IESO-administered markets* using a *load resource* with one of the classifications specified in Table 0-14. These classifications are determined by the *bid/offer type* as established by the *bid/offer type resource* parameter. This parameter must be submitted by each *load resource* and is described in the subsection below.

Table 0-14: Classification for Load Resources

Bid/Offer Type	Load Resource Classification
Dispatchable	Dispatchable load

<u>Non-dispatchable</u>	<u>Non-dispatchable load</u> <u>Hourly demand response resource</u>
<u>Day-Ahead price responsive</u>	<u>Price responsive load</u>

There are specific registration requirements for the various types of *resources* participating in the *day-ahead market* and *real-time market*. These requirements are outlined in Table 0-15 and are used by the *IESO* tools and processes to support *dispatch data* validation, scheduling and *dispatch* decisions and *settlement*.

Table 0-15: Load Resource Registration Parameters

Registration Parameter	Mandatory/ Optional	Load Resource Classification			
		Non-Dispatchable Load	Dispatchable Load	Price Responsive Load	Hourly Demand Response
<u>Bid/Offer Type</u>	<u>M</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
<u>Operating Reserve Class</u>	<u>M</u>		<u>X</u>		
<u>Maximum Registered Dispatchable or Price Responsive Load capacity</u>	<u>by IESO</u>		<u>X</u>	<u>X</u>	

As part of the registration procedures for the *day-ahead market* and *real-time market*, the *Equipment Registration Specialist* must submit specific technical data and *resource data* through *Online IESO*, which the *IESO* uses to determine a *resource's*:

- commitments and schedules, while respecting the *facility's* technical data; and
- make-whole payment eligibility for the *day-ahead market* and *real-time market*.

The following subsections describe the applicable *resource data* parameters that must be submitted by the *Equipment Registration Specialist* of a *load facility*.

3.5.1. Bid/Offer Type

The *bid/offer type* registration parameter is a mandatory registration parameter for all *load resources*. This parameter identifies a *resource* registered as either a *dispatchable load*, *price responsive load* or a *non-dispatchable load*. The value selected by the *Equipment Registration Specialist* will be used by the *IESO's* tools to determine *bid* submission eligibility for a *load resource* in the *day-ahead market* and *real-time market*. During the registration procedure, the

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Equipment Registration Specialist must select one of the following *bid/offer* types for each *load resource* during the registration procedure:

- **Dispatchable** to indicate a *market participant's* intent to participate in the *IESO-administered markets* as a *dispatchable load*;
- **Day-ahead price responsive** to indicate a *market participant's* intent to participate in the *IESO-administered markets* as a *price responsive load*; or
- **Non-dispatchable** to indicate a *market participant's* intent to participate in the *IESO-administered markets* as a *non-dispatchable load*.

Market participants can change their *bid/offer* type from a *dispatchable load* or a *price responsive load* to a *non-dispatchable load* and vice versa. For more details on the requirements specific to submitting these change requests, refer to section 4.2.2 in this manual.

3-63.5.2. Operating Reserve—Dispatchable Load

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(Market Rules: Chapter 7, sections 2.2.8)

Each *wholesale consumer* associated with a *dispatchable load* must submit a value for the *operating reserve* class registration parameter. This parameter identifies if the *resource* is eligible to provide *operating reserve* and the *operating reserve* classes that the *market participant* has elected to provide. Eligibility criteria for participation in the *operating reserve markets* by a *dispatchable load* are described in section 3.6.2.1 of this *market manual*.

The Equipment Registration Specialist of a *dispatchable load* eligible to provide *operating reserve* may submit one of the following values in Online IESO:

- **10 min non-spin and 30 min** to indicate election to provide in the non-synchronized *ten-minute operating reserve* and *thirty-minute operating reserve*;
- **30 min non-spin** to indicate election to provide *thirty-minute operating reserve*;
- **All type** to indicate election to provide synchronized and non-synchronized *ten-minute operating reserve* as well as *thirty-minute operating reserve*; or
- **No operating reserve** to indicate election not to provide *operating reserve*.

3-6-13.5.2.1 Eligibility Criteria for Participation in the Operating Reserve Markets

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Dispatchable load Resources/loads must have a predictable, periodic consumption cycle, and meet the eligibility criteria for participation in the ~~10~~*ten-minute* and ~~30~~*thirty-minute operating reserve* market as described in ~~Table 3-5:~~Table 0-16.

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Table 0-5-16: Dispatchable Load Eligibility Criteria

Criteria	Rationale
1	<p>Must demonstrate a load cycle of more than 0.75 (total minutes consuming divided by total minutes of the cycle period)</p> <p>This <u>criteria</u> allows the <i>IESO</i> to make assumptions about the availability and consumption level of the <u>load Resource/resource</u>. A lower duty ratio means that the <i>IESO</i> has to carry more 10<u>ten</u>-minute or 30<u>thirty</u>-minute <u>operating</u> reserve or <u>regulation</u> to compensate for a higher uncertainty of the ability of the <u>load resource</u> to comply with the 10<u>ten</u>-minute or 30<u>thirty</u>-minute <u>operating</u> reserve activation request.</p> <p>This also limits the exposure of that <u>load resource</u> in the event it's scheduled for 10<u>ten</u>-minute or 30<u>thirty</u>-minute <u>operating</u> reserve but <u>is</u> not able to activate because it would be down 10 or 30 minutes after receipt of the activation message.</p> <p>For instance, for 10<u>ten</u>-minute <u>non-spinning operating</u> reserve, if a <u>load were resource was</u> down six (6) minutes then up four (4) minutes, it would meet criterion #2, but have a duty cycle of 40%. However, if it were activated in minute 3, then ten minutes later (i.e., minute 13) it would have been down anyway. Criterion #2 combined with criterion #4 limits this exposure.</p>
2	<p>Must NOT<u>not</u> be at zero consumption for more than 10 minutes at a time (exceptions are allowed for unplanned events)</p> <p>RequiredThis <u>criteria</u> is required to <u>help</u> ensure that the <u>load Resource/resource</u> will be able to respond to a 10<u>ten</u>-minute <u>operating</u> reserve activation and reduce load<u>consumption</u> within 10 minutes (i.e., the <u>Resource/resource</u> would have been loaded at the time the relief is required).</p>
3	<p>Must NOT<u>not</u> be at zero consumption for more than 30 minutes at a time (exceptions are allowed for unplanned events)</p> <p>RequiredThis <u>criteria</u> is required to <u>help</u> ensure that the <u>load Resource/resource</u> will be able to respond to a 30<u>thirty</u>-minute <u>operating</u> reserve activation and reduce load<u>consumption</u> within 30 minutes (i.e., the <u>Resource/resource</u> would have been loaded at the time the relief is required).</p>
4	<p>Must be able to maintain a zero consumption level for at least one hour, when activated for 10<u>10</u>-minute or 30<u>30</u>-minute <u>operating</u> reserve</p> <p><u>As described in</u> <u>NPCC</u> Directory 5 Reserve.</p>
5	<p>Must be able to respond to the <i>IESO</i>'s activation request for 10<u>10</u>-minute reserve and reduce load within 10<u>10</u> minutes</p> <p><u>As described in</u>:</p> <ul style="list-style-type: none"> <i>IESO</i> market rules, definitions of 10<u>10</u>-minute and 30-minute reserve <i>NERC</i> Glossary of Terms

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Criteria	Rationale
6 Must be able to respond to the IESO's activation request for 30-minute reserve and reduce load within 30 minutes	<p>As described in:</p> <ul style="list-style-type: none"> • IESO market rules, definitions of 10-minute and 30-minute reserve • NERC Glossary of Terms

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3-6-23.5.2.2 Batch Type Dispatchable Loads

Most of the *dispatchable loads* participating in the *energy market* are of the continuous process type. However, some *loads* are batch type ~~processes~~*loads*, meaning that there are cyclical periods during the *bidding* hour in which they are operating at 0 MW in order to refuel or unload.

Batch type *loads* may be considered for participation in the *energy market* as *dispatchable loads* provided:

- ~~The~~ batch type *load* has an hourly consumption schedule that is predictable at least two (2) hours in advance of the *dispatch hour*, ~~in order~~ to allow the *market participant* to formulate and submit its *offers* within the timelines specified by the *market rules* for *dispatchable facilities*; and
- ~~The~~ batch type *load* exhibits a duty ratio of at least 0.75. This means that within an hour, the *load* should not be at zero consumption for more than a cumulative of 15 minutes.

