Communicating with the IESO – Non-Dispatchable Loads

IESO Training

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This guide has been prepared to assist in the IESO training of market participants and has been compiled from extracts from the market rules or documents posted on the web site of Ontario's Independent Electricity System Operator. Users of this guide are reminded that they remain responsible for complying with all of their obligations under the market rules and associated policies, standards and procedures relating to the subject matter of this guide, even if such obligations are not specifically referred to herein. While every effort has been made to ensure the provisions of this guide are accurate and up to date, users must be aware that the specific provisions of the market rules or particular document shall govern.

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1. Introduction

Effective communication is the most important tool the IESO has in maintaining the reliability of the IESO-controlled grid[1]and operating the markets. Information exchange is key.

Although the IESO receives thousands of bits of data every few seconds, there are many situations that only Market Participants (MPs) can see. MPs' information can alert the IESO to something about, or confirm the seriousness of a situation and can help the IESO make the right decision as quickly as possible. Examples of this type of information include local electrical storms, grass fires, high winds, and ice build-up on structures. It is also essential for MPs to tell the IESO about circumstances that have the potential to impact the future operation of their facilities.

This guide covers:

- Timelines – and reasons for these timelines
- Communication principles and protocols
- Communication requirements during normal and abnormal operating states
- How the IESO and Market Participants communicate in real-time

[1] In this document, 'grid' means the IESO-controlled grid. 'Markets' means the IESO-administered markets

2. Communications Timelines

Events on the power system happen quickly. When the IESO there is an unexpected event on the power system (a 'contingency'), the system is not as strong as it was before the event. The IESO needs to re-prepare, i.e., get ready to face the next event as soon as possible.

The longer the system spends time in a degraded state, the more vulnerable it is to the effects of another contingency. Often, contingencies take place during severe weather, so the likelihood of another event is higher than normal.

2.1 Reliability standards

Reliability standards require the IESO to re-prepare the system within 30 minutes during normal conditions and within 15 minutes during high-risk conditions, such as an electrical storm. In these short periods, the IESO must gather information from MPs, make a plan and execute it. As the user of this guide can see, timely communication from the involved MPs is key if the IESO is to meet required re-preparation times and minimize exposure to this increased risk.

2.2 The Market Participant's role

The IESO may direct an MP to take an action 'promptly' or 'immediately'. When the IESO uses these terms, it means:

- As soon as possible, but no longer than 5 minutes after receiving direction or recognizing the need to take an action.2

The IESO will communicate this type of direction to the MP by telephone

[2] As outlined in the Market Rules: Chapter 5, Section 1.2.5.

3. Communications Principles and Protocols

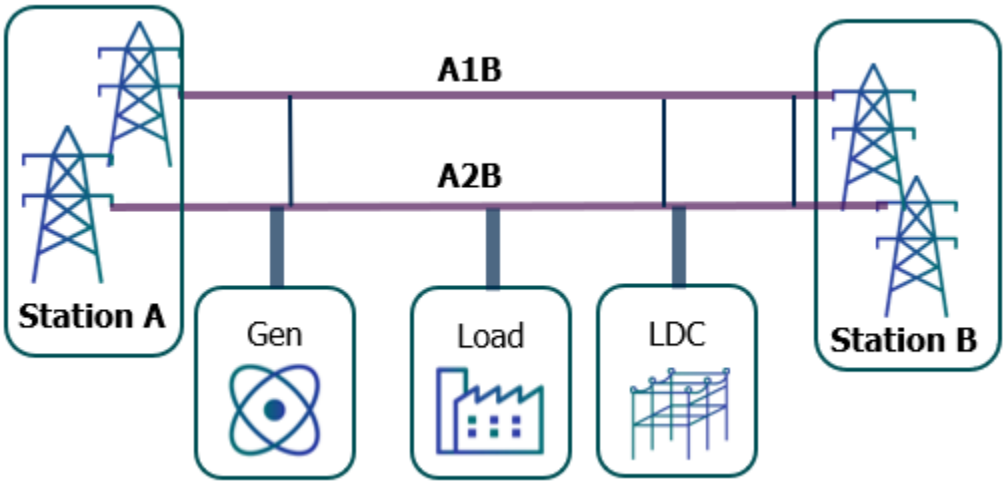

Figure 1 - Directly Connected Load Customer

Both the market rules and market manuals use the term 'connected wholesale customers' to refer to directly connected loads as shown here.

The illustration above shows the configuration for a directly connected Load customer, that is, the transmission system between Station A and Station B. Because of this, the IESO is responsible for directing the operation of the equipment that connects the MP's facility, and the Load customer has some specific communications obligations with the IESO.

