

Communicating with the IESO – Transmitters

IESO Training

June 2017



Communicating with the IESO: Guide for Transmitters

AN IESO MARKETPLACE TRAINING PUBLICATION

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.

The Independent Electricity System Operator Box
4474, Station A
Toronto, Ontario
M5W 4E5

Customer Relations Tel: (905) 403-6900
Toll Free 1-888-448-7777

www.ieso.ca

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1. Introduction

Effective communication is the most important tool we¹ have in maintaining the reliability of the IESO-controlled grid² and operating the markets. Information exchange is key. Although we receive thousands of bits of data every few seconds, there are many situations that only you can see. Your information can alert us to something we are unaware of or can confirm the seriousness of a situation and help us 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 you to tell us about circumstances that have the potential to impact the future operation of your facilities.

This guide covers:

- Timelines – and reasons for these timelines
- Communication principles and protocols
- Communication requirements during normal and abnormal operating states
- How we communicate with each other in real-time

¹ In this document, 'we', 'us' and 'our' refer to the IESO. 'You' refers to the market participant.

² In this document, 'grid' means the IESO-controlled grid.

2. Communications Timelines

Events on the power system happen quickly. When we experience an unexpected event on the power system (a ‘contingency’), the system is not as strong as it was before the event. We need to re-prepare, i.e., get ready to face the next event as soon as possible.

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

Reliability standards

Reliability standards require us to re-prepare the system within 30 minutes during normal conditions – and we only have 15 minutes during high risk conditions, such as an electrical storm. In these short periods, we must gather information from participants, make a plan and execute it. As you can see, timely communication from the involved participants is key if we are to meet our re-preparation times and minimize our exposure to this increased risk.

Your role

We may direct you to take an action ‘promptly’ or ‘immediately’. When we use these terms, we mean:

As soon as possible, but no longer than 5 minutes after receiving direction or recognizing the need to take an action.³

We will communicate this type of direction to you by telephone.

³ As outlined in the *Market Rules: Chapter 5, Section 1.2.5*.

3. Communications Principles and Protocols

Our goal is to facilitate open, timely communication. Clear communication is paramount during both normal and abnormal conditions. It is important that we understand what you have said to us and we must ensure that our messages are correctly understood.

Because of unconscious editing, technical term misunderstanding, or technical problems, the receiver must repeat the message back to the sender to ensure that the message has been received and is understood.

Guidelines

- Avoid using first names when you participate 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 your call.
- Give the call your complete attention.
- To avoid any misunderstandings, use official industry operating terminology.
- Avoid using jargon that may only be understood within your own company – see Market Manual 7.6: *Glossary of Standard Operating Terminology* for a list of approved operating terms.
- Be sure to identify yourself, your company and the location you are calling from. (Some participants have more than one location.)

Where can you find communications 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

4. Communicating During a Normal Operating State

What are normal operating conditions?

We are in a normal operating state when we have:

- Fair weather conditions
- No security limits or thermal limits being exceeded
- Sufficient energy and capacity to meet the forecast 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.

Your communication paths

During normal operating conditions you have two communication paths, which you use according to the circumstances:

- There are things that you must communicate directly to us, such as:
 - Planned equipment and/or auxiliaries outages, tests or outage extensions Approvals to switch equipment in and out of service (planned switching, planned periods of unavailability of equipment, expected return to service times from outages, etc.)
 - Performing any transformer manual tap changes Planned operation of any breakers that parallel the grid
 - Any event information that could potentially jeopardize grid or equipment reliability
- Typically, according to connection and operating agreements, you communicate with your customers about things such as:
 - Coordinating switching
 - Outage timing requirements and work protection
 - Operating control of elements contained in a common switchyard, etc.

We may also be involved in some of these discussions.



4. Communicating During a Normal Operating State

Please remember that these communication protocols are set out as minimums – we encourage you to contact us whenever you have something relevant to communicate.

Remember that often you are the only one who knows of a situation. Your prompt communication to us can help avert an event that would otherwise adversely affect the grid.

5. Communicating During an Abnormal Operating State

What are abnormal operating conditions?

An abnormal operating state exists any time we are not in a normal condition, including:

- When we declare an emergency
- When we declare a high-risk operating state
- After a contingency (i.e., an unexpected event on the power system)

We are your first point of contact

In abnormal operating conditions, such as after a contingency, we are your first point of contact.

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

When should you call us?

