



**PROCEDURE**

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

**Part 1.4: Connection  
Assessment and  
Approval**

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**Issue 23.0**

*This document provides detailed procedures to be followed by connection applicants who wish to connect to the IESO-controlled grid.*

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## Related Documents

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PRO-408	Market Manual 1.5: Market Registration Procedures
IESO_REQ_0208	Market Manual 1.6: Performance Validation

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# Table of Changes

Reference (Section and Paragraph)	Description of Change
Throughout	Updated content to reference the SIA/ESIA confidential appendices where appropriate
Conventions	Updated to include a definition for Confidential Appendix
Sections 5.1, 5.1.1, 5.2, 5.3, and 12	Updated to include the requirement to safeguard <i>confidential information</i> in final SIA and ESIA reports and addendums
Section 8.7.1	Added a clarification of what the <i>connection applicant</i> and the <i>transmitter(s)</i> are expected to review in the draft report
Section 8.8	Updated the information that will be included in an SIA report and also updated to include the requirement to safeguard <i>confidential information</i> in final SIA reports and addendums
Section 8.11 and 9.9	Updated the SIA/ESIA publishing date
Section 9.6	Updated the information that will be included in an ESIA on report and added a clarification of what the <i>connection applicant</i> and the <i>transmitter(s)</i> are expected to review in the draft report. A requirement to safeguard <i>confidential information</i> in final ESIA reports and addendums is also added.
Section 12	The Information Confidentiality section is updated to include information in the confidential appendices that, if disclosed, could reasonably be expected to pose a potential security threat to the <i>integrated power system</i> , the <i>IESO-administered markets</i> , or those of neighbouring jurisdictions.

# Market Manuals

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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 appended to, or referenced in, these procedures provide a supporting framework.

## Market Procedures

“Connecting to Ontario's Power System” is Series 1 of the *Market Manuals*, where this document forms Part 1.4: Connection Assessment and Approval.

This document constitutes the procedures describing the manner and timing for the processing of *requests for connection assessment*, that the IESO is required to establish under Section 6.1.14, Chapter 4 of the *market rules*.

## Conventions

The *market manual* standard conventions are as defined in the “Market Manual Overview” document. 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*”,
- Double quotation marks are used to indicate titles of legislation, publications, forms and other documents.

**Confidential Appendix** means an appendix to the SIA or ESIA that contains *confidential information*, as further described in sections 8.8 and 9.6.

**Technical Feasibility Study** means an optional study that the IESO can perform at the request of a *connection applicant* to assess the technical acceptability of a new or modified connection to the *IESO-controlled grid* and to identify considerations with respect to the connection on the *reliability* and operability of the *integrated power system*.

**System Impact Assessment (SIA)** means a mandatory *connection assessment*.

**Expedited System Impact Assessment (ESIA)** means a mandatory *connection assessment* that only requires a simple study since it is expected to have no impact, or minimal impact on the *reliability* of the *integrated power system*.

**Project** means the new or modified *connection* to the *IESO controlled grid* that is the object of a *request for connection assessment* or request for a technical feasibility study, as applicable.

**Regulated completion target(s)** means the timelines the IESO must meet when providing the *connection assessment* results for specific project types as defined by regulation(s) made under the *Electricity Act, 1998* (i.e. Ontario regulation 326/09).



**- End of Section -**

# 1. Introduction

In accordance with the *market rules*, Chapter 4, Section 6, anyone planning to establish or modify a connection to the *IESO-controlled grid* must obtain *IESO* approval through the Connection Assessment and Approval (CAA) process. The CAA process allows the *IESO* to assess the impact of new or modified connections to the *IESO-controlled grid* on the *reliability* of the *integrated power system*.

A new or modified connection to the *IESO-controlled grid* includes, but is not limited<sup>1</sup> to:

- The connection of a new or modified *generation facility* or the connection of a new or modified *embedded generation facility* greater than 10 MW<sup>2</sup>,
- The connection of a new or modified *electricity storage facility* or the connection of a new or modified *embedded electricity storage facility* with an *electricity storage facility size* greater than 10 MW<sup>2</sup>,
- The connection of a new or modified *transmission facility*,
- The connection of a new or modified *load facility* or an onetime addition of load greater than 10 MW,
- The modification of protection systems, and
- The connection of a new or modified *ancillary services facility*.

A *connection applicant* does not have to be a *market participant* in order to apply for *connection assessment* and approval, however, the required *IESO* Market Entry process must be completed prior to participation in the *IESO-administered markets*<sup>3</sup>.

## 1.1 Purpose

*Market Manual 1.4: Connection Assessment and Approval* is the first 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*:

Stage	Market Manual
1. <a href="#">Prepare application</a> 2. <a href="#">Obtain conditional approval to connect</a>	<b>Part 1.4: Connection Assessment and Approval</b> (formerly Market Manual 2.10)
3. <a href="#">Design and build</a>	N/A <sup>4</sup>

<sup>1</sup> If in doubt, *connection applicants* are encouraged to contact the *IESO* for clarification.

<sup>2</sup> Where an *embedded facility* consists of both *generation units* and *electricity storage unit(s)*, a connection assessment will be required if the aggregate of the *electricity storage unit size(s)* and the maximum output of the *generation unit(s)* is greater than 10 MW.

<sup>3</sup> Before applying to the *IESO* for a *connection assessment*, *connection applicants* are strongly advised to initiate discussions with the affected *transmitter*.

<sup>4</sup> 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.

Stage	Market Manual
4. <a href="#">Authorize market and program participation</a> 5. <a href="#">Register equipment</a>	Part 1.5: Market Registration Procedures
6. <a href="#">Commission equipment and validate performance</a>	Part 1.5: Market Registration Procedures, and Part 1.6: Performance Validation (formerly Market Manual 2.20)

This *market manual* contains the procedures related to *connection assessment* and approval, which encompasses Stages 1 and 2 of the process, and is a guide for *connection applicants* seeking the *IESO's* approval to establish or modify a connection to the *IESO-controlled grid*, in accordance with the *Market Rules*, Chapter 4, Section 6.

## 1.2 Scope

This procedure provides a *connection applicant* with the required steps as well as an understanding of the roles played by the *connection applicant*, the *IESO*, consultants, the affected *distributor(s)* and the affected *transmitter(s)*. This document serves as a road map for *connection applicants*, *transmitters* and the *IESO*, and reflects the requirements set out in the *market rules*, applicable standards and *IESO* policies and procedures. The overview information in section 2, provided for context purposes only, highlights the main actions that comprise the procedure.

Anyone who wishes to participate in the *IESO-administered markets* or that causes or permits electricity to be conveyed into, through or out of the *IESO-controlled grid* must complete the *IESO* Market Registration process. For information about being authorized as a *market participant*, and for detailed equipment registration procedures, refer to Market Manual 1.5: Market Registration Procedures.

- End of Section -

## 2. Overview of the Connection Assessment and Approval Process

The System Impact Assessment (SIA) is a mandatory assessment conducted by the *IESO* pursuant to Section 6.1.5, Chapter 4 of the *market rules* to assess the impact of a new connection to the *IESO-controlled grid* or the modification of an existing connection to the *IESO-controlled grid* on the reliability of the *integrated power system*. If the *IESO* determines, based on the guidelines outlined in section 9.2, that a detailed study is not required, an Expedited System Impact Assessment (ESIA), which involves a simple study, will be performed.

The objective of the SIA/ESIA is to ensure the *reliability* of the *IESO-controlled grid* is not compromised. When completed, it provides the *connection applicant* with an SIA/ESIA report and Notification of Conditional Approval or a Notification of Disapproval with Reasons for the project as submitted to the *IESO*.

Before submitting the request for *connection assessment*, *connection applicants* may request a Technical Feasibility Study, which is an optional and confidential study that the *IESO* performs at the request of a *connection applicant* to assess the technical acceptability of a new or modified connection to the *IESO-controlled grid*, or to identify alternate or preferable options with respect to the *reliability* of the *integrated power system*.

*Connection applicants* may choose to engage a consultant to perform *connection assessment* studies that would normally be performed by the *IESO*. The *IESO* will make use of the consultant's study results to the fullest extent possible when conducting the assessment.

The CAA process involves specific timelines that are specified by this document or regulated under the *Electricity Act, 1998*. While the *IESO*, the affected *transmitter(s)*, or the *connection applicant* may request an extension, any variation in the timing specified in this document requires the prior agreement of all affected parties to the extent allowed by the regulations made under the *Electricity Act, 1998*.

An overview of each of the above assessment types is provided below. Comprehensive descriptions are provided in sections 7, 8 and 9.

### 2.1 Technical Feasibility Study (Optional)

To initiate a Technical Feasibility Study, the *connection applicant* completes the appropriate [Technical Feasibility Study application form](#) which can be found on the *IESO* website (see Appendix A: Forms).

Upon receipt of the appropriate application, the associated documents and the required deposit, the *IESO* and the *connection applicant* negotiate a Scope of Work, including timelines, and execute a [Technical Feasibility Study agreement](#) based on the template located on the *IESO* website. Due to its optional nature, there are no regulated completion target(s) for Technical Feasibility Studies.