The IESO's goal is to facilitate open, timely communication. Clear communication is paramount during both normal and abnormal conditions. It is important that both the IESO and MPs understand all communications.

Because of unconscious editing, technical term misunderstanding, or technical problems, the receiver (whether the IESO or an MP) must repeat the message back to the sender to ensure that the message has been received and is understood correctly.

3.1 Guidelines

- Avoid using first names on a conference call - address individuals by station or site name.
- Be concise and precise - provide only the information that is related to the purpose of the call.
- Give complete attention to the call.
- To avoid any misunderstandings, use official industry operating term.
- Avoid using jargon that may only be understood within the MP's own company. Please refer to Market Manual 7.6: Glossary of Standard Operating Term for a list of approved operating terms.
- An MP should identify their company and the location they are calling from. (since some participants have more than one location.)
- Avoid discussions about real-time price, market conditions, and other confidential/sensitive information

3.2 Where to find communication protocols

Communication protocols with the IESO are in the market rules and market manuals:

- Market Manual 7.1 contains much of the material covered in this guide
- Market Manual 7.6 lists approved operating terms

Note: An MP may have protocols with their transmitter as defined in their connection agreements.

4. Communicating During a Normal Operating State

4.1 Normal Operating Conditions

The grid is in a normal operating state when the IESO has:

- Fair weather conditions
- No security limits or thermal limits being exceeded
- Sufficient energy and capacity to meet the forecasted demand
- No emerging reliability concerns within Ontario or in neighbouring jurisdictions that could affect our area

The grid is in the normal operating state most of the time.

4.2 Communicating with the transmitter

An MP has communication obligations with their transmitters, as outlined in their connection agreement. These obligations include coordination of switching or outage timing requirements and work protection. The IESO may also be involved in some of these discussions.

4.3 Communicating with the IESO

There are things that an MP must communicate directly to the IESO – even if the MP also communicates to their transmitter – such as:

- System reliability information
- Outage notification
- Approvals for switching equipment in and out of service
- Planned equipment and auxiliaries outages or tests
- Except for large industrial customers who routinely exceed these levels, planned single-point load pickup of:
  - 100 MW if your facility is south of Barrie
  - 50 MW if your facility is north of Barrie
- Planned operation of any breakers that can cause a parallel between multiple connection points to the grid
- An event that could potentially jeopardize grid or equipment reliability

The MP is encouraged to contact the IESO whenever they have something relevant to communicate.

5. Communicating During an Abnormal Operating State

5.1 Abnormal operating conditions

An abnormal operating state exists any time the IESO is not in a normal condition, including when:

- The IESO declares an emergency, or
- The IESO declares a high-risk operating state, or
- After a contingency (i.e., an unexpected event on the power system).

5.2 Who to communicate with

In abnormal operating conditions, such as after a contingency, the IESO is the MP's first point of contact.

The IESO will assess, co-ordinate and direct the restoration of equipment when it is safe to do so, conferencing in all involved parties.

5.3 When to call the IESO

- The MP should call the IESO immediately if:
- Experiencing partial or total loss of potential
- If located south of Barrie and they experience:
  - Automatic loss of load > 100 MW
  - Automatic loss of reactive capability ≥ 15 MVARS (dispatchable by the IESO)
- If located north of Barrie and they experience:
  - Automatic loss of load > 50 MW
  - Automatic loss of reactive capability ≥ 10 MVARS (dispatchable by the IESO)
- Operation of any protective relaying, special protection schemes or system auxiliaries (such as communication facilities associated with protections)
- Degradation of system auxiliaries
- Loss of any internal distribution lines that affect the output of an embedded generator of 20 MW or more

In abnormal operating conditions, the IESO is the MP's first point of contact. The MP may contact their own authority control centre as long as if doing so does not delay the phone call to the IESO.

If the MP's call is due to a contingency, the IESO will assess, co-ordinate and direct the restoration of any equipment. Typically, the IESO will conference call with all affected parties, including their transmitter if necessary.

5.4 Multi-party Communications

Due to the integrated nature of the power system, there are many situations where the IESO needs to speak with a number of different participants at the same time via a conference call.

As an involved party, it is essential that the MP remains on the line while these discussions take place. Failure to do so may delay restoration or prevent resolution of the operating problem.

For example, assume the MP is fed off a two-line supply, and one of them is automatically removed from service. For safety reasons, the IESO cannot restore the circuit until we have spoken with all the tapped participants.

If the MP does not call the IESO and the IESO cannot reach them, the line will remain out of service, subjecting all the participants, including themselves, to increased risk as the MP will remain on single line supply until the IESO can reach them.

