Registration Timelines Guide

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Introduction

Registering a new or modified *facility* requires detailed and lengthy tasks to be executed by both *market participants*[1] and the *IESO*. In most cases this requires verifying equipment data, updating models, performing studies to determine operating instructions, making *settlement* arrangements, configuring metering, and more. To ensure accurate settlement and/or system reliability, all tasks associated with a new or modified *facility* **must** be completed before the equipment will be allowed to connect to the *IESO-controlled grid*.

The purpose of this document is to establish timelines, and document the associated framework that will support the efficient registration of common types of system changes. These common types of changes are referred to as "change types". For example, a like-for-like disconnect switch replacement is a 'change type'. Establishing timelines for each major type of change provides guidance to *market participants* so they know how far in advance of their desired in-service date they need to initiate registration activities so everyone is ready for in-service. Establishing and administering these timelines helps the *IESO* ensure that tasks are completed in an efficient and accurate manner.

There are two types of time periods: a 'minimum period', and an 'average period'. The minimum period is the time required to complete a change, without complications, stated in *business days*. However, it is quite common for there to be data ommisions, or for issues to be identified by the IESO *that* need to be resolved by the *market participant*, etc., and addressing these will delay task completion. The average period indicates how long a particular change type typically takes, calculated based on a running average of past projects, stated in calendar days. The minimum

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[1] Throughout this document, a reference to *market participant* includes *applicant* where applicable.

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periods are stipulated in this document, while the average period are values posted on the _IESO public website_, where it is periodically updated.

How will these timelines be used?

The requested in-service date for a change cannot be earlier than the submission date (i.e. the date on which the proponent submits a change request to IESO Market Registration) plus the relevant minimum period(s). The _IESO_ will only approve in-service dates that are equal to or later than the submission date plus the minimum period. However, as noted above, it is possible that submissions are incomplete, some projects are more complex or create greater implementation risk, or other issues are discovered, such that the in-service cannot be achieved until these issues are resolved. Thus, the minimum period is a guide as to how early a change should be submitted for registration.

The _IESO,_ at its discretion, on a case-by-case basis may approve shorter timelines to facilitate _reliability_, operability, _emergency_ or other conditions.

IESO Data

A _facility_ participating in the _IESO-controlled grid_ and _IESO-administered market_ needs to be reflected in four internal systems: registration database, Supervisory Control and Data Acquisition (SCADA ICG and SCADA IAM) for reliability monitoring and market scheduling, and revenue metering (for _Settlement_ purposes). This section provides some context behind how the minimum period is determined.

Registration Database

All data must be submitted by _market participants_ to the registration database through Online _IESO_. A change could pertain to relatively simple information, like user contact information. Data could be more technical, like transformer impedance, or a _generation unit_'s _minimum loading point_. All other internal _IESO_ processes rely on this master data, so it is essential that this database contains the most up-to-date information. All submitted data is screened by _IESO_ subject matter experts for accuracy.

SCADA (ICG)

SCADA is a generic term for a control system utilized by an organization to monitor, supervise and direct processes, machines and other equipment. The _IESO_ uses one to operate the _IESO-controlled grid_, and another to operate the IAM. This includes a computer model of the _IESO-controlled grid_ along with all technical parameters, such as circuit impedances, capacitor ratings, etc. The data required to build these models is a subset of the registration data, and the process to update our SCADA system is called the Network Model Build (NMB), which occurs on a set schedule every 4 to 5 weeks. There is a significant amount of processing and quality assurance effort required for each NMB cycle, so all required change information must be provided well in advance. The timing of the

NMB in relation to when a change request is initiated is the key factor in determining the minimum period for most change types.

SCADA (IAM)

There are a set of changes that are unique to the market only, such as a *generation unit*'s *minimum loading point*. These changes are not required to be implemented through an NMB, and may take up to 10 *business days* to complete. However, if the equipment will be in-service prior to the desired change date, then the *IESO* can only implement the change the day before; this excludes Mondays as *IESO* does not implement changes on weekends and holidays.

Metering

Market Manuals 3.0 to 3.10 describe metering used for *settlement* purposes in detail. Metering requirements are taken into account in determining the minimum period for each change type.

Minimum Periods

The required minimum periods are summarized in the following table, and are described in additional detail below.