Following the execution of the Technical Feasibility Study agreement the *IESO* conducts the Technical Feasibility Study within the timeline agreed upon. Upon completion, the *IESO* issues a Technical Feasibility Study report to the *connection applicant* and an *invoice* detailing the total costs and expenses

associated with the Technical Feasibility Study. If the costs and expenses are less than the deposit amount, the *IESO* will issue a refund to the *connection applicant*.

Since the Technical Feasibility Study is confidential, the Technical Feasibility Study report and associated information will not be posted on the *IESO* website.

## 2.2 System Impact Assessment/Expedited System Impact Assessment

To initiate a request for *connection assessment*, the *connection applicant* completes the appropriate [SIA application form](#) which can be found on the *IESO* website (see Appendix A: Forms).

In its response, the *IESO* will identify any additional information necessary to determine whether an SIA or ESIA is required<sup>5</sup> based on the guidelines described in section 9.2. The *IESO* will notify the *connection applicant* if an SIA or an ESIA is required normally within five *business days* following receipt of all necessary information. The following two sections describe the processes associated with SIA and ESIA.

### 2.2.1 System Impact Assessment

Upon receipt of the required deposit and the associated documents, the *IESO* and the *connection applicant* negotiate a [Scope of Work](#) and execute an [SIA agreement](#) based on the template located on the *IESO* website. Upon execution of the SIA agreement, the project is posted on the Status of System Impact Assessment Applications list as described in section 3.1.

The *IESO* conducts an SIA within the timeline agreed upon with the *connection applicant*, which cannot exceed the regulated completion target(s)<sup>6</sup>. Upon completion, the *IESO* issues the final SIA report to the *connection applicant* and affected *transmitter(s)*, and either a Notification of Conditional Approval or a Notification of Disapproval with Reasons for the project.

Upon completion, the final SIA report, excluding confidential appendices, will be posted on the *IESO* website, as described in section 8.11.

The *IESO* then sends an *invoice* to the *connection applicant* detailing the total costs and expenses associated with the SIA, which includes the affected *transmitter(s)* costs as invoiced to the *IESO*. If the total costs and expenses are less than the deposit amount, the *IESO* will issue a refund to the *connection applicant*.

The *connection applicant* must inform the *IESO* when their design and equipment procurement processes are concluded and provide the updated project related information. The *IESO* will analyze the final project specifications and indicate if the post-SIA changes need to be addressed in an addendum to the final SIA report. An addendum may also be initiated based on new information provided by the transmitter not captured in the final SIA report, or based on new information obtained by the *IESO* that was not reflected in the study assumptions of the final SIA report.

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<sup>5</sup> Due to their nature and complexity, connection applications for “renewable energy generation facilities”, as described by Ontario *Regulation* 328/09, or other type of facility that has a regulated delivery timeline of the connection assessment, without exception, require an SIA.

<sup>6</sup> An example would be connection assessments for renewable energy *generation facilities* that, under Ontario *Regulation* 326/09, must be delivered within 150 days from receipt of a complete application.

The addendum to the final SIA report, excluding confidential appendices, will be posted on the *IESO* web site, as described in section 8.11.

Any subsequent costs incurred by the *IESO*, e.g. post-SIA changes that result in addenda to the SIA report, or *IESO* support and participation in regulatory proceedings will be separately invoiced to the *connection applicant*.

### **2.2.2 Expedited System Impact Assessment (ESIA)**

Upon receipt of the appropriate application and the documents containing all relevant technical information and project details, the *IESO* will determine whether the project meets the ESIA guidelines described in section 9.2.

Where the project meets the ESIA guidelines, a Cost Recovery agreement, which requires the *connection applicant* to pay all costs and expenses incurred by the *IESO* in performing the assessment and preparing the ESIA report, will be executed with each unique *connection applicant*.

The *IESO* then conducts an ESIA within the timeline agreed upon with the *connection applicant*. Upon completion, the *IESO* issues a final ESIA report and either a Notification of Conditional Approval, a Notification of Final Approval or a Notification of Disapproval with Reasons for the project to the *connection applicant* and affected *transmitter(s)*.

Upon completion, the final ESIA report, excluding confidential appendices, will be posted on the *IESO* website, as described in section 9.9.

The *IESO* sends an *invoice* to the *connection applicant* every quarter, if applicable, detailing the total costs and expenses associated with conducting all ESIA's for that *connection applicant* in the previous quarter, or quarters, if necessary.

**- End of Section -**

## 3. Management of Connection Assessments

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### 3.1 Status of System Impact Assessment Applications List

A project will be placed on the [“Status of System Impact Assessment Applications” list](#) on the *IESO* website after the associated SIA or ESIA agreement has been executed by the *IESO*. This list contains all transmission, load, generation, electricity storage and *ancillary services* projects that have submitted an SIA application and have executed an associated SIA or ESIA agreement.

The list contains SIA status information and hyperlinks to final SIA/ESIA reports, excluding confidential appendices, and is updated on a monthly basis<sup>7</sup> to reflect new entries and status changes.

### 3.2 Rules of Project Withdrawal

These rules of withdrawal are applicable to *connection assessment* projects.

1. A project will be withdrawn if the *connection applicant* submits a [Notification of Withdrawal](#) based on the template listed on the *IESO* website, or
2. A project will be deemed by the *IESO* to have been withdrawn if:
  - The connection applicant declares that there is no intention to complete the project,
  - (applicable to System Impact Assessment only) The connection applicant fails to respond to two consecutive requests made by the *IESO* for submission of a project status report in accordance with section 10,
  - (applicable to System Impact Assessment only) The connection applicant fails to meet milestones described in section 3.6,
  - The connection applicant proposes any of the following changes that would have the potential to result in an unacceptable impact on the reliability of the integrated power system, or an adverse impact on other projects:
    - A change in *generation unit* or *electricity storage unit* active or reactive output capacity, or an increase in active or reactive peak load,
    - A change in the transmission *facilities* ratings,
    - A modification to the *connection point*, or *connection facilities*,
    - A change to the normal mode of operation of the *connection facilities*, or

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<sup>7</sup> The *IESO* targets the beginning of the month to update this list for the previous month. *Connection Applicants* with different targets for report *publishing* should contact the *IESO* in advance to arrange for off schedule updates.

- (applicable to Technical Feasibility Studies only) The connection applicant declares an intention, or has submitted an application to develop the project in response to an IESO procurement prior to the Technical Feasibility Study report being issued.

The *connection applicant* may consider submitting a new request for *connection assessment* if the project is deemed withdrawn by the *IESO*.

In all cases listed at item 2 above the *IESO* will issue a Notification of Deemed Withdrawal (IMO\_FORM\_1049) to the *connection applicant*.

### 3.3 Committed Projects

A committed project is a project that has demonstrated to the *IESO* a high probability of being placed into service. A committed project will be included in the base case assumptions for the evaluation of other projects.

A project will be deemed by the *IESO* to be a committed project if:

- (1) The *connection applicant* provides notification to the *IESO* specifying a defined and future-dated in-service date for the project, and,
- (2) The *connection applicant* provides notification to the *IESO* indicating that project is actively being completed (i.e. not declared to be “on hold”), and,
- (3) The *connection applicant* does one of the following:
  - Provides a notification to the *IESO* indicating that the *connection applicant* will be compensated with respect to the project through a power purchase contract, or rates set by the *Ontario Energy Board*,
  - Provides a notification to the *IESO* indicating that a leave to construct approval has been granted by the *Ontario Energy Board*,
  - Provides a notification to the *IESO* indicating that the project has a connection cost recovery agreement (CCRA) in place with the *transmitter*,
  - Provides a joint notification with the *transmitter* to the *IESO* indicating the project will come into service,
  - Provides notification through the *IESO Facility Registration* process that the project has started construction, or
  - (for transmission and load projects only in which the *connection applicant* is the *transmitter*) Identifies the project in its Plans for New or Modified Facilities Information Submittal Form for the Reliability Outlook(IMO\_FORM\_1484) for the Outlook assessment, or Plans for Retired, New or Modified Facilities Information Submittal Form (IMO\_FORM\_1494) for other *reliability* assessments.

Unless specified otherwise, notifications must be provided in the form of an email to the *IESO* at [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca).

The *IESO* will acknowledge that a project is committed by placing a “Yes” in the “Committed” column of the “Status of System Impact Assessment Applications” list on the *IESO* website.



A project will lose its “committed” status when the project goes in service, is withdrawn as described in section 3.2, or no longer meets any of the conditions of being committed in which case it is expected that the *connection applicant* will notify the *IESO*.

The *IESO* reserves the right to remove a “committed” status for a project should the *IESO* deem that any previously provided notifications are no longer valid based on publicly available information.

### **3.4 Queue Principles for Generation and Electricity Storage Projects**

Transmission and load projects are not assigned a queue position. Generation and electricity storage projects will be assigned a queue position as described below. Different queue principles are applied to generation projects depending on whether the SIA application was received before or after April 30, 2005.