3.5.3. Maximum Registered Dispatchable or Price Responsive Load

The maximum registered *dispatchable* or *price responsive load* registration parameter is a mandatory *resource* data parameter that is determined by the *IESO*. This parameter represents the maximum active power capability for a *resource* registered as either a *dispatchable load* or *price responsive load*. For a *dispatchable load*, the *IESO* uses this parameter to calculate the maximum *offer* quantity for *energy* or *operating reserve* that can be submitted as *dispatch data*. For a *price responsive load*, the *IESO* uses this parameter to calculate the maximum *offer* quantity for *energy* that can be submitted as *dispatch data* in the *day-ahead market*. The *IESO* determines the value of this parameter by calculating the sum of the values provided by the *Equipment Registration Specialist* for all registered *loads* associated with the *load resource*.

3-7-3.6. Aggregation

(Market Rules: Chapter 7, sections 2.3)

At or subsequent to their initial registration, *market participants* may apply to aggregate *generation units* or *load equipment/loads* for *bid/ offering purposes*. ~~However, the purpose of submitting bids/ offers.~~ As per Chapter 7, section 2.3 of the *market rules*, aggregated *resources* will be treated by the *IESO* as a single *resource*. The *IESO* will only grant ~~the~~ an aggregation request from a *market participant* if the aggregation will NOT affect *system operating limits*, and will NOT affect *security* or *resource adequacy* assessments.

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~~3.7.1~~ 3.6.1. Resource Compliance Aggregation

~~Market participants may identify Resources that do not qualify for aggregation under model aggregation but do qualify for aggregation for the purpose of following dispatch.~~

~~Market participants shall submit a request for compliance aggregation. Resources that are not eligible for aggregation may be eligible for compliance aggregation. This is where individual generation resources within a defined group may ignore their dispatch provided that the total dispatch is respected. For example, two generators G1 and G2 each have a dispatch of 5 MW. Under compliance aggregation, G1 may generate 3 MW and G2 7 MW, meeting the total dispatch of 10 MW. This is typically for river systems whose generation facilities do not share common connection points (hence ineligible for aggregation), but may individually suffer challenges in following dispatch instructions due to sharing a single fuel supply.~~

~~Market participants who wish to participate in compliance aggregation shall submit a request noting the relationships between these Resources resources (e.g., river system).~~

The request for aggregation will be considered based on:

- ~~Whether whether~~ the Resources resources to be aggregated are dispatchable quick-start Resources generation facilities or dispatchable non-quick-start Resources generation facilities. Where a market participant wishes to register dispatchable non-quick-start Resources generation facilities, such Resources resources will be subject to ramp rate restrictions when exercising compliance aggregation in real-time. These restrictions are outlined in [Market Manual 4: Market Operations Part 4.3: Real-Time Scheduling of the Physical Markets, Section 10, section 1.12](#);
- ~~Whether whether~~ the Resources resources are related Resourcesto each other (e.g., river systems); and
- ~~The the~~ likelihood that the Resource resource will be sent to Unit Specific Dispatch (USD) for security reasons.

If the request for aggregation is approved, the market participant will be notified. The in-service activities of the aggregated Resources resources are coordinated by the IESO in the same way as for any new or modified facility.

~~3.8~~ Real Time Generation Cost Guarantee

~~Any non-quick start generation facility can also opt to register their Resource in the Real Time Generation Cost Guarantee (RT-GCG) program by submitting a request online and providing technical data and supporting documentation to validate such data. To be applicable, the market participant must also meet the requirements specified in Market Rules Chapter 7, Section 2.2B.1.~~

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The IESO will review the data and may request additional technical data to support the values submitted. The IESO may deny registration of the submitted values if they believe that the technical data does not support the request.

Initial registration in the program or changes will be processed during regular business days and within 10 business days of receipt. Updates such as registration, deregistration or changes to MRT, will always become effective two days after the change is approved.

Market participants may choose to deregister their facilities from the RT-GCG program by submitting a request through Online IESO. For facility deregistration procedures, see Section 5.1.

3.9.3.7. Variable Generation Facility Registration

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All (Market Rules: Chapter 4, section 7.1.6)

Each variable generators generator having a wind and/or solar photovoltaic generation facilities facility with an installed capacity of 5 MW or greater, and all each wind and/or solar photovoltaic facilities facility that are is directly connected to the IESO-controlled grid are is required to:

- Authorize authorize as a program participant for centralized forecasting service (see refer to Section section 2.3.2);
- Register register via Online IESO to provide operational and meteorological monitoring data for centralized forecasting service, then (after being registered) provide the data via Online IESO (see Sections 3.9.1 through 3.9.4); refer to sections 3.7.1 through 3.7.4);
- Submit submit facility data for their its equipment and supporting documentation for their its meteorological equipment via Online IESO. See Refer to Appendix C (wind) and Appendix D (solar) for complete listings of the required facility data. Submitted data is are reviewed and (if the data meets meet requirements) approved by the IESO; and
- Coordinate coordinate with the IESO for scheduling and performing data monitoring (operational and meteorological) tests.

3.9.3.7.1. Operational and Meteorological Monitoring

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As a market participants, participant, a variable generators generator²⁸ must provide operational telemetry to the IESO and are is subject to the operational monitoring requirements outlined in Market Rules Appendix 4.15 market rules Appendix 4.15 and to the performance required requirements outlined in Market Rules market rules Appendix 4.19. These requirements are based on a per facility basis. All operational monitoring shall be provided to the IESO as per the specifications defined in Section Market Manual 6: Participant Technical Reference Manual, section 4 of the Market Manual 6: Participant Technical Reference Manual (PTRM).

²⁸ As per Market Rules Appendix 4.19, the IESO considers medium performance to be acceptable for embedded variable generators (i.e., program participants).

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Facility Size	Total number of meteorological towers or sodar/lidar units per facility
300 MW to less than 400 MW	4 minimum

3.9.4.3.7.4. Operational Monitoring - Solar Generation Facilities

At the time of registration, the IESO will provide the [ERS Equipment Registration Specialist](#) with a list of applicable monitoring based on the requirements in [Appendix D \(solar\)](#).

Each solar *facility* shall have a minimum of two meteorological data collection points irrespective of the physical size of the solar *facility*. No solar panel shall be further than 12 km from the nearest two meteorological data collection points. Multiple *facilities* can provide data from the same data collection points if they are within the 12 km range.

3.10 Additional Generation Facility Characteristics

In order for IESO dispatch instructions to respect certain generation facility limitations and areas of its output that may cause excessive wear and tear or equipment damage, a generation facility registered to participate in the IESO-administered markets can submit facility specific data stating the number of forbidden regions. Up to three sets of forbidden region values, and a period of steady operation can be submitted through the Manage Resource tab in Online IESO.

3.10.1.1.1.1 Period of Steady Operation

The period of steady operation is specifically for non-quick start facilities (e.g., nuclear generation) and may also include combined cycle and cogeneration facilities. This value is stated in number of five-minute intervals (0, 1, or 2), and is used to ensure that units do not reverse direction without a minimum period of steady operation. Depending upon the data submitted by market participants, it may be necessary for the IESO to adjust the period of steady operation value for some units if there is a negative impact on overall system operation. Market participants will be notified through Online IESO of any changes to this value.

3.10.2 Forbidden Regions

Forbidden regions are specifically for hydroelectric generation units. These regions, up to a maximum of 3, are accompanied by an upper and lower limit measured in MW and are intended to ensure equipment safety, NOT economic operation. Forbidden region values

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~~allow the IESO to not schedule facilities within these predefined operating ranges. If applicable, forbidden regions should meet the following criteria:~~

- ~~• Forbidden Region 1 Lower Limit shall be greater than or equal to 0.~~
- ~~• Forbidden Region 1 Upper Limit shall be greater than Forbidden Region 1 Lower Limit.~~
- ~~• Forbidden Region 2 Lower Limit shall be greater than Forbidden Region 1 Upper Limit.~~
- ~~• Forbidden Region 2 Upper Limit shall be greater than Forbidden Region 2 Lower Limit.~~
- ~~• Forbidden Region 3 Lower Limit shall be greater than Forbidden Region 2 Upper Limit.~~
- ~~• Forbidden Region 3 Upper Limit shall be greater than Forbidden Region 3 Lower Limit.~~

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~~The IESO will review the submitted data and may request additional technical data to support the values submitted. The IESO may deny registration of the submitted values if they believe that the technical data does not support the request.~~

~~If no values are submitted or approved, then the IESO shall assign through Online IESO default values of zero for the number of forbidden regions and the period of steady operation.~~

3.11.3.8. Next Steps

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~~Although not always mandatory, once~~After the Stage 5: Register equipment processEquipment procedure is complete, the next stage in connecting to Ontario's power system is Stage 6: Commission equipment and validate performance. ~~This process~~Stage 6 is not always mandatory. This procedure is outlined in the Commission equipment and validate performance process diagram.