5.5 Communicating with the IESO during a contingency

Who to call

- Call the IESO control room operator promptly when a grid disturbance occurs and provide information on the cause (if known) and effect of the contingency on the MP's facility and equipment.
- The IESO will conference the MP as necessary and all affected parties. During phone conferencing, please remain on the line until the IESO ends the call. Remember that the MP's information is important to the IESO in building the plan for recovery to normal operation.

Communicating with the IESO

Whether an MP speaks with the IESO system control room operator or is re-directed to a voice mailbox[3], the IESO needs key information:

- Identify the caller's name
- Identify the MP's company and facility location
- Identify the reason for the call
- Have key information available (as outlined below)

[3] MPs may be directed to a voice mailbox only during large scale or widespread disturbances

The information the MP should provide

- Time of the event
- Status of the MP's facility and equipment
- What the MP observed – were there any indications prior to the trip that something was happening on the grid
- If the MP has any indication of likely cause
- Any concerns about returning equipment to service
- Other urgent equipment, safety, or environmental concerns

What to leave on the IESO's voice mail

The IESO telephone system prioritizes calls during disturbances. When this happens, an MP's call may be re-directed to voice mail:

- It is important to leave all relevant information on the recording and the IESO will return the MP's call as soon as possible. Please note that due to the volume of calls the IESO receives during disturbances, unless their conditions change, one phone message is sufficient.
- An MP may elevate themselves in the IESO's phone queue if they have urgent information concerning public safety, danger to the environment, or risk of equipment damage.

The MP's message should include:

- The MP's identity, company and facility location
- The reason for the MP's call
- Information on the cause or impact of the disturbance and the status of the MP's equipment

Be prepared for the IESO's follow-up call.

Next steps

The IESO will use all available information from an MP and other affected participants to build a plan for recovery to restore the system to normal operation as soon as possible:

- Follow the IESO's directions to restore equipment
- Resume normal operation when the IESO confirms it is safe to do so
- Call the IESO if an MP knows of any post-event issues that may affect the grid or the markets or if they discover anything that could help reveal the cause of the disturbance

The MP's information is a very important part of building the IESO's restoration plan. It is important that the IESO is able to communicate with every participant on a circuit before re-energizing that circuit.

If the IESO cannot speak with an MP, restoration may be delayed. That is why it is important that the MP's contact numbers are up to date in the IESO's registration database. If an MP's information is not up to date, please contact the MP should contact their Business Advisor and update the information in Online IESO. An Applicant Representative of the registered organizations can add or remove contract roles in Online IESO. To update contact roles, please refer to the Step By Step For Adding a Contact Role document.

5.6 Communicating with the IESO when a Facility has a loss of potential

What happens if an MP's facility loses all potential? The blackout could be localized or could affect a large area. Regardless of the extent, the MP must call the IESO immediately.

Call the IESO control room operator promptly, following the same steps as the MP would for a contingency. Keep in mind that:

- During a widespread disturbance MPs will probably be unable to talk with the IESO directly.
- The IESO's telephone system prioritizes calls during disturbances. When this happens, the MP's call may be re-directed to voice mail. As with contingencies, it is important that the MP leaves all their information on the recording and the IESO will return their call as soon as possible. The MP can also elevate themselves in the IESO's phone queue if they have urgent information concerning public safety, danger to the environment, or risk of equipment damage.
- In the meantime, take the MP's pre-approved independent actions on loss of potential following the Ontario Power System Restoration Plan.

The IESO will call the MP when restoration has proceeded to the point where the IESO is able to allow load back on the system.

- Resume normal operation when the IESO confirms it is safe to do so.
- Call the IESO if the MP knows of any post-event issues that may affect the grid or the markets

5.7 Post-contingency communications

The information an MP provides is very important for system reliability. Post contingency, the IESO needs to know:

- **Equipment status or concerns:** Has the MP's equipment been forced out of service for a long period? Does the MP Are have any concerns about equipment damage?
- **System status:** Does the MP have any voltage or thermal concerns? Has the MP noticed any abnormal frequency excursions? Has the facility suffered any load loss?
- What annunciations can the MP provide to the IESO – such as relay protection sealed-in? This can help the IESO piece together the cause of an event.
- Has the MP had any operation of any special protection schemes or system auxiliaries (e.g., underfrequency load shedding)?
- Does the MP have any urgent environmental concerns that could become a major disaster?