#### **3.4.1 SIA Applications Received before April 30, 2005**

Independent of their type, SIA applications received before April 30, 2005 were assigned a sequential queue position based on the SIA agreement date. If a *connection applicant* had submitted more than one SIA application for a given site, each SIA application was assigned the same queue position.

A queue position does not confer rights to physical transmission capacity. However, a project earlier in the queue will not be financially disadvantaged in the *IESO-administered markets* as the result of a project later in the queue connecting first. This queue position confers the financial equivalent to physical transmission capacity rights for projects earlier in the queue that do not trigger the need for *reliability*-related transmission upgrades.

#### **3.4.2 SIA Applications Received On or After April 30, 2005**

SIA applications for generation and electricity storage projects received on or after April 30, 2005 are assigned a sequential queue position when they are deemed “committed” as per section 3.3.

The date used to assign the queue position is based on either the power purchase contract date or the CCRA date, but cannot be earlier than the SIA agreement execution date. All generation and electricity storage projects that are successful in a procurement process will be treated as having the same queue date as the date when the results of the procurement process are announced.

At the time a generation or an electricity storage project is assigned a queue position, it receives a “Yes” in the “Committed” column of the Status of System Impact Assessment Applications list.

### **3.5 Loss of Queue Position**

A generation or an electricity storage project that has a “committed” status will lose that status when the project goes in service, is withdrawn as described in section 3.2, or if any of the conditions listed in section 3.3 can no longer be met, or are invalid.

### 3.6 Milestones for Projects

A project needs to meet the following milestones to demonstrate ongoing project viability and a *connection applicant's* commitment to complete the project:

1. The *connection applicant* has entered into a CCRA agreement with the *transmitter* either within 24 months from the completion of the SIA or by October 1<sup>st</sup>, 2014, whichever date is later, and
2. The *connection applicant's* project must be in-service within 36 months of signing the CCRA agreement with the *transmitter*.

If a milestone cannot be met due to circumstances beyond the *connection applicant's* control, the *connection applicant* may request an extension with the *IESO* by initiating a request email to [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca). If an extension is not granted the project will be deemed withdrawn.

The *connection applicant* must confirm that a milestone has been met by notifying the *IESO* at [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca).

- End of Section -

## 4. Criteria for Connection Assessments and Technical Feasibility Studies

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The criteria used by the *IESO* for *connection assessments* are contained in the ["Ontario Resource and Transmission Assessment Criteria"](#) posted on the *IESO* website and any applicable *NPCC* and *NERC* reliability standards.

All *facilities* that inject, withdraw or can both inject and withdraw electrical energy will be assessed for compliance with the performance requirements listed in Appendix 4.2 or Appendix 4.3 of the *Market Rules*, as applicable.

- End of Section -

## 5. Responsibilities

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The *IESO* is responsible for the overall administration and coordination of the CAA process. Depending on the assessment type, the *connection applicants, transmitter(s)*, the *IESO* and consultants have specific responsibilities as described below.

### 5.1 Connection Applicants

*Connection applicants* are required to:

1. initiate the request for *connection assessment* by submitting the appropriate SIA application form to the *IESO*, including the required deposit for generator *connection facilities*, transmission *connection facilities*, load *connection facilities*, *electricity storage facilities* or *ancillary service facilities*, as described in this document,
2. review and provide comments to the *IESO* on the proposed Scope of Work prepared by the *IESO* for the applicable assessment type,
3. execute with the *IESO*, based on the type of assessment required, a Technical Feasibility Study agreement, an SIA agreement or a Cost Recovery agreement for an ESIA,
4. submit responses to *IESO* requests for missing or supplementary information or clarification,
5. review and provide comments to the *IESO* on Technical Feasibility Study reports or SIA reports,
6. safeguard *confidential information* in final SIA and ESIA reports and addendums,
7. adhere to the time lines stipulated in this document,
8. submit requests for time extensions, if required,
9. engage consultants to perform *connection assessment* studies, if applicable,
10. submit and complete the Consent for Connection Cost Recovery Agreement Status Request when requested by the *IESO*,
11. pay, upon receipt of an *invoice*, the costs and expenses incurred by the *IESO* and affected *transmitter(s)* in conducting the SIA or ESIA, and if applicable, in supporting and participating in regulatory proceedings associated with the *connection applicant's* project,
12. pay, upon receipt of an *invoice*, the costs and expenses incurred by the *IESO* in conducting the Technical Feasibility Study,
13. provide project status reports when requested by the *IESO*,
14. confirm when section 3.6 milestones are met, and
15. notify the *IESO* when any of the conditions for project commitment as per section 3.3 have been met or changed.

If a *connection applicant* retains a consultant to perform *connection assessment* studies, the *connection applicant* and their consultant are required to execute a non-disclosure agreement with the *IESO*.

### 5.1.1 Distributor(s)

*Distributor(s)* are required to:

1. initiate the request for *connection assessment* by submitting the appropriate SIA application for embedded electricity storage or embedded generation projects greater than 10 MW<sup>2</sup>, including the required deposit to the *IESO* on behalf of the *electricity storage participant* or the *generator*, as required by the Distribution System Code<sup>8</sup>,
2. review and provide comments to the *IESO* on the proposed Scope of Work prepared by the *IESO* for the embedded generation or the embedded electricity storage project,
3. execute the SIA agreement with the *IESO*,
4. submit to the *IESO* a copy of the *distribution system* Impact Assessment provided for in the Distribution System Code as part of the SIA application,
5. complete other applicable responsibilities identified in section 5.1, and
6. safeguard *confidential information* in final SIA and ESIA reports and addendums.

### 5.2 Transmitter(s)

*Transmitter(s)* are required to:

1. provide *transmission system facilities* ratings<sup>9</sup> to the *IESO* on request,
2. assess the expected impact of project(s) on the *IESO-controlled grid* short circuit levels and protections when requested by the *IESO*,
3. assess compliance of the project with the Transmission System Code<sup>10</sup>, to the extent possible, based on the *connection applicant's* submission,
4. safeguard *confidential information* in final SIA and ESIA reports and addendums,
5. assess the expected impact of the project on the *reliability* of existing *transmission customers* via the Customer Impact Assessment (CIA), provided for in section 6.4 of the Transmission System Code,
6. submit the results of the CIA provided for in section 6.4 of the Transmission System Code to the *IESO* within an agreed-upon timeframe<sup>11</sup> consistent with the schedule for the SIA,
7. provide details specified in the Consent for Connection Cost Recovery Agreement Status Request as per section 8.9 as applicable when requested by the *IESO*, and
8. prepare and issue *invoices* to the *IESO* to cover the costs of studies requested by the *IESO*, as applicable.

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<sup>8</sup> In the event of any inconsistency between this *market manual* and the Distribution System Code, the Distribution System Code shall prevail to the extent of the inconsistency.

<sup>9</sup> Includes: line ratings, transformer ratings, breaker ratings, etc.

<sup>10</sup> In the event of any inconsistency between this *market manual* and the Transmission System Code, the Transmission System Code shall prevail to the extent of the inconsistency.

<sup>11</sup> For project types that have regulated completion targets, the *transmitter* must submit the CIA report to the *IESO* within the regulated timelines.

## 5.3 IESO

The *IESO* is required to perform some or all of the following depending on the assessment type:

1. acknowledge and process all *requests for connection assessment* and related submissions,
2. inform the *connection applicant* of the assessment type to be followed,
3. provide the *connection applicant* a CAA ID number for the project(s),
4. review project data and issue requests for missing or supplementary information or clarification,
5. inform the affected *transmitter(s)* of the project,
6. inform the *connection applicant* of the requirement to contact the *transmitter* regarding the Customer Impact Assessment process,
7. establish the Scope of Work and execute with each *connection applicant*, based on the type of assessment required, a Technical Feasibility Study agreement, an SIA agreement or a Cost Recovery agreement for ESIA,
8. place the project on the project list as described in section 3.1,
9. respect the time lines negotiated with the *connection applicant*, regulated under the *Electricity Act, 1998*, or otherwise stipulated within this document,
10. record all costs and expenses incurred in performing all *connection assessment* activities and, if applicable, in supporting and participating in regulatory proceedings associated with the *applicant's* project,
11. schedule and perform study activities,
12. in consultation with the affected *transmitter(s)*, prepare and negotiate the Scope of Study for short circuit analysis, if applicable,
13. inform the affected *transmitter(s)* of the SIA's findings, including *transmission system* reinforcement requirements, if applicable,
14. issue SIA or ESIA reports to the *connection applicant* and affected *transmitter(s)*,
15. safeguard *confidential information* in final SIA and ESIA reports and addendums;
16. if required by applicable standards or *operating agreements*, issue the SIA or ESIA reports to other affected internal and external entities,
17. issue Technical Feasibility Study reports to the *connection applicant*,
18. *publish* the status of SIA/ESIA applications, as described in Section 3, and SIA/ESIA reports, excluding confidential appendices,, as described in sections 8.11 and 9.9,
19. request that the Consent for Connection Cost Recovery Agreement Status Request be completed by the *connection applicant* and forward a copy to the *transmitter*, if required,
20. issue a Notification of Conditional Approval, a Notification of Final Approval or a Notification of Disapproval with Reasons for the project that was subject to an SIA/ESIA,
21. support and participate, as required, in regulatory proceedings related to Leave to Construct applications for the project,
22. issue *invoices* pertaining to performing all *connection assessment* activities and in supporting and participating in regulatory proceedings associated with the *connection applicant's* project,
23. include, where applicable, projects in the baseline assumptions for future *IESO connection assessments* and other *IESO* forecast and *adequacy* studies,

24. notify the *connection applicant* if study assumptions in the final SIA have changed since its release based on new information obtained, and
25. revoke final SIA and Notification of Conditional Approval and issue notifications under conditions described in section 8.9, if applicable.