Under the following abnormal conditions, you must call us immediately. These are specific cases, but any indication that something abnormal is going on should prompt you to call.

Contact us immediately whenever you experience:

- Automatic operations of any grid-connected circuit breakers
- Degradation of system, auxiliary or control equipment, such as:
 - Transformers and their alarms
 - Circuit breaker problems or alarms
 - DC supply system problems
 - Protection and communication system problems
- Degradation of switchyard auxiliary equipment (e.g., compressors or compressed air system problems that can cause circuit breakers to fail to operate and create a 'stuck breaker' situation)
- Operation of power system auxiliaries:
 - Special protection systems
 - Under-frequency protection of one or more UFLS relays
- Any indication of a power system event, such as:

- Oscillations of real or reactive power
- Voltage declines $\geq 10\%$
- Operation of disturbance recorders, etc.
- An automatic loss of reactive capability or resources:
 - ≥ 15 MVARs, if it is south of Barrie
 - ≥ 10 MVARs, if it is north of Barrie
- Any factors that may affect the operation of the grid (e.g., inclement weather, forest fires, sabotage, or directions from civil authorities, etc.)

Communicating with us during a contingency

Who should you call?

- Call our control room operator promptly when a grid disturbance occurs, and provide information on the cause (if known) and effect of the contingency on your facility and equipment.
- We will conference you as necessary with all affected parties. During phone conferencing, please remain on the line until we end the call. Remember that your information is important to us in building the plan for recovery to normal operation.

Multi-party communications

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

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

What do you say?

Whether you speak with our operator or are re-directed to a voice mailbox⁴, we need key information from you:

- Identify yourself
- Identify your company and facility location
- Identify the reason for your call

⁴ You may be directed to a voice mailbox only during large scale or wide spread disturbances.

- Have key information available (as outlined below)

What information should you provide?

- Time of the event
- Status of the stations/lines involved in the event and related equipment
- What you observed – were there any indications prior to the trip that something was happening on the grid
- If you have any indication of likely cause Any protection annunciations received
- Any concerns about returning equipment to service
- Other urgent equipment, safety, or environmental concerns

What happens next?

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

- Follow our directions to restore equipment
- Resume normal operation when we confirm it is safe to do so
- Call us if you know of any post-event issues that may affect the grid or the markets or if you discover anything that could help reveal the cause of the disturbance

Your information is a very important part of building our restoration plan. It is important that we are able to communicate with every participant on a circuit before re-energizing that circuit.

If we cannot speak with you, restoration may be delayed. That is why it is important that your contact numbers are up-to-date in our registration database. If your information is not up-to-date, please contact your account manager.

Post-contingency communications

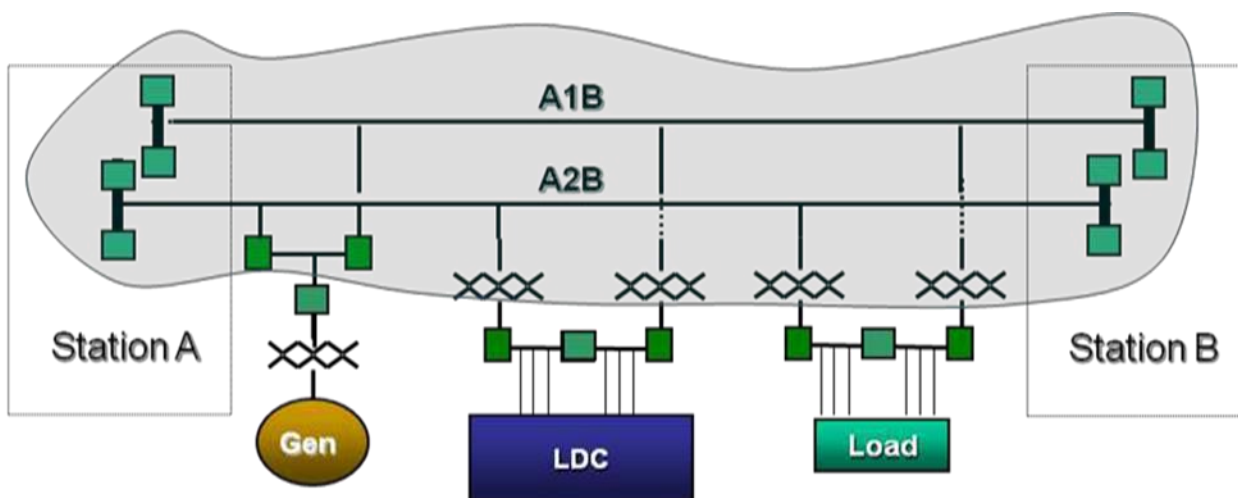
The information you provide is very important for system reliability. Post contingency, we need to know:

- **Equipment status or concerns:** Has your equipment been forced out of service for a long period? Do you have any concerns about equipment damage?
- **System status:** Do you have any voltage or thermal concerns? Have you noticed any abnormal frequency excursions? Have you suffered any load loss?