3.11.3.8.1. Commission Equipment

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(Market Rules: Chapter 7, sections 2.2A)

During the Commission Equipment stage, the market participant conducts commissioning tests of the equipment installed at their facility. These tests are scheduled according to the procedures in Market Manual 7: System Operations Part 7.3: Outage Management.

The purpose of the commissioning tests is to confirm whether the equipment:

- ~~Meets~~meets the requirements and expectations established during the connection assessment process and defined in the Notice of Conditional Approval to Connect-(NoCA),
;
- ~~Is~~is impactful on the reliability of the IESO-controlled grid; and
- ~~Should~~should be included in the outage reporting requirement.

All exclusions from the outage reporting requirement are subject to periodic review by the IESO and may be revoked at any time as a result of such a review and/or changes to registered facilities.

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Commission testing consists of the following four ~~(4)~~ steps, which are described in full detail on the [Stage 6: Commission equipment and validate performance](#) webpage:

1. Submit commissioning request.
2. Submit commissioning test plan.
3. Complete commissioning test.
4. Submit commissioning test report.

~~3.11.23.8.2.~~ Performance Validation

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The primary purpose of performance validation is to mitigate risks that equipment will not be suitable for connection to the *IESO-controlled grid*. Performance validation applies to new equipment, ~~as well as~~ and to equipment that has been modified such that it causes a change to its performance characteristics.

During the Register Equipment ~~procedures~~ procedure, the ~~ER~~ Equipment Registration Specialist will receive notification from Online IESO if performance validation is required. For more information, refer to ~~Market Manual 1.6: Performance Validation~~, Market Manual 1: Connecting to Ontario's Power System Part 1.6: Performance Validation.

– End of Section –

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4. Maintain IESO Registered Data

The purpose of the Maintain IESO Registered Data procedures is to maintain data such that the IESO retains current and accurate information on Participants and service providers. This includes maintaining data related to their applicable facilities, equipment, Resources/resources, and people and their contact information and system accesses registered with the IESO.

Changes to registered data should be identified to the IESO and made in Online IESO as soon as possible before they take effect. However, some proposed changes must be identified to the IESO well before they take effect.



Important

It is the responsibility of the Participant to review and maintain their IESO registered data and submitted supporting documentation on an enduring basis, to ensure that they all are correct.

Important: It is the responsibility of the Participant or service provider to review and maintain their IESO registered data and submitted supporting documentation on an enduring basis, to ensure that they all are correct.

4.14.1. Maintain Organization/Participant Registered Data

Market participants, via their Applicant Representatives, are (Market Rules: Chapter 1, section 11.3.1; Chapter 2, section 3.1.8)

Each Participant and service provider, via their Applicant Representatives, is required to maintain IESO registered data, including supporting documentation, by reviewing and updating them as necessary in Online IESO. Examples of IESO registered data include (but are not limited to):

- Organization/organization name, address, contact information, etc.;
- Access/access to IESO systems;
- Market or program participant/Participant and service provider authorization type;
- Bank/bank account data; and
- Supporting/supporting documentation (e.g., *prudential* support, OEB licence, CER permit).

Market Rules Chapter 9, Section/section 6.18 of the market rules requires that all Participants provide details of changes to bank details or settlement account details at least 60 business days before the change takes effect.

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4.1.14.1.1. Change Organization Name

When a Participant ~~is seeking~~ service provider wishes to change their organization name, as stated in the original *participation agreement*, then the Authorized Representative must initiate a change by sending a request to market.registration@ieso.ca as soon as possible after the name change date has been officially set. The request should include the reason for the name change. The Participant or service provider will be instructed to upload applicable supporting documents through Online IESO (e.g., official statement of merger or buyout).

After the IESO reviews the supporting documents ~~are reviewed by the IESO~~, including a possible IESO Legal review, the IESO will ~~contact~~ advise the Authorized Representative ~~to advise on~~ whether any additional supporting documents are needed. If no additional supporting documents are needed, the Participant or service provider will then re-register the organization, using the procedures in ~~Section 2: Authorize Market and Program Participation~~ Section 2. A new ~~Participant Agreement~~ participant agreement will be generated, printed, and issued for signature as described in ~~Section~~ section 2.1.1.

~~The Participant~~ Market participants must ~~also~~ update their *prudential support* information, ~~as well as~~. Additionally, they must update and submit their *OEB Licence* and (if applicable) CER permit (~~see Section 2.2.1~~ refer to section 2.2.1).

4.1.24.1.2. Change Participant Participation Type

Upon receiving a request from a *market participant* to change their participant participation type, the ~~IESO is required to verify~~ assesses any possible impact the requested class change may have on the *market participant's facility* information, and whether the change has any real or potential impact on the *security* and *reliability* of the *IESO-controlled grid*.

4.1.34.1.3. Access Additions/Changes to IESO Systems

~~The Participant's~~ Rights Administrators may need to update, add, ~~and~~ or delete users to access to the IESO systems used for exchanging data between themselves and the IESO (e.g., Online IESO, IESO Portal). For these situations, refer to ~~Market Manual 1.3: Identity Management Operations Guide~~ Market Manual 1: Market Entry, Maintenance & Exit Part 1.3: Identity Management Operations Guide for information on system access.

4.1.44.1.4. Changes to Mandatory Organization Contacts

~~A Participant~~ Participants or service providers may request a change to one of their mandatory organization contacts (~~see refer to Section 2.1~~ section 2.1) by submitting a task through Online IESO on the day before the change is to take effect, or as soon as possible after. The change must be requested by another mandatory organization contact as described below:

- A request to change an Applicant Representative may be submitted any mandatory organization contact who is registered in Online IESO;

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- ~~A~~a request to change a Rights Administrator may be submitted by either an Authorized Representative, Primary Contact, or another Rights Administrator who is registered in Online IESO and is still ~~functioning~~ in that role; ~~and~~
- ~~A~~a request to change a Primary Contact may be submitted either by an Authorized Representative or another Primary Contact who is registered in Online IESO and is still in that role.

Online IESO sends an automatic annual email notification to each participant on the anniversary date of their registration requesting they confirm that their mandatory organization contacts are ~~still~~ accurate, or to make any necessary changes.

4.1.4.1 ~~Changing an Authorized Representative~~

A request to change an Authorized Representative may be submitted through Online IESO by any mandatory organization contact. However, the request must be accompanied by a letter (on company letterhead) from either the new Authorized Representative, or from another Authorized Representative who is registered in Online IESO and is still in that role. The letter must include the following information:

- ~~Name~~name (legal and if applicable, known name), email address; and phone number of the new Authorized Representative;
- ~~Attestation~~attestation either from self (if the new Authorized Representative is to be the only Authorized Representative) or from the Authorized Representative writing the letter that the person identified is now an Authorized Representative;
- ~~Attestation~~attestation that the new Authorized Representative has the authority to contractually bind the company;
- ~~Attestation~~attestation that any registered Authorized Representatives who are no longer in that role should be removed from that role;
- ~~The~~the effective date of the Authorized Representative change; and
- ~~Printed~~printed name and signature of the Authorized Representative writing the letter.

4.1.4.2 ~~Changing all Mandatory Organization Contacts~~

In a situation where all of a ~~participant's~~Participant or service provider's registered mandatory organization contacts have changed (e.g., a complete management turnover), a representative of the organization's new management who has the authority to contractually bind the company should contact IESO Customer Relations (customer.relations@ieso.ca) to begin the process of registering their new mandatory organization contacts.

~~4.24.2. Facility and~~ Equipment and Resource Data Maintenance

After ~~approval of~~approving a *facility* for participation in the *IESO-administered markets*, the IESO uses the maintenance procedures to ensure that all *facilities* continue to meet the

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minimum requirements defined by the *market rules*. In addition, the maintenance procedures ensure that any changes or additions to *facilities and their associated resources* participating in the *IESO-administered markets*, or their related data stored in Online IESO, do not negatively impact the *security* or *reliability* of the *IESO-controlled grid*. For example, *facility* maintenance is required in the following circumstances:

- ~~Market~~market participation changes, such as:
 - ~~Resource~~resource type (~~generator~~generation resource, load resource, etc.);
 - ~~Bid~~bid/offer type resource data parameter changes for generation resources (dispatchable [regular]³⁰, non-dispatchable, ~~self-scheduled~~scheduling, intermittent);
 - ~~Operating~~bid/offer type resource data parameter changes for load resources (dispatchable [regular]³¹, day-ahead price responsive³², non-dispatchable);
 - changes to operating reserve class (10-minute or 30-minute) changes);
 - ~~Facility~~facility type (~~generator~~generation facility, load facility, etc.);
 - ~~Combined~~combined cycle facility modelling changes (*pseudo unit* model, etc.); and
- ~~Physical~~physical site modifications (e.g., changes in MW output, ramp rates, governor models, data monitoring, and voice communication equipment, etc.); and
- ~~Changes~~changes in operational control, as defined by the *registered market participant (RMP)*.