Registration Minimum Periods

Category	Minimum Period Business Days
Register and Authorize Organization	40
Organization Role Change	30
New Generation Unit or Load Facility	90
New or Modified Equipment (Other)	60
Telemetry Only Update	90
Like-for-like Switching Device	20
Commissioning	90
Market Parameter Updates	10

Some change types may have dependencies on other change types, while others can occur in parallel. For example, consider a newly built wind farm owned by an organization that is not currently a *market participant*. The organization must complete Register and Authorize Organization before it can initiate any other changes. New *generation units* must go through commissioning, but only after the 'new *generation unit* or *load facility*' stage has been completed. However, other assets (i.e. 'new equipment') in the windfarm, such as breakers, can go through registration in parallel to the wind turbines. This would have a combined minimum period of 40+90+90=220 *business days*.

However, as noted previously, many projects do not complete within the minimum period. *Market participants* should monitor posted average periods and plan their projects accordingly. The minimum period explains that projects targeting an in-service date less than the minimum period cannot be supported by the *IESO*. *Market participants* are encouraged to begin registration as early as possible to avoid challenges with these minimum periods.

The process of registering all change types is described in detail in Market Manual 1.5. Interested parties can initiate registration or ask questions by emailing market.registration@ieso.ca.

Remedial Action Schemes

A *remedial action scheme* (*RAS*), sometimes also known as a Special Protection System (SPS), is a control that automatically operates equipment in the *IESO-controlled grid* according to configurable conditions. For example, if there was a fault on a transmission circuit, the *RAS* might cause the unit breaker of a *generation unit* to open, balancing the load in generation within the electrical area.

Evaluating and modelling a *RAS* is a complex process. This includes obtaining Northeast Power Coordinating Council (*NPCC*) approval to operate the *RAS*. To accommodate the various tasks required to be completed prior to the targeted in-service date, *market participants* should engage with the *IESO* Market Registration team at least 9 calendar months in advance.

Change Types

These categories are simple summaries to help users identify the timeline associated with a particular activity they may wish to engage in. For details on the specific tasks associated with registering these changes, please refer to Market Manual 1.5.

Register and Authorize Organization

This is used by *applicants* who are not yet a registered *market participant* or program participant. It is used to address activities such as signing a *participation agreement*, submitting bank information, a valid *licence*, primary and organizational contacts, etc.

Organization Role Change

Sometimes an organization takes on, or changes functions within the market; for example *owner, registered market participant* or *metered market participant*. These roles are associated with specific facilities, and usually change as a result of selling or acquiring equipment or entire facilities.

New Generation Unit or Load Facility

This is for new *generation units* and *load facilities* being directly connected to the *IESO-controlled grid* and/or participating in the *IESO-administered market* (e.g. embedded resources). This is typically newly constructed resources, but may also include refurbishing resources that have been decommissioned or mothballed. This also includes storage, which is represented as both a *generation unit* and *load facility*. Note that a new or modified *generation unit* will often undergo commissioning, which is counted separately (see below). The registration data for these assets is used to model them for operation, and to configure their participation in the *IESO-controlled grid*.

New or Modified Equipment (Other)

Updated *generation units* or *load facilities*, or other new/updated equipment such as transformers, circuits, switching devices, reactive devices, etc., typically have new or updated parameters that must be modelled on SCADA. Other *IESO* activities triggered by registration, such as metering, can be executed in parallel to the NMB and be resolved within the same period.

Telemetry Only Update

This is for providing the applicable telemetry data such as megawatts (MW) and megavars (MVAR), and for completing end to end testing of all necessary testing points with the *IESO*. All found anomalies must be corrected before the *IESO* final approval to go into service.

Like-for-like Switching Device

Switching devices that reach end-of-life, such as breakers, are often replaced with an identical unit. While this activity must still go through registration, it is a relatively simpler process.

Commissioning

This is a process to verify the actual performance of certain equipment (primarily *generation units*) as specified in Market Manual 1.6. It is the most susceptible process to variation or an extension of time; some may be completed in a month, while other extreme cases last over three years if the *generation units* were unable to meet *IESO* requirements. The stipulated timeline of approximately 6 calendar months, or 130 *business days*, is extrapolated from typical project durations going back to market open; *market participants* are advised to plan accordingly.

Market Parameter Updates

There are additional updates to registration data that may not require a NMB, such as an update to an organization contact. While relatively simpler, some processing and verification is still necessary,

requiring 10 *business days* to address as there likely many other system changes that need to be evaluated.