5. Communicating During an Abnormal Operating State

- What annunciations can you provide to us – such as relay protection sealed-in? This can help us piece together the cause of an event.
- Have you had any operation of any special protection schemes or system auxiliaries (e.g., underfrequency load shedding)?
- Do you have any urgent environmental concerns that could become a major disaster?
- Indications of fault severity (if you have digital fault recorders installed within your operation, communicating this information is very important, e.g., how did your equipment respond during this disturbance, etc.)
- Your assessment of return to service of your 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 - we will discuss with all parties before the restoration attempt (this is why it is important for our facility registration database to have your up-to-date contact information).

Example – loss of instantaneous protection



Assume that this portion of the grid loses instantaneous protection. Regardless of the extent, you must call us immediately. In this case, the grid is exposed to more risk because of the extended time that a fault might remain on the power system.

What should you do?

- Call our control room operator promptly and follow the same steps as for a contingency
- However, during this situation, it is important to emphasize the key facts among the numerous alarms you may have (e.g., loss of instantaneous protection on lines A1B and A2B)
- Provide us with any additional information about your plan and timeline to rectify the equipment malfunction

What happens next?

- We will use all available information and direct the switching to remove the circuit from service if this is an area that is impactful to our neighbours – refer to *Market Manual 7: Part 7.4 IESO-Controlled Grid Operating Policies*
- You need to let us know promptly of any changes that affect status of the protection system

6. IESO-initiated Communications

There are circumstances when we may call you to do something during normal or abnormal conditions. Telephoning is our most common means of communication. We do not physically operate equipment, rather we direct the operation of the IESO-controlled grid. It is through telephone communication with you, the participant, that we get things done.

During normal operating states, we initiate communication that could include:

- Directing you to execute an action
- Equipment outages or de-rates
- Requesting equipment or system information

Building action plans to mitigate reliability issues [Advisory Notices](#) also alert you about:

- System advisories
- Major change advisories
- Grid material changes (refer to *Market Manual 7.2, Section 1.3.3*, available on our [Rules and Manuals](#) web page, for details on material changes)

To maintain reliability or during emergency operating states, we will take actions that could include:

- Directing you to execute an action, or
- Requesting a load reduction or a 3% or 5% voltage reduction

During these times, prompt response to our requests is important. Although it does not happen often, we may request you to remove equipment from service immediately.

7. Skill Check

Skill Check: Questions

1. You have called us immediately after receiving numerous transformer station alarms caused by a transmission circuit trip. From the list below, select the information that you need to communicate to us about this incident.
 - a) Whether you still have instantaneous protection for the equipment, buses and transmission lines.
 - b) A brief explanation, exact time, what you observed and if you have any indication of the likely cause of the event.
 - c) Any concerns about returning your equipment to service.
 - d) Report all the alarms to ensure nothing is missed.
 - e) Fax us a copy of the disturbance recorder's sequence of events list.

 2. You receive an alarm indicating a station circuit breaker air system problem. You plan to dispatch personnel who are near the station to investigate. From the list of actions below, select the correct one.
 - a) Wait until your field personnel report full details of the problem before informing us.
 - b) Call us immediately with a brief description of the event.
 - c) Give your field personnel 30 minutes to report. If they have not contacted you by then, call us.
 - d) Wait a while – this is a known problem that clears itself in minutes.