- Indications of fault severity (if the MP has digital fault recorders installed within their operation, communicating this information is very important, e.g., how did their equipment respond during this disturbance, etc.)
- The MP's assessment of return to service of their equipment and any potential causes, if they are known.
- Any information relevant to security of the grid or concerns before restoration attempt is made, e.g., equipment limitations, environmental conditions, etc.
- If the contingency involves other market participants' equipment – the IESO will discuss with all parties before a restoration attempt (this is why it is important for the IESO's facility registration database to have the MP's up-to-date contact information).

6. IESO-initiated Communications

There are circumstances when the IESO may call an MP to do something during normal or abnormal conditions.

For example, to maintain reliability or during emergency operating states, the IESO will take actions that could include:

- Directing the MP to execute an action, or
- The IESO could also implement rotational or block load shedding

If the IESO is requesting a load reduction, they will either call the MP directly or via a recorded broadcast message. It is important that the MP implements the requested actions immediately and call the IESO back confirming their participation and the amount of load they will shed. Use the phone number that was given to the MP on the recorded message.

Advisory Notices also alert the MP to an emergency operating state.

6.1 How the IESO communicates with MPs

Telephone is the IESO's most common means of communication.

The IESO does not physically operate equipment, rather they direct the operation of the IESO-controlled grid. It is through telephone communication with MPs, the participant, that the IESO gets things done. During MPs' registration, the IESO provides all the phone numbers an MP needs to communicate with the IESO. If the MP wishes to confirm any of these numbers, please contact Customer Relations.

Advisory Notices and Adequacy Reports

The IESO releases these reports and Advisory Notices, if required, at specific times daily throughout the day and posts them on the IESO website. These notices allow the IESO to present information to market participants that is not addressed through in the Adequacy Report. They are intended to provide this information for an event that is deemed significant or any change that is not captured through regularly scheduled publication of reports.

- System Status Reports (SSRs) and Adequacy Reports list the hourly forecast demand, system capacity and energy, as well as system advisories for the IESO-administered markets.

Adequacy Reports list the hourly forecast demand, system capacity, and energy, for the IESO-administered markets. Please refer to Market Manual 7.2 on the IESO's Market Rules and Manuals Library web page, for details on the Adequacy Report and other Near-Team Assessments and Reports published

7. Skill Check

7.1 Questions

1. From the list below, under which of the following situations should an MP call the IESO?
   a) The MP is planning to operate the tie circuit breaker that will parallel two connection points of the grid
   b) The MP is going to draw an oil sample from their stations directly connected main transformer
   c) The MP will be performing some internal plant switching that will introduce a load pick-up of 45 MW to the system
   d) The MP's maintenance team is performing infrared scanning of their live transformer and overhead line switches
   e) The MP's facility, located in Toronto, suffers a load loss of 34 MW

2. When is the grid considered to be in abnormal conditions? (choose all that apply)
   a) When the IESO has formally declared an emergency and posted a system status report
   b) When primary demand forecast adjustments are required due to revised weather forecasts
   c) When there is lightning activity in a local area of southern Ontario
   d) When the IESO has formally declared a high-risk operating state and posted a system status report
   e) When system contingencies or unusual equipment behaviour threaten the reliability of the grid

3. Assume an MP receives a high temperature alarm on their facilities directly connected main transformer. The MP's technician determines that the temperature switch needs replacement. What communication to the IESO, if any, needs to be initiated?
   a) No communication is necessary since the MP's technician informs them that the replacement of the switch can be done without de-energizing the transformer.
   b) Replace the temperature switch promptly, then call to inform the IESO.
   c) Call to inform the IESO promptly. Coordination through the IESO's outage management procedure is required.

4. An MP received a credible sabotage threat to their facility and they will be shutting down their facility, resulting in a sudden load loss of 35 MW. Should the MP call the IEO about this?

    a) No, this is a local problem within the MP's facility.

    b) Yes. The IESO encourages communication of unusual events that could become bigger issues affecting grid reliability, public safety, equipment or the environment.

    c) No, since this only causes a load loss of 35 MW.

5. There has been a contingency on the grid and an MP's facility has lost all potential. They have no environmental, safety or equipment concerns. They wish to know what happened and how long it will be before power is restored. When the MP calls the IESO, they get a recorded message. What should the MP do next?

    a) Elevate the MP's priority in the IESO's telephone queue to find out when the power will be restored

    b) Leave a message with applicable details, and implement the MP's independent control actions in preparation for the IESO's phone call

    c) Keep calling and leave as many messages as it takes

    d) Keep calling until the MP speaks with an operator

6. It is a normal day of production at an MP's facility. They receive a recorded message from their control room requesting that the MP reduces demand by 4% in 10 minutes. How should the MP respond?