Other activities

Additional activities, such as registering a *RAS* /SPS, or a mobile utility substation or mobile transformer unit (MUS/MTU), have their own timelines and this information can be obtained by contacting the Market Registration team or by reference to the *IESO* public website.

Key Concepts

Network Model Build

Maintaining an up-to-date representation of the physical grid in SCADA is critical to ensuring the *IESO* is able to reliably monitor and operate the *IESO-controlled grid*. As explained earlier in this document, physical changes in the *IESO-controlled grid* are incorporated into SCADA via a process called the NMB. This NMB process is often the critical path in completing Registration and each NMB will include numerous system changes planned over the next few days to months in advance. The NMB occurs approximately every 30 *business days*[2], i.e. 4-5 calendar weeks. Advance notice of 60 *business days* (approximately three calendar months) is required to have equipment in the NMB prior to use, whether that is for energization, commissioning, commercial operation, or any other purpose.

Another important function of the NMB process is to ensure the successful acquisition of the operational telemetry required for SCADA. This activity requires 60 *business days*. The telemetry must be tested, which often leads to corrections in the following NMB, for a total of 90 *business days*. However, unlike commissioning, the NMB work and the telemetry setup can be performed in parallel to the equipment registration. For example, the telemetry extends the new equipment registration timeline by 30 days, rather than adding 90 *business days* to the total time.

This is the rationale behind the entries in the table above labelled as "minimum"; however, due to errors or other complications, they may take longer.

Staged Projects

Complex projects may have multiple stages. For example, a new generating station may connect to the *IESO-controlled grid* all at once, while other projects may: connect a breaker one month, a circuit another month, or re-terminate that same circuit in a third month, etc. In staged projects, the timelines apply to each stage, i.e. in the brief example above each of the three stages would require notification at least 60 *business days* prior to their connection. A project plan depicting all stages should be available from the *market participant* prior to the completion of the first stage. If a stage is

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[2] Other system operators in the eastern *interconnection* update their models every two months, quarterly, or even less often. Some require registration to begin up to two years in advance of the in-service date.

associated with one or more *outages*, then the timeline corresponds with when the last *outages* end, not only when they begin.

Registration Approval Notification

Registration milestones are documented via a Registration Approval Notification (RAN). This indicates that the *market participant* has met the requirements, and that the *IESO* has completed the relevant tasks, to allow the specified equipment on the RAN to connect[3]. A RAN may be conditional if there are restrictions, pending registration requirements or future work that affect the operation of the equipment specified on the RAN.

Please note that regardless of the desired in-service date, or the average or minimum periods stipulated in this guideline, a *facility* can only go in-service upon receipt of a valid conditional or final RAN. These in turn are only issued when the *IESO* is assured that all requirements have been satisfied, such as a modified *facility* performing as described. Even then, it is at the *IESO's* discretion to operate the *IESO-controlled grid* reliably; if at the time of the change going in-service, the *IESO* is aware of conditions within the *IESO-controlled grid* such that placing this change in-service would jeopardize the former's *reliability*, it may delay placing that change in-service.

Maximum Period

Note that there is no corresponding concept of a 'maximum period'. Facilities, new or modified, may only go in-service once they have met all requirements under the *market rules*. Some projects, of the same change type, are simply more complex than others and may require more time for the *market participant* and the *IESO* to complete their respective duties. However, in the vast majority of cases, any duration beyond the minimum period corresponds to time spent by the *market participant* in resolving outstanding issues. It should also be noted, that System Impact Assessments (SIA) may impose additional requirements that would render the minimum periods defined in this document to no longer be an accurate representation of the minimum time required to complete the relevant change type. Market Participants are encouraged to contact the IESO at market.registration@ieso.ca should they be uncertain as to how the complexity of their project or their SIA may impact their registration timelines.

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[3] It remains at the *IESO's* discretion whether to actually allow equipment to connect, in spite of an issued RAN, based on *reliability* or operability concerns in any particular moment.

References

Document ID	Document Title
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
PRO-408	Market Manual 1.5: Market Registration Procedures
IESO_REQ_0208	Market Manual 1.6: Performance Validation
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
IESO_PRO_0573	Market Manual 3.10: Transmission Grid –High Voltage Metering

Document Change History

Issue	Reason for Issue	Date
1.0	Initial release for Baseline 49.0	March 1, 2023