 3. One of your customers has called you to inform about a grass fire that has developed under a 230 kV transmission line corridor and that fire fighters are already on the way. Is this something you need to communicate to us?
 - a) Yes
 - b) No

 4. One of your transformer station's DC supply systems generates a general alarm. The DC system is fully duplicated. From the communication response list below, select the correct answer.
 - a) No need to call us since the DC system is fully duplicated.
 - b) Call us immediately so we can collectively discuss a reliability mitigation plan.
 - c) General alarms usually indicate minor problems – call us only if you find it to be a problem that has the potential to reduce grid reliability.
-

5. From the list of events below, pick all the ones that you need to report to us immediately:
 - a) Planned equipment outages or auxiliaries' outages, tests or outage extensions.
 - b) Planned operation of any breakers that parallel the grid.
 - c) Any automatic loss of reactive power capability or resources <10 MVARs if you are located north of Barrie.
 - d) Any factors that may affect the operation of the grid (e.g., inclement weather, forest fires, sabotage, directions from civil authorities, etc.).
 - e) Any indication of a power system event (e.g., oscillations of real or reactive power, voltage declines $\geq 10\%$, any operation of disturbance recorders, etc.)

6. Your monitoring system records a system frequency oscillation. You are not sure if this is a real situation since you have not received any other unusual alarms. From the list below, choose the correct response.
 - a) Call our control room operator immediately and report the information – frequency oscillations often signify larger system problems. We can also use our telemetry to confirm the situation.
 - b) Since there are no other alarms to cross-reference this event, it must not be real – no need to call us.
 - c) Wait at least 10 minutes to allow for frequency correction. Often, frequency oscillation events correct themselves.

7. We call you during a busy day to request an urgent circuit removal to clear a limit exceedance. From the list below, select the correct response.
 - a) Repeat the request to confirm, and execute the action promptly.
 - b) Because it is a busy day, you ask to call us back as soon you complete another task.
 - c) Repeat the request to confirm, then wait to execute the action until receiving approval from your supervisor who is attending a meeting.
 - d) Repeat the request to confirm, then inform all connected customers before removing the circuit from service.

Skill Check: Answers

1. You have called us immediately after receiving numerous transformer station alarms caused by a transmission circuit trip. From the list below, select the information that you need to communicate to us about this incident.
 - a) **Whether you still have instantaneous protection for the equipment, buses and transmission lines. ✓**
 - b) **A brief explanation, exact time, what you observed and if you have any indication of the likely cause of the event. ✓**
 - c) **Any concerns about returning your equipment to service. ✓**
 - d) Report all the alarms to ensure nothing is missed.
 - e) Fax us a copy of the disturbance recorder's sequence of events list.

 2. You receive an alarm indicating a station circuit breaker air system problem. You plan to dispatch personnel who are near the station to investigate. From the list of actions below, select the correct one.
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 - b) **Call us immediately with a brief description of the event. ✓**
 - c) Give your field personnel 30 minutes to report. If they have not contacted you by then, call us.
 - d) Wait a while – this is a known problem that clears itself in minutes.

 3. One of your customers has called you to inform about a grass fire that has developed under a 230 kV transmission line corridor and that fire fighters are already on the way. Is this something you need to communicate to us?
 - a) **Yes ✓**
 - b) No

 4. One of your transformer station's DC supply systems generates a general alarm. The DC system is fully duplicated. From the communication response list below, select the correct answer.
 - a) No need to call us since the DC system is fully duplicated.
 - b) **Call us immediately so we can collectively discuss a reliability mitigation plan. ✓**
 - c) General alarms usually indicate minor problems – call us only if you find it to be a problem that has the potential to reduce grid reliability.
-

5. From the list of events below, pick all the ones that you need to report to us immediately:
- a) **Planned equipment outages or auxiliaries' outages, tests or outage extensions.** ✓
 - b) **Planned operation of any breakers that parallel the grid.** ✓
 - c) Any automatic loss of reactive power capability or resources <10 MVARs if you are located north of Barrie.
 - d) **Any factors that may affect the operation of the grid (e.g., inclement weather, forest fires, sabotage, directions from civil authorities, etc.).** ✓
 - e) **Any indication of a power system event (e.g., oscillations of real or reactive power, voltage declines $\geq 10\%$, any operation of disturbance recorders, etc.)** ✓
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 - b) Because it is a busy day, you ask to call us back as soon you complete another task.
 - c) Repeat the request to confirm, then wait to execute the action until receiving approval from your supervisor who is attending a meeting.
 - d) Repeat the request to confirm, then inform all connected customers before removing the circuit from service.

8. Summary

In summary:

- We encourage you to contact us any time you have something relevant to tell us
- Your timely communication during normal and abnormal conditions allows for more options
- Be aware of the types of situations that require you to call us promptly
- Your participation in conference calls is an important part of a prompt recovery plan
- Provide us with key information following contingent events
- We may request you to initiate a control action during abnormal operating conditions