~~Market participants~~Participants manage their *facility*, ~~Resource~~resource, and equipment data, and applicable relationship data using Online IESO. ~~Market participants~~These persons are required to submit a change request through Online IESO to notify the *IESO* about any changes, additions, or deletions to data concerning their ~~Physical Facilities~~facilities. These changes may impact the data stored in Online IESO, or the supporting documentation relating to the *facility*.

Any changes that ~~the market participant~~Participant cannot make through Online IESO must be emailed to- market.registration@ieso.ca. The *IESO* will update the relevant data in Online IESO, which the ~~market participant~~Participant can then confirm by accessing their Online IESO registration data.

Depending on the nature of the change request, the *IESO* may need to prepare and issue a ~~Registration Approval Notification (RAN)~~ to the ~~market participant~~Participant in order to approve

³⁰ Sandbox testing, facilitated by the *IESO*, is required for new ~~RMPs going~~registered market participants becoming dispatchable for the first time. Sandbox testing provides the ability for a market participant to familiarize themselves with the dispatch workstation.

³¹ Sandbox testing, facilitated by the *IESO*, is required for new registered market participants becoming dispatchable for the first time.

³² Sandbox testing, facilitated by the *IESO*, is required for new registered market participants becoming price responsive for the first time.

the change. As a guideline to ~~participants~~Participant with existing facilities, the IESO will issue a RAN for changes such as, but not limited to:

- ~~Resource attribute~~resource data parameter changes:
 - ~~Operating~~operating reserve ~~type~~class;
 - ~~Decrease~~decrease/increase in maximum capacities;_i
 - ~~Bid~~bid/offer type (i.e., from non-dispatchable to *dispatchable*);_i
 - Minimum run time (MRT); ~~minimum generation block run time~~ (MLP);_i and ~~minimum loading point~~ (MLP);_i and
 - Participation participation in an IESO program (e.g., ~~Real Time Generation Cost Guarantee [RT-GCG], Demand Response [DR], Capacity Auction~~); generator offer guarantee status);
- ~~Physical~~equipment data changes (including operating nomenclature changes):
 - ~~Breaker~~breaker, transformer, and switch replacements;_i
 - ~~Static~~static VAR Compensator (SVC), STATCOM, capacitor and reactor;_i
 - Remedial Action Scheme (~~RAS~~);_i and
 - ~~Modifications~~modifications to *Automatic Voltage Regulator (AVR)*, Power System Stabilizer (PSS);_i and
- ~~Relationships~~relationships changes for ~~equipment~~ at a *facility* or ~~Resource~~boundary entity resource (i.e., ownership, operation, or ~~RMP~~registered market participant changes);_i
- A RAN will generally not be issued for changes to *facility* contact information, user-~~Resource~~resource relationship, protection changes to an existing *facility*, and *revenue metering* changes.
- It is recommended that the ~~participant~~person email market.registration@ieso.ca early in the change process to determine if a RAN is required.
- The following subsections cover specific types of *facility* data changes.

4.2.14.2.1. Data Monitoring and Voice Communications Changes

Any change to a ~~market participant's~~Participant's data monitoring or ~~to~~ voice communications ~~facilities~~ requires re-submission via Online IESO and, if necessary, revised ~~single line diagrams (SLDs)~~Single-Line Diagrams. Changes to this data may require the ~~market participant~~Participant to redo certain *facility* tests (see ~~refer to Section~~section 3.3). After assessment of the requested changes, the IESO will notify the ~~market participant~~Participant through Online IESO whether the requested changes have been approved or denied.

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4.2.2. Changes to Bid/Offer Type Registration Parameter for Load Resources

(Market Rules: Chapter 7, sections 2.2.25 and 2.2.26)

As described in section 3.5.1 of this *market manual*, existing *load resources* can indicate their intent to participate in the *IESO-administered markets* as a *dispatchable load*, a *non-dispatchable load* or a *price responsive load* when submitting the *bid/offer type resource* parameter. A *load resource* can change its intent by requesting a change of the *bid/offer type resource* parameter to be approved from the *IESO*. Depending on the nature of the change, a *load resource* will have to complete additional stages in the Connecting to Ontario's Power System process as described in section 1.1 of this *market manual*. Requirements for each type of change in the *bid/offer type* of a *load resource* are summarized in the headings below.

4.2.2.1 Changing from a Non-Dispatchable Load to a Dispatchable Load

Market participants that request a change to their *bid/offer type* from a *non-dispatchable load* to a *dispatchable load* must do so at least six months prior to the effective date. *Market participant* contacts registered with the *IESO*, including the Equipment Registration Specialist and Revenue Metering contact, must complete several requirements at least five business days prior to the effective date, including but not limited to the requirements set out below:

- the Register Equipment procedure as a *dispatchable load*, including all applicable prerequisite requirements indicated in section 3.3 of this *market manual*;
- assignment of all applicable *market participant/resource* relationships as described in section 3.3.2 of this *market manual*;
- all applicable metering and data monitoring requirements (e.g. *dispatch workstation*) as described in section 3.2 of this *market manual*; and
- submission of all *facility*, equipment and *resource* data required by a *dispatchable load* as indicated in the Register Facility Help File.

4.2.2.2 Changing from a Non-Dispatchable Load to a Price Responsive Load

Market participants that request a change to their *bid/offer type* from a *non-dispatchable load* to a *price response load* must do so at least one month prior to the effective date. *Market participant* contacts registered with the *IESO*, including the Equipment Registration Specialist and Revenue Metering contact, must complete a number of requirements at least five business days prior to the effective date, including but not limited to the requirements set out below:

- the register equipment procedures as a *price responsive load*, including all applicable prerequisite requirements indicated in section 3.1.1 of this *market manual*;
- assignment of all applicable *market participant/resource* relationships as described in section 3.1.5 of this *market manual*;

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- all applicable metering and data monitoring requirements as described in section 3.2 of this market manual; and
- submission of all facility, equipment and resource data required by a dispatchable load as indicated in the Register Facility Help File.

4.2.2.3 Changing from a Dispatchable Load or a Price Responsive Load to a Non-Dispatchable Load

Market participants that request a change to their bid/offer type from either a dispatchable load or price responsive load to a non-dispatchable load must do so at least seven business days prior to the effective date.

Once the change to the bid/offer type takes effect, market participants will not be permitted to revert their bid/offer type back to a dispatchable load or price responsive load for a minimum period of 12 months.

4.2.2.4.2.3 Assessments for Operating Reserve Market Participation

Requests to change a facility's resource's registration data to allow it to be used for participation in the operating reserve market will be subject to the following assessments:

- Whetherwhether the facility's resource is eligible to provide 10-minute spinning reserve. Boundary entities are not eligible to offer spinning 10-minute spinning, and operating reserve;
- Whetherwhether the facility's resource's registration data indicatesindicate that there may be difficulty in providing 10ten-minute operating reserve vs. 30thirty-minute operating reserve; and
- Whetherwhether the dispatchable load facility is eligible to provide 10ten-minute operating reserve or 30thirty-minute operating reserve.

4.2.2.4.2.4 Changes to Self-scheduling Scheduling Generators

(Market Rules: Chapter 7, sections 2.2.9 and 2.2.11)

Requests for changes to self-scheduling generation facilities and any associated resources will be assessed with respect to:

- Ensuringensuring that the generator-is resource associated with the self-scheduling generation facility is between 1 and 10-MW name-plateand 10 MW nameplate rating, and is within the IESO control area; and
- Whetherwhether the changes to the noted generator resource will affect IESO-controlled grid security.

4.2.2.4.2.5 Changes to Intermittent Generators

(Market Rules: Chapter 7, section 2.2.15)

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Requests for changes to intermittent generation will be assessed ensuring that the change to the *facility* will not affect *security* of the *IESO-controlled grid*. ~~The participant~~Participants shall submit sufficient documentation for the intermittent status and this documentation must be approved by the *IESO*. The documentation must demonstrate that the *generation facility* generates on an intermittent basis as a result of factors beyond the control of the *generator*.