If a *connection applicant* retains a consultant to perform SIA studies, the *IESO* is required to:

26. execute a non-disclosure agreement with the *connection applicant* and the consultant,
27. develop a Scope of Study for the consultant,
28. meet with the consultant to discuss the Scope of Study, as well as the reporting requirements and related assumptions that will be required, and
29. provide basecase, dynamic data and other data as may be required.

## **5.4 Consultant (if applicable)**

If a *connection applicant* retains a consultant to perform SIA studies, the consultant is required to:

1. execute a non-disclosure agreement with the *connection applicant* and the *IESO*,
2. perform SIA studies in accordance with the Scope of Study developed by the *IESO*, and
3. prepare a study report in accordance with the reporting requirements identified in the Scope of Study.

- End of Section -

## 6. Submission and Response Methods

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The CAA process requires the submission of various types of information. The preferred method of correspondence is via email to [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca).

All application forms should be submitted by email<sup>12</sup>. Hard copies of the application forms and supporting documents are not required. Where the supporting documentation (e.g. single line diagram) is not suitable for email submission, it should be submitted by mail or courier to the following address.

IESO  
Attn. Connection Assessments  
2635 Lakeshore Rd. West  
Mississauga, ON  
L5J 4R9

The required deposit for a *connection assessment* can be made by cheque or by *electronic funds transfer* as per the details on the appropriate application form. If the required deposit is made by cheque it must be accompanied by a copy of the application.

The *IESO* will correspond with the *connection applicant* via email for requests or general notifications, and via mail or courier if an original *IESO* signature is involved. In cases in which a document bearing a signature is required, an electronic copy shall constitute a good-faith assurance that the signed document is forthcoming and the CAA process may continue.

The CAA process requires an extensive exchange of information between the *IESO* and the *connection applicant*, necessitating a large number of emails and telephone calls. Unless any of the parties requests otherwise, emails and phone calls will not require a follow-up paper copy.

- End of Section -

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<sup>12</sup> To the extent possible, the documents and drawings should be submitted in .pdf format. Signed documents should be scanned in .pdf format. *Connection applicants* intending to send documents in a different format are encouraged to contact the *IESO* in advance.



## 7. Technical Feasibility Study

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### 7.1 Objectives

A Technical Feasibility Study is an optional study *connection applicants* can request from the *IESO*. A *connection applicant* may request an analysis of several connection options, and therefore, there may be more than one project being assessed within a Technical Feasibility Study. The purpose of the Technical Feasibility Study is to:

1. identify any benefits associated with the project(s) in addressing an operability or reliability issue,
2. identify general reliability and operability concerns on the *integrated power system* associated with the project(s), and
3. identify considerations, or recommendations with respect to the design of the project(s) that may address any reliability or operability concerns.

It is the responsibility of the *connection applicant* and the *IESO* to carry out the relevant responsibilities described in section 5.

The exchange of information between the *connection applicant* and the *IESO* will follow the methods described in section 6.

### 7.2 Scope

The scope and timing of each Technical Feasibility Study will be negotiated with the *connection applicant*, and will be based on the particular issues and concerns associated with the project under consideration.

The *IESO* will not conduct a Technical Feasibility Study for the following instances:

1. a request in which the question(s) have been answered in other *IESO* public studies, product(s), or report(s),
2. a request in which the *IESO* deems to be more suitable in another form of study outside of the Connection Assessment and Approval process,
3. a request in which the project(s) is being developed in response to an *IESO* procurement,
4. a request to examine the economic viability of the project(s), or
5. a request to assess congestion associated with the project(s).

Accordingly, *connection applicants* should not submit a Technical Feasibility Study application for any of the aforementioned examples. In the event that an application is submitted for instance (3), the *IESO* has the right to deem the project as withdrawn as per section 3.2. *Connection applicants* may choose to engage a consultant to perform *connection assessment* studies. Upon request by a *connection applicant*, the *IESO* will provide a list of consultants who have indicated an interest in performing *connection assessment* studies. The *IESO* does not give any assurances regarding the performance of any consultant, nor does it assume any liability for performance by a consultant.

## 7.3 Submitting a Technical Feasibility Study Application

A Technical Feasibility Study is initiated by the submission of a Technical Feasibility Study application package to the *IESO*, comprised of the appropriate completed Technical Feasibility Study application form, the appropriate supporting documentation including a single-line diagram(s), and the required deposit as described in section 7.3.1. The [Technical Feasibility Study application form](#) (see Appendix A, Forms) can be downloaded from the *IESO* website. It should be noted that there are specific Technical Feasibility Study application forms for generator *connection facilities*, transmission *connection facilities*, load *connection facilities* or *ancillary service facilities*, respectively. To initiate a request for Technical Feasibility Study for a new or modified *electricity storage facility*, the appropriate *connection facilities* application form for *generators* is to be used. For *electricity storage facilities* that are not seeking a new or modified connection but are interested in providing *ancillary services*, these facilities are to use the *ancillary services* Technical Feasibility Study application form. The Technical Feasibility Study application package must be submitted as described in section 6.

Relevant sections of this Technical Feasibility Study application form must be completed, signed by an authorized representative of the *connection applicant* and submitted to the *IESO* with the required deposit.

By signature, the *connection applicant* will be required to acknowledge that the project will not be developed in response to an *IESO* procurement, adhering to the Technical Feasibility scope requirement indicated in section 7.2. Upon receipt of a Technical Feasibility Study application package and the required deposit, the *IESO* will assign an ID number with the format YEAR-*nnn*, where the first four digits represent the year the Technical Feasibility Study application was received, and the three digits following the year are a sequential number. The *IESO* then sends an email to the *connection applicant* acknowledging receipt of the Technical Feasibility Study application and providing the ID number. The ID number is to be referenced in all subsequent steps in the Technical Feasibility Study process pertaining to the particular project.

### 7.3.1 Required Deposit

A deposit of \$20,000 must be remitted against the anticipated cost and expense of the Technical Feasibility Study. Final costs are calculated after completion of the Technical Feasibility Study, and an *invoice* is issued to the *connection applicant*, as described in section 7.8. No guarantee is given that the final costs will be less than the deposit amount.

Technical Feasibility Study applications submitted to the *IESO* with an *electronic funds transfer* will not be processed until the *IESO* confirms that the deposit has been received.

## 7.4 Missing Information and Information Clarification

If the *IESO's* review of the submitted material reveals that any information is missing or requires clarification, the *connection applicant* will receive a request for additional information or clarification. If the *connection applicant* cannot provide specific equipment data, the *IESO*, in consultation with the *connection applicant*, may propose suitable typical values to be used in the Technical Feasibility Study.

## 7.5 Technical Feasibility Study Agreement Execution

The execution of a Technical Feasibility Study agreement between the *IESO* and the *connection applicant* consists of the following steps:

1. When the *IESO* determines the information contained in the Technical Feasibility Study application package is complete and the required deposit has been paid, the *IESO* prepares the draft Scope of Work for the Technical Feasibility Study to be negotiated with the *connection applicant*. This Scope of Work is attached as Schedule 1 to the Technical Feasibility Study agreement,
2. The *IESO* sends an undated copy of the Technical Feasibility Study agreement, including a proposed Scope of Work, to the *connection applicant*,
3. Normally, within ten *business days* of the receipt of the Technical Feasibility Study agreement from the *IESO*, the Scope of Work is negotiated between the *IESO* and the *connection applicant*. Once the Scope of Work is agreed upon, the *connection applicant* prints, signs and returns to the *IESO* a scanned copy<sup>13</sup> of the Technical Feasibility Study agreement,
4. The *IESO* produces two paper copies of the Technical Feasibility Study agreement based on the files received from the *connection applicant*.
5. The *IESO* Chief Operating Officer (COO), or designate, signs each copy, and assigns a date to the Technical Feasibility Study agreement (the agreement execution date).
6. Normally within ten *business days* of receipt of the Technical Feasibility Study agreement signed by the *connection applicant*, the *IESO* mails one copy of the executed and dated Technical Feasibility Study agreement to the *connection applicant*.
7. Any subsequent revisions to Schedule 1 (Scope of Work) that are agreed upon by the *connection applicant* and the *IESO* will be subject to the terms and conditions of the Technical Feasibility Study agreement.