    a) Call the IESO back immediately at the number that was given to them on the recorded message and verify that it is not a simulated exercise

    b) Call the IESO back at the number provided on the recorded message and request an explanation

    c) Begin implementing the demand reduction, then call the IESO back at the number provided on the recorded message with an estimate MW reduction that will be achieved

    d) Look for a system status report on the IESO web site for verification of an emergency condition and call the IESO back at the number provided on the recorded message

    e) Contact the MP's management staff and call the IESO back to initiate a conference with the IESO once the MP have contacted them

7. An MP's facility is directly connected to the grid and is experiencing fluctuating incoming voltages. The MP suspects it is caused by the neighbouring generating facility. Who does the MP call for more information about the cause?

   a) The MP's transmitter

   b) The IESO

   c) The MP's local distribution company

   d) The neighbouring generation facility

7.2 Answers

1. From the list below, under which of the following situations should an MP call the IESO?

   a) **The MP is planning to operate the tie circuit breaker that will parallel two connection points of the grid √**

   b) The MP is going to draw an oil sample from their stations directly connected main transformer

   c) The MP will be performing some internal plant switching that will introduce a load pick-up of 45 MW to the system

   d) The MP's maintenance team is performing infrared scanning of their live transformer and overhead line switches

   e) The MP's facility, located in Toronto, suffers a load loss of 34 MW

2. When is the grid considered to be in abnormal conditions? (choose all that apply)

   a) **When the MP has formally declared an emergency and posted a system status report √**

   b) When primary demand forecast adjustments are required due to revised weather forecasts

   c) When there is lightning activity in a local area of southern Ontario

   d) **When the MP has formally declared a high-risk operating state and posted a system status report √**

   e) **When system contingencies or unusual equipment behaviour threaten the reliability of the grid √**

3. Assume an MP receives a high temperature alarm on their facilities directly connected main transformer. The MP's technician determines that the temperature switch needs replacement. What communication to the IESO, if any, needs to be initiated?

   a) No communication is necessary since the MP's technician informs them that the replacement of the switch can be done without de-energizing the transformer.

   b) Replace the temperature switch promptly, then call to inform the IESO.

   c) **Call to inform the IESO promptly. Coordination through the IESO's outage management procedure is required √**

4. An MP has received a credible sabotage threat to their facility and they will be shutting down their facility, resulting in a sudden load loss of 35 MW. Should the MP call the IESO about this?

   a) No, this is a local problem within the MP's facility.

   b) **Yes. The IESO encourages communication of unusual events that could become bigger issues affecting grid reliability, public safety, equipment or the environment. √**

   c) No, since this only causes a load loss of 35 MW.

5. There has been a contingency on the grid and an MP's facility has lost all potential. The MP has no environmental, safety or equipment concerns. The MP wishes to know what happened and how long it will be before power is restored. When the MP calls the IESO, they get a recorded message. What should the MP do next?

   a) Elevate the MP's priority in the IESO's telephone queue to find out when the power will be restored

   b) **Leave a message with applicable details, and implement the MP's independent control actions in preparation for the IESO's phone call √**

   c) Keep calling and leave as many messages as it takes

   d) Keep calling until the MP speaks with an operator

6. It is a normal day of production at an MP's facility. The MP receives a recorded message from the IESO control room requesting that the MP reduces demand by 4% in 10 minutes. How should the MP respond?

   a) Call the IESO back immediately at the number that was given to them on the recorded message and verify that it is not a simulated exercise

   b) Call the IESO back at the number provided on the recorded message and request an explanation

   c) **Begin implementing the demand reduction, then call the IESO back at the number provided on the recorded message with an estimate MW reduction that will be achieved √**

   d) Look for a system status report on the IESO web site for verification of an emergency condition and call the IESO back at the number provided on the recorded message

   e) Contact the MP's management staff and call the IESO back to initiate a conference with the IESO once the MP has contacted them

7. An MP's facility is directly connected to the grid and is experiencing fluctuating incoming voltages. The MP suspects it is caused by the neighbouring generating facility. Who does the MP call for more information about the cause?

   a) The MP's transmitter

   b) **The IESO √**

   c) The MP's local distribution company

   d) The neighbouring generation facility

8. Summary

In summary:

- MPs are encouraged to contact the IESO any time they have something relevant to advise.
- MP's timely communication during normal and abnormal conditions allows for more options.
- Be aware of the types of situations that require an MP to promptly call the IESO.
- An MP's participation in conference calls is an important part of a prompt recovery plan
- The IESO will call an MP directly by phone or via a broadcast message if:
  - MPs is required to shed load, or
  - MPs is part of a simulated load-shedding exercise

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