4.2.54.2.6. Changes to Cogeneration Facilities

(Market Rules: Chapter 7, section 2.2.23)

A *cogeneration facility* that is currently deemed to be a *transitional scheduling generator* (~~TSG~~) is required to be re-registered as a *dispatchable, self-scheduling, or intermittent generation facility* within one month of the coming into effect of the amendment to the applicable Power Purchase Agreement (~~PPA~~) with the *Ontario Electricity Financial Corporation (OEFCo)*.

4.2.64.2.7. Transfer of Facility Registration

~~A market participant~~(Market Rules: Chapter 7, section 2.5)

Market participants who ~~wishes~~wish to transfer the registration of a *facility* to ~~another~~other *market participant*~~participants~~ as a result of their intent to sell, lease, assign, or transfer control of that *facility* must submit a request to the *IESO* for the transfer of the *facility* at least 10 *business days* in advance of the proposed date of transfer. The request must specify:

- ~~The~~the identity of the transferee and whether or not they are or intend to be a *market participant*; and
- ~~The~~the date on which the proposed transfer is to take place.
- The *market participant* to whom the *facility* is to be transferred must provide to the *IESO*:
 - ~~Confirmation~~confirmation that it is willing and able to assume control of the *facility* to be transferred and to comply with all provisions of the *market rules* related to *facilities* and any *reliability must-run contract* or *contracted ancillary services contract* applicable to the *facility*;
 - ~~A~~a new ~~Connection Agreement~~connection agreement;
 - ~~A~~a new OEB licence;
 - ~~A~~a new or revised ~~Restoration Participant Attachment~~restoration participant attachment (if applicable);
 - ~~Any~~any changes related to the operational control of the *facility* (e.g., new ~~Registered Market Participant~~registered market participant data);
 - ~~Information~~information concerning any planned changes to the *facility's* physical characteristics or its associated data monitoring or voice communications equipment; and

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- ~~Information~~information concerning changes to contacts for the *facility*.
- In a rare case, where the *facility* and ~~Resources~~or *associated resources* refer to the prior *market participant's* name, the new *market participant* will be required to register a new *facility* and ~~Resource names~~associated *resources* in Online IESO with a different name. This is to ensure they do not negatively impact the *security* or *reliability* of the *IESO-controlled grid*. The new *facility* owner is also expected to complete this registration change with their applicable *transmitter* or *distributor*.
- If the proposed transferee is not a *market participant* at the time the request for transfer is made, the *IESO* will not approve the transfer until such time as the transferee has completed the Participant Authorization ~~Procedures~~ (see procedures (refer to Section section 2)). All obligations will remain with the current *market participant*.

4.3.3. Document Changes

(Market Rules: Chapter 1, section 11.1 and Chapter 2, section 3.1.8)

Market participants are required to resubmit the following documentation to the *IESO* any time the content of the original document changes:

- OEB licence;
- ~~Connection Agreement~~
- connection agreement;
- Restoration Participant Attachment;
- Single-Line Diagram;
- Protection Description Document;
- Operational Philosophy Document;
- Facility Description Documents; and
- ~~Technical~~technical data, such as capability curves, protection document, operational philosophy, etc.

Once an updated document has been stored in Online IESO, the previous version is archived in the *IESO* document management system, where it can be accessed if required.

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5. Facility Deregistration / Market Participant Withdrawal

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5.1 Facility Deregistration

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(Market Rules: Chapter 7, section 2.4)

Market participants who wish to deregister one or more facilities are required to file a Notice of Request to Deregister with the IESO Manager, Operations Integration by email (market.registration@ieso.ca).

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The request to deregister should include, at a minimum, the following information:

- ~~Market~~market participant name;
- ~~Facility~~facility name;
- ~~Facility~~facility ID;
- ~~Resources~~
- ~~Reason~~resource name(s);
- ~~reason~~ for deregistration
- ~~The~~the expected deregistration date; and
- ~~Confirmation~~confirmation that deregistration of the facility will not potentially:
 - o ~~Endanger~~danger the safety of any person;
 - o ~~Damaged~~damage equipment; or
 - o ~~Violate~~violate any applicable law (e.g., environmental).

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The IESO will review the request and may ask the market participant to provide additional data if required.

As stated in ~~Market Rules Chapter 7, Section~~Chapter 7, section 2.4.8 of the market rules, ~~generators that are registered with~~ facilities must provide the IESO with at least six months' notice of plans to retire a facility, ~~as well as in addition to~~ notification of any plans the generator may have to construct replacement facilities for those being retired. This notice is necessary so that the IESO has sufficient time to assess the impact the deregistration could have on the reliability of the IESO-controlled grid, and whether a full technical assessment is required.

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5.1.1.5.1.1. Determining ~~whether~~ Whether Technical Assessment Is Required

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Within 10 *business days*³³ of receiving a *market participant's* request to deregister a *facility*, the *IESO* will inform the *market participant* and the *transmitter* to whose *transmission system* the ~~registered~~ *facility* is connected (if applicable) as to whether or not an *IESO* technical assessment of the impact of the *facility's* disconnection on the *reliability* of the *IESO-controlled grid* is required.

5.1.2.5.1.2. When Technical Assessment Is ~~NOT~~ Not Required

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If the *IESO* determines that a technical assessment of a deregistration is not required, ~~they~~ the *IESO* will email the *market participant* and inform them of this decision. The *market participant* ~~participants~~ will then inform the *IESO* of the date they wish to have the deregistration take effect. The deregistration date:

- ~~May~~ *may* not be less than five (~~5~~) *business days* after the date on which the *market participant* ~~participants~~ received the *IESO's* notification that the deregistration would not require a technical assessment; and
- ~~As~~ *as* applicable, is subject to the date on which the ~~registered~~ *facility* has been disconnected as confirmed to the *IESO* by the relevant *transmitter*.

5.1.3.5.1.3. When Technical Assessment Is Required

If the *IESO* determines that a technical assessment is required, they will notify the *market participant* ~~participants~~ and the ~~transmitter~~ *transmitters* of the anticipated completion date of the assessment, which can be no more than 45 *business days* from the notification date, unless a longer timeframe is mutually agreed upon by the *IESO* and the *market participant* ~~participants~~.

Table 0-18: Actions during Deregistration

If the technical assessment indicates that deregistration of the facility is :	IESO/Market Participant Actions
<ul style="list-style-type: none"> • Impacts <i>impacts</i>, or could potentially impact the <i>reliability</i> of the <i>IESO-controlled grid</i>; or • Could <i>could</i> potentially endanger the safety of any person, damage 	<ul style="list-style-type: none"> • The <i>IESO</i> will not grant approval for the deregistration of the <i>facility</i>. • The <i>IESO</i> Contract Management staff and the relevant <i>market participant</i> are required by the <i>market rules</i> to enter into good faith negotiations to conclude an

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³³ The deregistration of a generator, for example, may require a sufficiently longer time period to determine whether a technical assessment is required.

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If the technical assessment indicates that deregistration of the facility:	IESO/Market Participant Actions
equipment, or violate any applicable law (e.g., environmental);	agreement for a <i>reliability must-run contract</i> for the applicable facility ³⁴ .
<ul style="list-style-type: none"> Does NOT does not impact the reliability of the IESO-controlled grid; and; Does NOT does not endanger the safety of any person, damage equipment, nor violate any applicable law (e.g., environmental); and; The If the facility IS NOT is not directly connected to the IESO-controlled grid 	<ul style="list-style-type: none"> Upon receiving the IESO response to the deregistration request, the market participant/Participant shall email IESO to advise of the date they want the facility deregistered. The deregistration date shall not be less than five (5) business days from the date the market participant/Participant receives the notification from the IESO that the deregistration request is approved. <p>The IESO will issue a disconnection letter to the distributor or host customer, noting that the facility will be deregistered and the date of the deregistration. The distributor or host customer will notify the IESO when the facility is disconnected.</p>
<ul style="list-style-type: none"> Does NOT does not impact the reliability of the IESO-controlled grid; and; Does NOT does not endanger the safety of any person, damage equipment, nor violate any applicable law (e.g., environmental); and <p>The</p> <ul style="list-style-type: none"> If the facility IS is directly connected to the IESO-controlled grid 	<ul style="list-style-type: none"> Upon receiving the IESO response to the deregistration request, the market participant shall email IESO to advise of the date they want the facility deregistered. The deregistration date shall not be less than five (5) business days from the date the market participant/Participant receives the notification from the IESO that the deregistration request is approved. <p>The IESO will then:</p> <ol style="list-style-type: none"> Issue a disconnection letter to the relevant transmitter, directing it to disconnect the registered facility from the IESO-controlled grid on the date specified in the notice filed by the market participant; and Deregister the facility on the date they receive confirmation from the relevant transmitter that the facility has been disconnected.