## 7.6 Timelines

The completion date for a Technical Feasibility Study is negotiated between the *IESO* and the *connection applicant* as part of the Scope of Work. It depends on factors such as the agreed-upon set of study activities, the complexity of the project, and the availability of *IESO* resources.

## 7.7 Technical Feasibility Study Report

The Technical Feasibility Study report will provide the following (if applicable):

1. a list of *IESO market rule* and Transmission System Code requirements that need to be satisfied by the project(s),
2. an examination of existing transmission limitations that may occur in real-time and the impact of the project(s) on these limitations.

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<sup>13</sup> *Connection applicants* that require original signatures on the FS agreement must mail or courier two signed paper copies to the *IESO* for execution.

3. *reliability* criteria that is/is not satisfied with the project(s) and possible measures that would need to be implemented by the *connection applicant* to ensure that criteria would be met.
4. a description of any benefits and concerns regarding the project(s) on the operability and *reliability* of the *integrated power system*.
5. a list of any specific issues that require further consideration in a subsequent SIA.
6. analysis in response to specific technical questions that the connection applicant may have.

The Technical Feasibility Study report will not provide the following:

1. an economic viability assessment of the project(s),
2. limit values with respect to network capability to connect generation, load, or electricity storage.
3. an assessment of the frequency of congestion (if applicable) and whether it is acceptable
4. a reassessment of questions that have previously been answered in other *IESO* public studies, products, or reports.

Due to its confidential nature, a Technical Feasibility Study report will not be posted on the *IESO* website.

## 7.8 Costs

Once the Technical Feasibility Study report has been issued, the *connection applicant* will receive an *invoice* from the *IESO* to cover the total costs and expenses incurred by the *IESO* in conducting the Technical Feasibility Study. If the total costs and expenses are less than the deposit amount, the *connection applicant* will receive a refund for the difference.

The *IESO* will normally update the *connection applicant* during the 2<sup>nd</sup> and 4<sup>th</sup> quarters of the year of the estimated assessment costs and expenses incurred to date. The *connection applicant* can then decide whether or not to continue with the Technical Feasibility Study. The costs and expenses provided by the *IESO* will be backdated two to four weeks due to the *IESO's* internal financial processing schedules.

If the *connection applicant* withdraws or is deemed to have withdrawn its Technical Feasibility Study application before the completion of the assessment, the *connection applicant* will receive an *invoice* from the *IESO* to cover the total costs and expenses incurred by the *IESO* in conducting the Technical Feasibility Study up to and including the date of the *IESO's* receipt of a Notification of Withdrawal. If the total costs and expenses are less than the deposit amount, the *connection applicant* will receive a refund for the difference.

Details of the cost recovery mechanism are found in the [Technical Feasibility Study agreement template](#).

- End of Section -

## 8. System Impact Assessment

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### 8.1 Objectives

An SIA is a mandatory phase of the CAA process. SIAs are conducted to determine the impact of projects on the *reliability* of the *integrated power system* and to identify enhancements to the *transmission system* that would be required by the *IESO* in order to mitigate any adverse *reliability* impacts. SIAs are conducted with input from the affected *transmitter(s)* and in consultation with the *connection applicant*.

It is the responsibility of the *connection applicant*, the affected *transmitter(s)* and the *IESO* to carry out the relevant responsibilities described in section 5.

The exchange of information between the *connection applicant* and the *IESO* will follow the methods described in section 6.

### 8.2 Scope

SIAs focus is on *reliability* issues related to the *integrated power system*. Studies are conducted to assess the extent to which all applicable assessment criteria noted in section 4 are met, and where this is not the case, to identify the mitigating measures required by the *IESO*.

In an SIA, a single project, or a portfolio of projects, is assessed to determine the impact of the project or portfolio of projects on the *reliability* of the *integrated power system*, and to identify the *transmission system* upgrades required to mitigate any negative *reliability* impacts.

#### 8.2.1 Basecase Assumptions

The basecase used to perform SIA studies will include all projects that are committed at the date of the assessment. For *generation* and electricity storage this would also include any new capacity at existing *generating facilities* or *electricity storage facilities*.

The *IESO* may need to confirm in-service dates of other projects in order to establish the study assumptions for the basecase. These updates will be obtained through requests to *connection applicants* as described in section 10. Generation or electricity storage projects that have lost their queue position in accordance with section 3.5 will be removed from basecase assumptions.

#### 8.2.2 Other Studies

*Connection applicants* should make available to the *IESO* any relevant studies that they have undertaken, or which have been undertaken on their behalf. The *IESO* will utilize the study results to the fullest extent possible in preparation of the SIA report. Where the *IESO* determines that the study is incomplete or inadequate, it will identify and conduct such further studies and assessments as may be required and will issue its SIA report accordingly.

### 8.2.3 Consultants

*Connection applicants* may choose to engage a consultant to perform SIA studies. Upon request by a *connection applicant*, the *IESO* will provide a list of consultants who have indicated an interest in performing SIA studies. The *IESO* does not give any assurances regarding the performance of any consultants, nor does it assume any liability for performance by a consultant.

## 8.3 IESO Study Activities

It is the responsibility of the *IESO* to:

1. establish basecase assumptions,
2. verify compliance of projects with the *market rules*, applicable standards and *IESO* policies and procedures,
3. assess the dynamic performance of the *integrated power system* and the project using the criteria noted in section 4,
4. assess the expected impact of the project, using the criteria noted in section 4, on:
  - prevailing operating *security limits* and transfer capabilities of the *integrated power system*,
  - operating voltages of the *IESO-controlled grid*,
  - operating flexibility of the *IESO-controlled grid*, and
  - the ability of existing *connections* to deliver to or withdraw power from the *IESO-controlled grid*,
5. determine the need for additional *facilities* or for modifications to existing *facilities* that may be required to incorporate the project and mitigate any material adverse impacts on the *reliability* of the *integrated power system*,
6. provide the *transmitter(s)* with advance notification of SIA study results to facilitate completion of the Customer Impact Assessment (CIA) process, and
7. take into consideration the results of CIA(s) provided by the *transmitter(s)* in formulating *IESO* requirements for system modifications,

## 8.4 Submitting an SIA Application

A *request for connection assessment* is initiated by the submission of an SIA application package to the *IESO*, comprised of the appropriate completed<sup>14</sup> SIA application form, the appropriate supporting documentation including a single-line diagram(s), and the required deposit, as described in section 8.4.2. The appropriate [SIA application forms](#) (see Appendix A, Forms) can be downloaded from the *IESO* website. It should be noted that there are specific SIA application forms for *generator connection facilities*, *transmission connection facilities*, *load connection facilities* or *ancillary service facilities* respectively. To initiate a *request for connection assessment* for a new or modified *electricity storage facility*, the appropriate *connection facilities* application form for *generators* is to be used. For *electricity storage facilities* that are not seeking a new or modified connection but are

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<sup>14</sup> For projects that have regulated completion timelines, the application form contains specific requirements for being deemed “complete”.

interested in providing *ancillary services*, these *facilities* are to use the *ancillary services* application form. The SIA application package must be submitted as described in section 6.

Relevant sections of this SIA application form must be completed, signed by an authorized representative of the *connection applicant*, and submitted to the *IESO* with the required deposit.

Upon receipt of an SIA application and the required deposit, the *IESO* will assign an ID number with the format YEAR-*nnn*, where the first four digits represent the year the SIA application was received and the three digits following the year are a sequential number. The *IESO* will send an email to the *connection applicant* acknowledging receipt of the SIA application and including the ID number, normally within five *business days*. The ID number is to be referenced in all subsequent steps in the CAA process pertaining to the particular project. The *IESO* also notifies the applicable *transmitter(s)* of the SIA application.

### 8.4.1 Embedded Generators and Embedded Electricity Storage

For proposed generation or electricity storage projects greater than 10 MW planning to *connect* to a *distribution system* (including new capacity at existing *generation facilities* or *electricity storage facilities*), the *distributor* is considered the official *connection applicant*. The *distributor* is required to initiate the *request for connection assessment* by submitting the appropriate *connection facilities* SIA application package for *generators* and the required deposit to the *IESO* on behalf of the *generator* or the *electricity storage participant*.

### 8.4.2 Required Deposit

Other than as approved by the *IESO* Chief Operating Officer (COO) or delegate, the following study deposits are required for SIAs:

Type of Project	Amount of Deposit
<i>Load facility</i>	\$20,000
<i>Embedded generation facility</i>	\$20,000
<i>Embedded electricity storage facility</i>	\$20,000
<i>Ancillary services facility</i>	\$20,000
<i>Non-embedded generation facility</i>	\$30,000
<i>Non-embedded electricity storage facility</i>	\$30,000
<i>Transmission facility</i>	\$40,000

The above deposits must be remitted against the anticipated cost and expense of the SIA studies for the project. Final costs are calculated after completion of the SIA, and an *invoice* is issued to the *connection applicant*, as described in section 8.11. No guarantee is given that the final costs will be less than the deposit amount.

SIA applications submitted to the *IESO* with an *electronic funds transfer* will not be processed until the *IESO* confirms that the deposit has been received.

## 8.5 Missing Information and Information Clarification

If the *IESO's* review of the submitted SIA application package reveals that any information is missing or requires clarification, the *connection applicant* will receive a request for additional information or clarification. If the *connection applicant* cannot provide specific equipment data, the *IESO*, in consultation with the *connection applicant*, may propose suitable typical values to be used in the study. If typical values are used, *connection applicants* must be aware that they are committing to these values as design specifications, and it is their responsibility to ensure that installed *facilities* have similar or better performance.

## 8.6 SIA Agreement Execution

The execution of an SIA agreement between the *IESO* and the *connection applicant* consists of the following steps:

1. When the *IESO* determines the information contained in the SIA application package is complete and the required deposit has been paid, the *IESO* prepares a draft Scope of Work for the SIA study to be negotiated with the *connection applicant*. This Scope of Work is attached as Schedule 1 to the SIA agreement.
2. The *IESO* sends an undated copy of the SIA agreement, including a proposed Scope of Work, to the *connection applicant*.
3. A Scope of Work is negotiated between the *IESO* and the *connection applicant*, normally within ten *business days* of the receipt of the SIA agreement from the *IESO*. Once the Scope of Work is agreed upon, the *connection applicant* prints, signs and returns to the *IESO* a scanned copy<sup>15</sup> of the SIA agreement.
4. The *IESO* produces two paper copies of the SIA agreement based on the files received from the *connection applicant*.
5. The *IESO* Chief Operating Officer (COO), or designate, signs each copy, and assigns a date to the SIA agreement (the agreement execution date).
6. Normally within ten *business days* of receipt of the SIA agreement signed by the *connection applicant*, the *IESO* mails one copy of the executed and dated SIA agreement to the *connection applicant*.
7. Any subsequent revisions to Schedule 1 (Scope of Work) that are agreed upon by the *connection applicant* and the *IESO* will be subject to the terms and conditions of the SIA agreement.

### 8.6.1 Embedded Generators and Embedded Electricity Storage

Upon receipt of the SIA application from the *distributor* for proposed generation or electricity storage project(s) planning to *connect* to a *distribution system* (including new capacity at existing *generation facilities* or *electricity storage facilities*), the *IESO* and the *distributor* negotiate the Scope of Work.

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<sup>15</sup> *Connection applicants* that require original signatures on the SIA agreement must mail or courier two signed paper copies to the *IESO* for execution.



An SIA agreement incorporating the agreed-upon Scope of Work is then executed with the *distributor* according to steps 2 through 7 outlined in section 8.6.

## 8.7 Timelines

The order in which *connection assessments* are conducted will be determined by the *IESO* on an individual basis, in consultation with the *connection applicant*, to meet the needs of both the *connection applicant* and the *IESO*. Considerations will include regulated completion targets, *reliability* needs, the project in-service date and procurement process timelines.

In the case where several SIA applications are associated with the same procurement process, the order in which these assessments will be conducted will be based on the regulated completion targets or their executed SIA agreement date, whichever is applicable.

### 8.7.1 Phase 1 - Production of draft SIA report

The draft SIA report will normally be completed within 120 calendar days of the start date of the *IESO* study activities or as mutually agreed by the *connection applicant* and the *IESO*, and will contain the information described in section 8.8.

For projects that have 150 days regulated completion target, the draft SIA report will normally be completed within 100 calendar days after receipt of the complete SIA application<sup>16</sup>. *Connection applicants* and *transmitters* are expected to provide their comments on the draft SIA report within 10 calendar days.

The draft SIA report will be submitted to the *connection applicant* and to the relevant *transmitter(s)* for review. The *connection applicant* and affected *transmitter(s)* are expected to review the draft SIA report to determine if the information related to the *project* and the *transmission system* is accurate and the requirements for *connection* are well understood. In addition, the *connection applicant* and the affected *transmitter(s)* are expected to indicate whether the draft report contains commercially sensitive or proprietary information that, in the opinion of the *connection applicant* or *transmitter*, should remain confidential.

### 8.7.2 Phase 2 - Production of revised draft SIA report

The revised draft report will be issued by the *IESO* to the *connection applicant* and the relevant *transmitter(s)*. The report will reflect comments received during Phase 1, any additional analysis or investigation required as a result of Phase 1 and, if applicable, preliminary Customer Impact Assessment results.

For projects that have 150 days regulated completion target, the *IESO* will normally prepare and issue the revised draft SIA report within 130 calendar days after receipt of the complete SIA application for *connection assessment* to address the comments received and include the relevant CIA findings provided by the affected *transmitter(s)*. The revised draft SIA report will normally be submitted to the *connection applicant* and affected *transmitter(s)* for a 10 calendar days review period.

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<sup>16</sup> An application for *connection assessment* is complete when it contains information sufficient to allow both the *IESO* and the *transmitter* to carry out their *connection assessment* activities.

### 8.7.3 Phase 3 - Production of final SIA report

The final SIA report, based on the revised draft SIA report<sup>17</sup>, will be issued to the *connection applicant*, and affected *transmitter(s)* when the Notification of Conditional Approval or the Notification of Disapproval with Reasons are signed by the *IESO*.

For projects that have regulated completion targets, the final SIA report will be issued to the *connection applicant* and affected *transmitter(s)* within the timelines required under the applicable regulation(s).

The final SIA report, excluding confidential appendices, will be posted on the *IESO* website, typically at the beginning of the next month.

### 8.7.4 Phase 4 – Production of addendum to final SIA report (if required)

More effective or economic solutions to implement the requirements of the SIA may be identified by the *connection applicant* or the relevant *transmitter(s)* when the detailed design work is undertaken. Additionally, the *connection applicant* may revise the original project assessed by the *IESO* or the *IESO* may obtain new information not captured in the study assumptions of the final SIA report. In these cases, the *IESO* will consider the proposed changes and will issue an addendum to the final SIA report, except when the conditions listed in section 3.2 apply.

Addenda to the final SIA reports are not subject to regulated completion targets. The completion date is negotiated between the *IESO* and the *connection applicant* and depends on factors such as the agreed-upon set of study activities, the complexity of the project changes and the availability of *IESO* resources. Reasonable efforts will be made to accommodate the *connection applicant's* scheduled in-service date.

## 8.8 Final SIA Report

The final SIA report will contain the following information:

- a high level description of the project,
- the requirements for the project that must be satisfied before receiving final approval to connect,
- a description of the system modifications that are required by the *IESO* in order to mitigate adverse reliability impacts of the project,
- an assessment of whether or not the project satisfies applicable criteria and, if not, which criteria are not satisfied,
- a description of other inadequacies, if applicable, of the existing power system that were identified in the course of the studies but are not the result of the project, and
- a summary of relevant study results.

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<sup>17</sup> For a period of time, due to procedural issues, the *IESO* posted a series of agreed draft SIA reports under the designation “final draft report”. For the affected projects a final SIA report was never produced. For those projects the “final draft report” should be considered “final SIA report”.

The final SIA report may contain information that falls under the definition of *confidential information*, including information that, if disclosed, could reasonably be expected to pose a potential security threat to the *integrated power system*, the *IESO-administered markets*, or those of neighbouring jurisdictions. The IESO may place *confidential information* in appendices of the final SIA report, which the IESO, *connection applicant* and affected *transmitter(s)* will protect as described in section 12.

## 8.9 Consent for Connection Cost Recovery Agreement Status Request

If a project requires a connection cost recovery agreement (CCRA) to be signed with the *transmitter*, the *connection applicant* will be required to complete and sign the “Consent for Connection Cost Recovery Agreement Status Request” form prior to the issuance of the final SIA report. By signing this form, the *connection applicant* allows the IESO to request and receive from the *transmitter*:

- (1) The date the connection applicant begins discussions with the transmitter regarding a CCRA, and
- (2) The date the CCRA is signed by the transmitter and connection applicant.

The “Consent for Connection Cost Recovery Agreement Status” request form can be found on the IESO website (see Appendix A, Forms).

## 8.10 Notification of Conditional Approval or Notification of Disapproval with Reasons

If a project is acceptable to the IESO, subject to the implementation of any applicable requirements identified in the final SIA report, a Notification of Conditional Approval of the project is issued by the IESO to the *connection applicant*, affected *transmitter(s)* and to the *Ontario Energy Board*.

If there are no feasible system modifications that will mitigate the adverse *reliability* impacts of the project, the *connection applicant* and the affected *transmitter(s)* are notified by means of a Notification of Disapproval with Reasons of the project. The Notification of Disapproval with Reasons of the project is issued by the IESO to the *connection applicant*, affected *transmitter(s)* and to the *Ontario Energy Board*.