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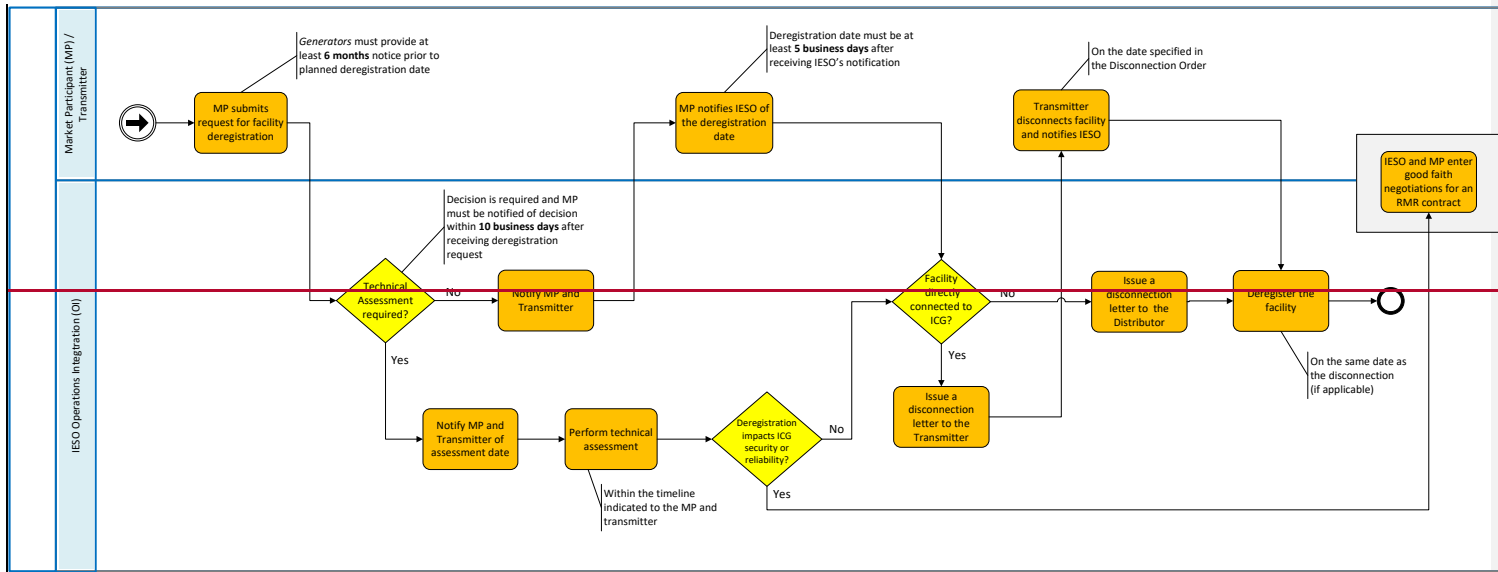
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³⁴ The applicable facility may be either generation, transmission, or load. Market Rules Chapter 7, Section 2.4.5 refers to "registered facility". For more information on reliability must-run contracts, please refer to Market Rules Chapter 7, Section 9.6 and 9.7 and Chapter 5, Section Chapter 5, Section 4.8 of the market rules.

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MM 1.5: Market Registration Procedures, Part 1.5: **Market Registration Procedures**



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Figure 5-1

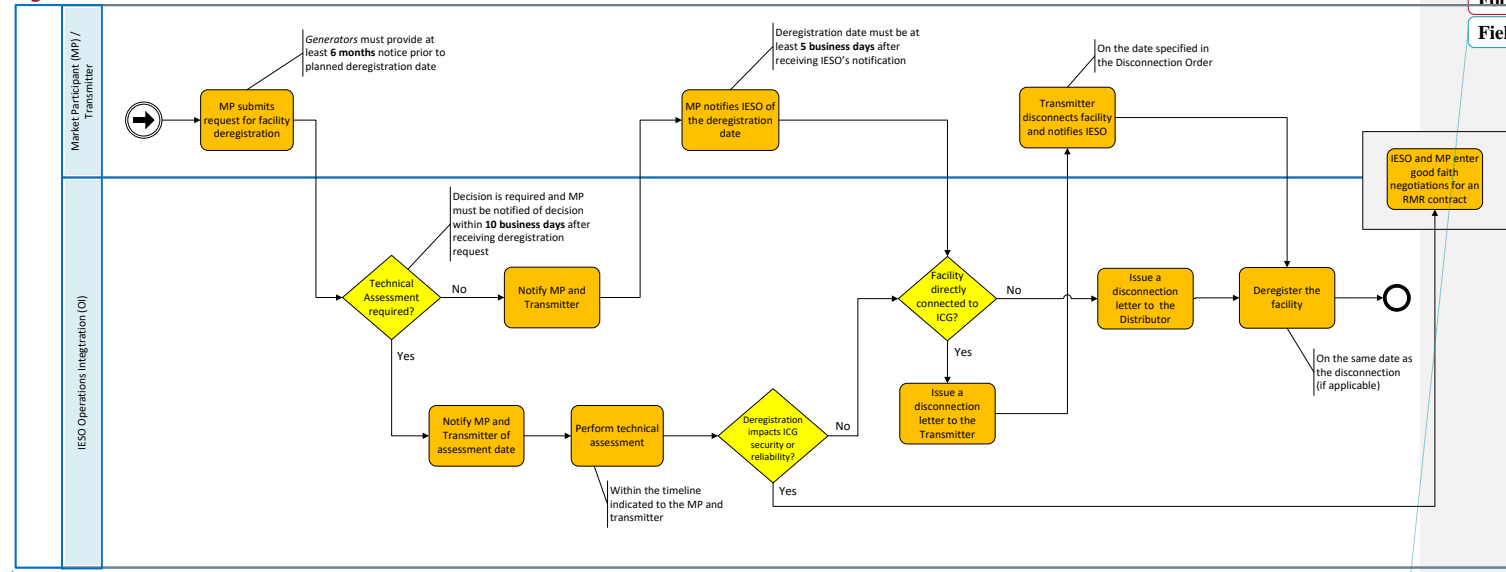


Figure 0-3: Facility Deregistration Process (requested by Market Participant)

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5.2.5.2. Market Participant, Program Participant or Service Provider Withdrawal

~~A market participant~~(Market Rules: Chapter 2, section 9)

The following types of Participants and service providers must complete and submit an Application for Withdrawal form to the IESO:

- ~~market participants~~ who no longer ~~wishes~~wish to participate in any of the IESO-administered markets ~~or~~;
- ~~program participants who no longer wish to participate in any of the IESO's programs must notify the IESO by completing and submitting an Application for Withdrawal form. The participant is; and~~
- ~~service providers who no longer wishes to provide services to the IESO.~~

The Participants or service providers are also required to submit their final contact information together with a request to revoke all user system access and digital certificates when notified by the IESO.

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~~The participant~~The Participant or service provider withdrawal procedures are distinct from terminating participation from the IESO-administered markets, which is covered in Section 5.3-section 5.3. Market participants with facilities that are registered ~~facilities~~by the IESO shall apply to the IESO to transfer or deregister their applicable facilities before they submit their application for withdrawal (see Section 5.1);refer to section 5.1).

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The Application for Withdrawal form specifies the date which the ~~participant~~Participant or service provider wishes to withdraw. ~~The~~For a market participant, the withdrawal date shall not be earlier than the date on which:

- ~~The~~the last of the market participant's applicable ~~registered~~ facilities is to be deregistered by the IESO and, where applicable, disconnected from the IESO-controlled grid; or
- ~~The~~the last of the market participant's applicable ~~registered~~ facilities is to be transferred by the IESO to another eligible market participant.

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~~A participant's~~Participants' or service providers' application for withdrawal will be reviewed and assessed by the appropriate IESO groups with respect to its potential impact on the reliability and security of the IESO-controlled grid, as described in Sections 5.1.1sections 5.1.1 through 5.1.3-5.1.3. If the IESO concludes that the removal from service of a ~~registered~~ facility will, or is likely to have, an unacceptable impact on the reliability of the IESO-controlled grid, the IESO and the market participant shall enter into good faith negotiations to conclude an agreement for

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a *reliability must-run contract* for the applicable *facility*²⁵. The ~~registered~~ *facility* shall not be removed from service during the course of such a process.

If the *IESO* determines that a ~~participant's~~ *Participant or service provider's* withdrawal can proceed as per the Application for Withdrawal, the *IESO* will send the ~~participant~~ *Participant* a ~~Registration Approval Notification (RAN)~~ confirming that the company is authorized to withdraw, and will update the participant's registration record to indicate that they have withdrawn their participation in the *IESO-administered markets* or applicable programs.

A *market participant* who has given notice of their intention to withdraw from the *IESO-administered markets* will cease to be a *market participant* on the latest of the following dates:

- ~~The~~ *the* withdrawal date specified on the Application for Withdrawal form;~~;~~ⁱ or
- ~~The~~ *the* date the last of the *market participant's* applicable ~~registered~~ *facilities is and their associated resources are* deregistered by the *IESO* and, where applicable, disconnected from the *IESO-controlled grid*;~~;~~ⁱ or
- ~~The~~ *the* date the last of the *market participant's* applicable ~~registered~~ *facilities has and their associated resources have* been transferred by the *IESO* to another eligible *market participant*;~~;~~ⁱ or
- ~~The~~ *the* date that all payments due from the *market participant* have been received by the *IESO*.

5.3.3. Market Participant Deregistration or Termination for Non-compliance

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5.3.1.5.3.1. Termination Order

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([Market Rules: Chapter 3, section 6.4](#))

Market participants are monitored on an ongoing basis for compliance with their obligations under the *market rules*. A breach of the *market rules* may result in the *IESO* issuing to the *market participant* a financial or non-financial penalty, a *suspension order*, or a *termination order*.

The *IESO* can also issue a *termination order* if ~~the~~ *a* *market participant* has been wound up, dissolved;~~;~~ or otherwise has ceased to exist.

A *termination order* results in the forced withdrawal (termination) of the *market participant* from the *IESO-administered markets*.

³⁵ The process is described in ~~Market Rules~~ Chapter 7, Section 9.6 and 9.7 and in Chapter 5, Section 4.8 [of the market rules](#) as explained in Chapter 7, Section 2.4.5.

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For complete information on the compliance processes, including the issuance of *termination orders* by the *IESO*, refer to ~~Market Manual 2.6: Treatment of Compliance Issues~~[Market Manual 2: Market Administration Part 2.6: Treatment of Compliance Issues](#).

~~5.3.2~~5.3.2. Deregistration for Non-Compliance

([Market Rules: Chapter 3, section 6.5](#))

The *IESO* may seek to deregister a *facility* ~~and its associated resources~~ as a result of the suspension of a *market participant* for non-compliance with the *market rules* or as a result of persistent breaches of the *market rules* by the *market participant*. This deregistration activity may be restricted to a specific *facility* ~~and its associated resources~~ or may be part of the process to terminate the *market participant's* participation in the *IESO-administered markets*. For more information on this process, please refer to:

- [Market Manual 2: Market Administration Part 2.6: Treatment of Compliance Issues](#)
- ~~Market Rules Chapter 3, Sections 6.2 and 6.2A~~
- [Chapter 3, sections 6.2 and 6.2A of the market rules](#)

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Appendix A: Organization Contact Roles

Table A-1 lists the contact roles that may be assigned, depending on participation type, by an organization's Applicant Representative. This [step-by-step guide](#) will assist an Applicant Representative in adding and updating contact roles.

Table A-1: Organization Contact Roles

Role	Description
Bids and Offers	Person or section to be contacted regarding the <i>bids</i> or <i>offers</i> for the organization.
Capacity Auction Contact	Person responsible for all tasks related to capacity auction.
Communications and Customer Service	Person or section responsible for receiving <i>IESO</i> information on communications and media issues and/or delivering customer service for the organization.
Compliance and Market Surveillance	Person responsible for discussing participant conduct and activities within the <i>IESO-administered markets</i> for the organization.
Contributor Information Contact	Person responsible for all tasks related to contributor information for the organization.
Control Room Section	Control room section for the organization.
Day-Ahead Bids and Offers	Person or section responsible for submitting and/or changing day-ahead <i>bids</i> or <i>offers</i> for the organization.
Dispatch Data Submitter	Person responsible for submitting and/or changing the real-time <i>bids</i> , <i>offers</i> or schedules for the organization.
Dispatch Data Viewer	Person responsible for viewing submitted real-time <i>bids</i> , <i>offers</i> or schedules for the organization.
Dispatch Instruction Operator(s)	Person(s) responsible for receiving, accepting, or rejecting <i>dispatch</i> instructions. Each <i>market participant</i> who may receive dispatch instructions must have at least one Dispatch Instruction Operator registered with the <i>IESO</i> .
e-Tag Curtailment	Person or section responsible for receiving notifications regarding the limiting of energy flow on an arranged and/or confirmed interchange transaction for the organization.

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Role	Description
Emergency Preparedness Plan	Person responsible for submitting and updating the <i>emergency preparedness plan</i> for the organization.
Equipment Outage Submitter	Person responsible for submitting, updating, canceling and viewing outage requests on equipment owned or operated by the organization.
Equipment Outage Viewer	Person who can view outage information on equipment owned or operated by the organization, and equipment permitted for viewing by other organizations. Note: —Do NOT not select this role if the Equipment Outage Submitter is already selected for this individual.
Equipment Registration Specialist	Person responsible for submitting attributes to their equipment, <i>facility</i> , and Resources <i>resources</i> for the organization. For more information, seerefer to Section 3.1.2: Equipment Registration Specialistsection 3.1.2.
Information Technology	Person or section responsible for communicating with the <i>IESO</i> about information technology services, projects, and changes for the organization.
Invoicing and Banking	Person responsible for submitting and maintaining, or approving banking information for the organization.
MMMP Metered Market Participant Meter Trouble Report	Person responsible for monitoring Meter Trouble Reports, adding comments, and receiving Meter Trouble Reports status notifications.
MSM Metering Service Provider Meter Trouble Report	Person responsible for responding to and initiating Meter Trouble Reports on meter issues and outages.
MSM Metering Service Provider Revenue Metering	Person responsible for submitting meter registration requests, monitoring in-flight requests and data and viewing the master data for registered meter installations.
Market Participant Compliance Contact	Person responsible for reliability compliance under the Ontario Reliability Compliance Program for the organization. This includes preparing and submitting Self-Certifications <i>self-certifications</i> , periodic data submittals, and data requests. In case of potential non-compliance, the compliance contact is responsible for submitting Self-Reports <i>self-reports</i> and providing associated mitigation plans.
Market Participant Escalation Contact	Person responsible for reporting reliability compliance on escalated matters (e.g., due dates are missed) under the Ontario Reliability Compliance Program for the organization. This person is preferably of higher authority than the person designated as the Market Participant Compliance Contact .

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Role	Description
Notice of Disagreement	Person responsible for submitting Notices of Disagreement for <i>settlement</i> statements for the organization.
Prudential Requirements	Person responsible for submitting prudential information and is the point of contact for any issues regarding prudential <i>prudential security</i> (e.g., margin calls, warnings and defaults) for the organization.
Revenue Metering	Person responsible for viewing the master data for registered meter installations and in-flight data submitted during a meter registration request. The Revenue Metering contact for a transmitter organization is responsible for approving Site Registration Reports for transmission delivery points.
Revenue Metering Data	Person responsible for managing meter data report profiles, as well as requesting and retrieving revenue meter data reports for the organization.
Settlements	Person responsible for issues/questions relating to settlement statements for the organization.

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~~Appendix B:~~ Appendix B: Technical Requirements

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Please refer to Chapter 2, ~~Section~~section 6.1 6.2, 6.3, Chapter 2, Appendix 2. 2, Chapter 4, Chapter 5, ~~Section~~section 12 of the *market rules* for information related to the technical requirements of *market participants*. Other portions of Chapter 5 and Chapter 7 may contain material relevant to the technical requirements.

Table B-1 contains references to technical communications requirements contained in the *market rules*. Given the detailed nature of these references, future rule amendments may alter them. It is the *market participant's* responsibility to confirm whether or not any rule amendments made to the *market rules*, subsequent to the publication of this procedure, change these references. The latest [Market Rule Amendments](#) (as posted on the *IESO* website) shall prevail in case of any errors or omissions.

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Appendix C: Wind Facility Data Requirements

Table C-1 identifies *facility* data requirements for the physical layout and details of the turbines. *Market participants* must also refer to [Section 3](#) for registration requirements.

Table C-19: Wind Facility Data Requirements

#	Static Plant Data	Description
1	Turbine Hub location	Turbine Hub location (latitude and longitude), height, and elevation from sea level.
2	Meteorological (MET) Tower or Sodar or Lidar Unit location	Physical location (latitude and longitude), height of measurements, and elevation from sea level. Met towers require measurement at hub height, sodar/lidar units should measure at hub height as well as 50 and 110 m if possible.
3	Type of turbine	Whether the turbine is a horizontal or vertical axis type.
4	Manufacturer's power curve	Power curve maps containing expected output for a turbine at varying wind speeds.
5	Cut in speed	The lowest wind speed (metres per second [m/s]) at which the turbine will generate power.
6	Cut out speed	The wind speed (m/s) at which the wind turbine will be shut down to prevent physical damage.
7	Cut out temperature	The maximum and minimum ambient temperature (in °C) at which the wind turbine will be shut down to prevent physical damage.