A previously issued Notification of Conditional Approval will be revoked in the event that the IESO deems a re-assessment is required (i) due to changes to the original project proposed by either the *transmitter* or the *connection applicant* or (ii) due to new information changing study assumptions of the final SIA report.

In the latter case, the IESO will notify the *connection applicant* by issuing a Revocation of Notification of Conditional Approval of Connection Proposal letter indicating that the Notification of Conditional Approval has been revoked and that a re-assessment is required.

## 8.11 Publication of the final SIA Report

The final SIA report, excluding confidential appendices, will be *published* on the IESO website, typically early in the month following the month in which the Notification of Conditional Approval or Notification of Disapproval with Reasons and the final SIA report have been issued to the *connection*

*applicant* and affected *transmitter(s)*. Access to final SIA report, excluding confidential appendices, is provided via hyperlinks within the project list, as described in section 3.1 of this document.

Any addendum to the final SIA report will be *published* in the same manner as the related SIA report, typically in the month following the month in which the addendum is issued to the *connection applicant* and affected *transmitter(s)*.

## 8.12 Costs

Upon completion of the SIA, the *connection applicant* will receive an *invoice* from the *IESO* to cover the total costs and expenses incurred by the *IESO* and the affected *transmitter(s)* in conducting the SIA. If the total costs and expenses are less than the deposit amount, the *connection applicant* will receive a refund for the difference.

The *IESO* will normally update the *connection applicant* during the 2nd and 4th quarters of the year of the estimated assessment costs and expenses incurred to date. The *connection applicant* can then decide whether or not to continue with the SIA. The costs and expenses provided by the *IESO* will be backdated two to four weeks due to the *IESO's* internal financial processing schedules.

As indicated in section 2.2.1, the *connection applicant* must update their project information when their design and equipment procurement processes are concluded. The *IESO* will study the post-SIA changes and, if applicable, produce an addendum to the final SIA report.

If alternatives to the original project are proposed by either the *transmitter* or the *connection applicant* the *IESO* will study the post-SIA changes and, if applicable, produce an addendum to the SIA report.

The *IESO* may also require a re-assessment based on new information obtained by the *IESO* not captured in the final SIA report. The *IESO* will study the post-SIA changes and, if applicable, produce an addendum to the SIA report.

In the cases above, the *connection applicant* will be separately invoiced by the *IESO* for any *IESO* costs and expenses incurred in the assessment of alternatives and the preparation of an addendum to the final SIA report. If the *connection applicant* withdraws or is deemed to have withdrawn its project before the completion of the assessment, the *connection applicant* will receive an *invoice* from the *IESO* to cover the total costs and expenses incurred by the *IESO* in conducting the SIA up to and including the date of the *IESO's* receipt of a Notification of Withdrawal or submission of the Notification of Deemed Withdrawal. The costs and expenses of performing additional SIA studies as a result of the *connection applicant's* withdrawal of its request, up to an amount of \$15,000, will also be invoiced to the *connection applicant*. If the total costs and expenses are less than the deposit amount, the *connection applicant* will receive a refund for the difference.

The *connection applicant* will be separately invoiced by the *IESO* for any *IESO* costs and expenses incurred as the result of the *IESO* in supporting and participating in regulatory proceedings associated with the project.

Details of the cost recovery mechanism are found in the SIA agreement.

- End of Section -

## 9. Expedited System Impact Assessment

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### 9.1 Objectives

A detailed SIA may not be necessary for projects that do not represent significant system changes and are not expected to have a major impact on the *reliability* of the *integrated power system*. In this case an expedited SIA (ESIA), which involves a simple study, will be conducted. The *IESO* will determine whether an SIA or an ESIA is appropriate upon receiving the request for *connection assessment*.

It is the responsibility of the *connection applicant*, the affected *transmitter(s)* and the *IESO* to carry out the relevant responsibilities described in section 5.

The exchange of information between the *connection applicant* and the *IESO* will follow the methods described in section 6.

### 9.2 Guidelines for Determining if an ESIA is Appropriate

As a guideline, an ESIA will be appropriate for the following projects:

1. where the electrical characteristics of *generation facilities* or *electricity storage facilities* are improved by less than 5%, do not exceed accepted design standards or tolerances, and are in conformance with Appendix 4.2 of the *market rules*,
2. like-for-like replacement of existing *transmission system facilities* where there is no connectivity change on the system, and no new contingencies are created,
3. where the electrical characteristics of a *transmission system facility* are changed by less than 10%,
4. *connection stations* and lines where the line tap is short, the total capacity is not expected to exceed 10 MW, the load does not include significant reactive power requirements such as those associated with large motors, furnaces or other similar *facilities*, and there is no significant change in system impedance,
5. addition of feeder breakers at system voltages less than 50 kV that are not expected to affect the total capacity by more than 10 MW,
6. reactive compensation devices connected at system voltages less than 50 kV (except at the tertiary of a transmission level autotransformer), or
7. protection changes, using approved standards and equipment, which are not expected to require studies to determine if there is an adverse impact on the *reliability* of the *integrated power system*.

## 9.3 Submitting an Expedited SIA Application

A *connection applicant* may initiate a *request for connection assessment* that appears to meet the guidelines described in section 9.2 by submitting the appropriate SIA application and the documents containing all relevant technical information and project details. The appropriate [SIA application form](#) (see Appendix A, Forms) can be downloaded from the *IESO* website. It should be noted that there are specific SIA application forms for generator *connection facilities*, transmission *connection facilities*, load *connection facilities* or *ancillary service facilities* respectively. To initiate a *request for connection assessment* for a new or modified *electricity storage facility*, the appropriate *connection facilities* application form for *generators* is to be used. For *electricity storage facilities* that are not seeking a new or modified connection but are interested in providing *ancillary services*, these *facilities* are to use the *ancillary services* application form. The SIA application must be submitted as described in section 6.

The *IESO* will notify the *connection applicant* if an ESIA is appropriate for the project normally within five *business days* following receipt of the SIA application.

The *IESO* will assign a number with the format YEAR-EXnnn, where the first four digits are the year the SIA application was received and the three digits following the "EX" are a sequential number. The *connection applicant* will be notified if additional information is required. The ID number is to be referenced in all subsequent steps in the CAA process pertaining to the particular project. The *IESO* also notifies the applicable *transmitter(s)* of the SIA application.

### 9.3.1 Cost Recovery Agreement

The *connection applicant* will not be required to submit a deposit for an ESIA, but will be required to agree to pay for the total costs and expenses associated with all of their ESIA's by signing a Cost Recovery agreement. The *IESO* will negotiate a Cost Recovery agreement with each unique *connection applicant* before commencing the first ESIA for that *connection applicant*. This Cost Recovery agreement will also cover all subsequent ESIA's initiated by the *connection applicant*.

If the *IESO* determines that an SIA is required instead of an ESIA, the *IESO* and the *connection applicant* will follow the process described in section 8.

## 9.4 Missing Information and Information Clarification

If the *IESO's* review of the submitted material reveals that information is missing or requires clarification, the *connection applicant* will receive a request for additional information or clarification. If the *connection applicant* cannot provide specific equipment data, the *IESO*, in consultation with the *connection applicant*, may propose suitable typical values to be used in the ESIA. If typical values are used, *connection applicants* must be aware that they are committing to these values as design specifications, and it is the responsibility of the *connection applicant* to ensure that installed *facilities* have similar or better performance.

## 9.5 Timelines

The completion date for an ESIA is negotiated between the *IESO* and the *connection applicant* and usually depends on the in-service date of the project and the availability of *IESO* resources.

## 9.6 ESIA Report

The final ESIA report will contain the following information:

- a high level description of the project,
- the requirements for the project that must be satisfied before receiving final approval to *connect*,
- an assessment of whether or not the project satisfies applicable criteria, and if not, which criteria are not satisfied,
- a description, if applicable, of other inadequacies of the existing power system that were identified in the course of the studies, and
- a summary of relevant study results, if applicable.

The final ESIA report may contain information that falls under the definition of *confidential information*, including information that, if disclosed, could reasonably be expected to pose a potential security threat to the *integrated power system*, the *IESO-administered markets*, or those of neighbouring jurisdictions. The IESO may place *confidential information* in appendices of the final ESIA report, which the IESO, *connection applicant* and affected *transmitter(s)* will protect as described in section 12.

It should be noted that prior to producing the final ESIA report, the draft ESIA report will be submitted to the *connection applicant* and to the relevant *transmitter(s)* for review. The *connection applicant* and affected *transmitter(s)* are expected to review the draft ESIA report to determine if the information related to the *project* and the *transmission system* is accurate and the requirements for *connection* are well understood. In addition, the *connection applicant* and the affected *transmitter(s)* are expected to indicate whether the draft report contains commercially sensitive or proprietary information that, in the opinion of the *connection applicant* or *transmitter*, should remain confidential.