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Table C-2 identifies operational monitoring requirements for wind *generation facilities*.

Table C-2: Wind Facility Operational Monitoring Requirements

Operational Monitoring Requirements			
Measurement Type	Unit of Measure	Height of Measurement	Precision (to the nearest...)
MW output ³⁶ (per <i>facility</i>)	Megawatt (MW)	N/A	0.1 MW
Available Megawatts ³⁷	Megawatt (MW)	N/A	0.1 MW

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Table C-3 identifies monitoring requirements for wind *generation facilities* from Meteorological towers or sodar or lidar units.

Table C-3: Met Tower and Sodar/Lidar Unit Requirements

Meteorological Tower and Sodar/Lidar Unit Requirements				
#	Measurement Type	Unit of Measure	Height of Measurement	Precision (to the nearest...)
1	Wind Speed	Metres per Second (m/s)	Met towers require measurement at hub height, sodar/lidar units should measure at hub height as well as 50 and 110 m if possible	0.1 m/s
2	Wind Direction	Degrees from True North	Met towers require measurement at hub height, sodar/lidar units should measure at hub height as well as 50 and 110 m if possible	1 degree
3	Ambient Air Temperature	Degrees Celsius (°C)	Can be provided from any height	0.1 °C
4	Barometric Pressure	Hectopascals (hPa)	Can be provided from any height	0.1 hPa
5	Relative Humidity	Percentage (%)	Can be provided from any height	1 %

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³⁶ Megawatts shall be provided as one measurement per *connection point*.

³⁷ Available Megawatts shall be reported as the sum total of the capacities of all available turbines per *connection point*. This value should not take into account speed or temperature cut-outs (i.e. available MW = max capacity - *outages*).

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Table C-4 identifies monitoring requirements for wind *generation facilities* from nacelle mounted data collection points (temperature, pressure and humidity measurements may be taken at any height at the turbine, not necessarily at the nacelle).

Table C-4: Nacelle-mounted Data Collection Requirements

Nacelle-mounted Data Collection Requirements				
#	Measurement Type	Unit of Measure	Height of Measurement	Precision (to the nearest...)
1	Wind Speed	Metres per Second (m/s)	Hub height	0.1 m/s
2	Wind Direction ³⁸	Degrees from True North	Hub height	1 degree
3	Ambient Air Temperature	Degrees Celsius (°C)	Can be provided from any height	0.1 °C
4	Barometric Pressure	Hectopascals (hPa)	Can be provided from any height	0.1 hPa
5	Relative Humidity	Percentage (%)	Can be provided from any height	1%

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Wind data collected at the nacelle is expected to represent the apparent wind not the true wind value at a *facility*, it does not need to compensate for changes in conditions due to the motion of the rotor blades.

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³⁸ Wind direction measured at the nacelle may only be used if properly calibrated and if it continues to be provided when the turbine is not generating.

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Appendix D: Solar Facility Data Requirements

Table D-1 identifies *facility* data requirements for the physical layout and details of the solar arrays. *Market participants* must also refer to [Section 3](#) for registration requirements.

Table D-1: Solar Facility Data Requirements

#	Static Plant Data	Description
1	Solar <i>facility</i> location (latitude and longitude) ³⁹	Physical location (GPS coordinates) of each solar array ⁴⁰ .
2	Meteorological data collection device location and elevation (latitude and longitude)	Physical location (GPS coordinates) of each met data collection device, its elevation and height of measurement.
3	Elevation and orientation angles of arrays	Height from ground level and angle of each solar array, Tilt (angle with horizontal plane) and Azimuth (angle in North-East-South West Plane).
4	Power Rating	Rated Power at standard test conditions.
5	<i>Generation capacity</i> of the generating <i>facility</i> and each <i>generation unit</i>	The name plate capacity of the entire <i>facility</i> with a breakdown for each array within the system. (DC and AC Power at standard test conditions for arrays and power of inverters.)
6	Temperature Coefficient	Temperature coefficient of the module power at the maximum power point.
7	Type of Mounting	Ground Mount, Rooftop, Rack Mount, Fixed or Solar Tracking (single or dual axis) ⁴¹ , etc.
8	Module Type	Crystalline, Thin-Film, Concentrated PV (CPV) etc.
9	Wind Protection	Wind speed at which panels are stored to avoid damage. (If applicable)

³⁹ The physical location should be representative of the GPS coordinates at the centre of each solar array such that every solar panel within that array is within 5 km of the GPS coordinates. In the event that the array is larger, additional GPS coordinates will be required to outline the geographic footprint of the array.

⁴⁰ Solar array is defined as a collection of solar panels that share a *connection point* going into an inverter.

⁴¹ If the tracking feature is disabled the *generator* shall notify the *IESO* using the address renewableforecastinfo@ieso.ca with as much notice as possible.

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Meteorological Monitoring Requirements					
#	Measurement Type	Definition	Unit of Measure	Data Required for	Measurement Precision
		direction of the sun at its current position in the sky.			
4	Ambient temperature at the array average height	Ambient temperature at the array average height	Degrees Celsius (°C)	Crystalline, Thin-Film, CPV	0.1 °C
5	Back of Module Temperature ⁴⁴	Average temperature at the back of module	Degrees Celsius (°C)	Crystalline, Thin-Film, CPV	0.1 °C
6	Barometric pressure	Barometric Pressure	Hectopascals (hPa)	Crystalline, Thin-Film, CPV	0.1 hPa
7	Wind speed at the average array height	Anemometer	Metres/Second (m/s)	Crystalline, Thin-Film, CPV	0.1 m/s
8	Wind direction at the average array height	Wind vane or wind mast readings	Degrees from True North	Crystalline, Thin-Film, CPV	1 °

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⁴⁴ The GPS coordinates of the back of module temperature measurement locations shall be included.

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List of Acronyms

<u>Acronym</u>	<u>Meaning</u>
<u>CAA</u>	<u>Connection Assessment and Approval</u>
<u>CER</u>	<u>Canada Energy Regulator</u>
<u>GOG</u>	<u>Generator offer guarantee</u>
<u>MGBRT</u>	<u>Minimum generation block run-time</u>
<u>MLP</u>	<u>Minimum loading point</u>
<u>NAESB</u>	<u>North American Energy Standards Board</u>
<u>OEB</u>	<u>Ontario Energy Board</u>
<u>RAN</u>	<u>Registration Approval Notification</u>

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References

Document ID & Link	Document Title
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
IMP_GDE_0088 IMP_GDE_0088	Market Manual 1.3: Identity Management Operations Guide
MDP_PRO_0017	Market Manual 2.1: Dispute Resolution
IMO_PRO_0019	Market Manual 2.2: Exemption Application and Assessment
MDP_PRO_0022	Market Manual 2.6: Treatment of Compliance Issues
MDP_MAN_0003	Market Manual 3.0: Metering Overview
MDP_PRO_0007	Market Manual 3.1: Metering Service Provider Registration, Revocation and De-registration
MDP_PRO_0013	Market Manual 3.2: Meter Point Registration and Maintenance
IMP_PRO_0047	Market Manual 3.7: Totalization Table Registration
IMP_PRO_0057	Market Manual 3.8: Creating and Maintaining Delivery Point Relationships
MDP_PRO_0027	Market Manual 4.2: Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets
IMP_PRO_0034	Market Manual 4.3: Real-Time Scheduling of the Physical Markets
MDP_PRO_0029	Market Manual 4.4: Transmission Rights Auction
PRO-324	Market Manual 4.6: Real Time Generation Cost Guarantee
MDP_PRO_0045	Market Manual 5.4: Prudential Support
IMO_MAN_0024	Market Manual 6: Participant Technical Reference Manual (PTRM)
IMP_PRO_0035	Market Manual 7.3: Outage Management
IMO_PLAN_0001	Market Manual 7.8: Ontario Power System Restoration Plan
IMO_PLAN_0002	Market Manual 7.10: Ontario Electricity Emergency Plan
MAN-44	Market Manual 12.0: Capacity Auctions
PRO-357	Market Manual 13.1: Capacity Export Requests
IMO_GDE_0001	Market Participant Emergency Planning Plan Guidelines & Requirements
LST-48	Register Facility Help File
	Prudential Training Guide
	Guide to the Day Ahead Commitment Process (DACP)

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