## 9.7 Consent for Connection Cost Recovery Agreement Status Request

If a project requires a connection cost recovery agreement (CCRA) to be signed with the *transmitter*, prior to the issuance of the final SIA report, the *connection applicant* will be required to complete and sign the “Consent for Connection Cost Recovery Agreement Status Request” form. By signing this form, the *connection applicant* allows the IESO to request and receive from the *transmitter*:

- (1) The date the *connection applicant* begins discussions with the transmitter regarding a CCRA, and
- (2) The date the CCRA is signed by the transmitter and *connection applicant*.

The “Consent for Connection Cost Recovery Agreement Status” request form can be found on the IESO website (see Appendix A, Forms).

## 9.8 Notification of Conditional Approval, Notification of Final Approval or Notification of Disapproval with Reasons

If a project is acceptable to the *IESO*, subject to the implementation of any applicable requirements identified in the ESIA report, a Notification of Conditional Approval of the project is issued by the *IESO* to the *connection applicant* and the affected *transmitter(s)*.

If a project is acceptable to the *IESO*, with no requirements identified in the ESIA report, a Notification of Final Approval of the project is issued by the *IESO* to the *connection applicant* and the affected *transmitter(s)*.

If the project has an adverse *reliability* impact and no feasible mitigating measures can be identified, the *connection applicant* and the affected *transmitter(s)* are notified by means of a Notification of Disapproval with Reasons of the project. The Notification of Disapproval with Reasons of the project is issued by the *IESO* to the *connection applicant* and the affected *transmitter(s)*.

A previously issued Notification of Conditional Approval will be revoked in the event that the *IESO* deems a re-assessment is required due to alternatives to the original project proposed by either the *transmitter* or the *connection applicant* or due to new information changing study assumptions of the final SIA report.

In the latter case, the *IESO* will notify the *connection applicant* by issuing a Revocation of Notification of Conditional Approval of Connection Proposal letter indicating that the Notification of Conditional Approval has been revoked and that a re-assessment is required.

## 9.9 Publication of ESIA Report

The final ESIA report, excluding confidential appendices, will be *published* on the *IESO* website, typically early in the month following the month in which the Notification of Conditional Approval, Notification of Final Approval or Notification of Disapproval with Reasons and the final ESIA report have been issued to the *connection applicant* and the affected *transmitter(s)*. Access to the final ESIA report, excluding confidential appendices, is provided via hyperlinks within the Status of System Impact Assessment Applications list, as described in section 3.1 of this document.

## 9.10 Costs

The *IESO* sends an *invoice* to the *connection applicant* every quarter, if applicable, detailing the total costs and expenses associated with conducting all ESIA's for that *connection applicant* in the previous quarter or quarters, if necessary.

- End of Section -



## 10. Project Status Reporting

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All *connection applicants* may periodically be requested by the *IESO* to provide a status report of their proposed connection with respect to its progress. The [project status report form](#) can be found on the *IESO* website (see Appendix A, Forms).

Such requests will be made by the *IESO* as often as required in order to establish baseline assumptions for the *IESO's reliability* outlook reports as described in the *market rules*, Chapter 5, section 7.

The *IESO* may also make such requests before the start of an SIA where other projects may impact the SIA. Based on the information received, the *IESO* will determine the study assumptions for the SIA.

Projects for which the *connection applicants* fail to comply with the project status reporting requirements will be withdrawn as described in section 3.2.

- End of Section -

# 11. Withdrawal

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At any point in the CAA process, a *connection applicant* can withdraw its project or the *IESO* may deem a project to be withdrawn based on the criteria outlined in section 3.2

Where a *connection applicant* withdraws or is deemed to have withdrawn its project in accordance with the provisions of this document, the *connection applicant* remains responsible for any costs and expenses incurred by the *IESO*, as described in sections 8.11 and 9.9 for the applicable assessment type.

- End of Section -

## 12. Information Confidentiality

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Except as described below, *confidential information* submitted by a *connection applicant* in support of its project, further to a request made by the *IESO* or as otherwise required by this document, shall be treated as *confidential information* by the *IESO* in the same manner as the *IESO* treats *confidential information* received from *market participants* under the *market rules*. Specifically, the *IESO* will deal with such *confidential information* in the manner set forth in section 5.2 of Chapter 3 of the *market rules*, and the provisions of section 5.3 of Chapter 3 of the *market rules* similarly apply to the *IESO* when dealing with such *confidential information*, in both cases as though the references in those sections to a *market participant* were references to the *connection applicant*.

By way of exception, and notwithstanding the preceding paragraph, the *IESO* may disclose *confidential information* received from a *connection applicant*:

- to affected transmitter(s), where required to enable such transmitter(s) to carry out their responsibilities as described in section 6 of Chapter 4 of the *market rules* and in this document, and for the purposes of their associated obligations under the Transmission System Code, and
- where the *confidential information* is contemplated by this document or any form, letter or agreement referred to in this document to be disclosed by the *IESO* or the affected transmitter(s).

Where the *IESO* discloses *confidential information* to a consultant, *connection applicant*, or affected transmitter, such consultant, *connection applicant*, or transmitter may not, except as permitted by Section 5.3 of Chapter 3 of the *market rules*<sup>18</sup>, disclose or use such information other than for the purpose of carrying out its responsibilities as described in Section 6 of Chapter 4 of the *market rules*, the Transmission System Code and this document. *Confidential information*, including information that, if disclosed, could reasonably be expected to pose a potential security threat to the *integrated power system*, the *IESO-administered markets*, or those of neighbouring jurisdictions may also be protected under *reliability standards*.

Upon completion of an SIA/ESIA, the final SIA/ESIA report, excluding confidential appendices, will be posted on the *IESO* website. The *connection applicant* will have an opportunity to review the draft SIA/ESIA reports for commercially sensitive or proprietary information, as further described in section 8.7.1 and 9.6, prior to the issuance of the final report.

- End of Section -

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<sup>18</sup> For this purpose, references in that Section shall be considered references to an affected transmitter.

## 13. Connection Applicant Actions Subsequent to the Connection Assessment and Approval Process

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Following receipt of a Notification of Conditional Approval for a project from the *IESO*, the *connection applicant* will be required to undertake some or all of the following actions in order to construct and operate new *generation*, electricity storage, transmission, *load* or *ancillary services facilities*.

- In accordance with Section 92 of the *Ontario Energy Board Act, 1998*, the *connection applicant* may be required to seek an order granting leave to construct from the *Ontario Energy Board*.
- The *connection applicant* may be required to enter into an agreement with the relevant *transmitter(s)* to cover the cost of preparing cost estimates for implementing the system modifications required by the *IESO*.
- In accordance with the Transmission System Code, the *connection applicant* is required to enter into a *Connection Agreement* with the relevant *transmitter(s)*.
- In accordance with the *market rules* and before final connection approval is issued by the *IESO*, the *connection applicant* is required to complete the Registration process with the *IESO* in order to *connect* and to participate in one or more of the *IESO-administered markets*. During the *IESO* Registration process, *connection applicants* will be required to demonstrate to the *IESO* that all requirements identified in the SIA report have been satisfied. Details with respect to the [IESO Registration process](#) can be found in the *IESO* website.

- End of Section -

## Appendix A: Forms

The following forms, letters and agreements are used in this Procedure.

Form Number	Form Name
IMO_FORM_1380	Technical Feasibility Study Application – Generation Facilities
IMO_FORM_1381	Technical Feasibility Study Application – Transmission Facilities
IMO_FORM_1052	Technical Feasibility Study Application – Load Facilities
IMO_FORM_1174	Technical Feasibility Study Application – Ancillary Services Facilities
IMO_FORM_1536	System Impact Assessment Application (IESO)/ Customer Impact Assessment Application (Hydro One) for Generation Facilities
IMO_FORM_1537	System Impact Assessment Application – Transmission Facilities
IMO_FORM_1538	System Impact Assessment Application (IESO)/ Customer Impact Assessment Application (Hydro One) for Load Facilities
IMO_FORM_1539	System Impact Assessment Application – Ancillary Services Facilities
IESO_FORM_1706	System Impact Assessment Application - Renewable Energy Generation Facility Application to Request a Connection Assessment for Hydro One
IESO_FORM_1707	System Impact Assessment Application - Renewable Energy Generation Facility Application to Request a Connection Assessment for GLP Transmission
IMO_FORM_1073	Notification of Withdrawal
IMP_AGR_0001	Technical Feasibility Study Agreement
IMP_AGR_0002	System Impact Assessment Agreement
IMO_FORM_1049	Notification of Deemed Withdrawal
IMO_FORM_1399	Project Status Report
IMO_FORM_1484	Plans for New or Modified Facilities Information Submittal for Reliability Outlook
IMO_FORM_1494	Plans for Retired, New or Modified Facilities Information Submittal Form
FORM_49	Consent for Connection Cost Recovery Agreement Status Request

- End of Section -

# References

Document ID	Document Title
MDP_RUL_0002	Market Rules
IMO_REQ_0041	Ontario Resource and Transmission Assessment Criteria
N/A	Ontario Energy Board Act, 1998

- End of Document -