



GLOSSARY

Market Manual 7: System Operations

Part 7.6: Glossary of Standard Operating Terms

Issue 8.0

This document provides a glossary of terms with definitions used in the "System Operations Manual".

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This *market manual* may contain a summary of a particular *market rule*. Where provided, the summary has been used because of the length of the *market rule* itself. The reader should be aware, however, that where a *market rule* is applicable, the obligation that needs to be met is as stated in the “Market Rules”. To the extent of any discrepancy or inconsistency between the provisions of a particular *market rule* and the summary, the provision of the *market rule* shall govern.

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Table of Changes

Reference (Section and Paragraph)	Description of Change
Section 2	Removed reference to IMO_POL_0001 (Electricity Emergency Priorities Policies) as it has been deleted and change the description of priority loads to be consistent with Market Manual 7.10 (Ontario Electricity Energy Plan).

Market Manuals

The *Market Manuals* consolidate the market procedures and associated forms, standards, and policies that define certain elements relating to the operation of the *IESO-administered markets*. Market procedures provide more detailed descriptions of the requirements for various activities than is 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

The *System Operations Manual* is Volume 7 of the *Market Manuals*, where this document forms *Part 7.6: Glossary of Standard Operating Terms*.

A list of the other component parts of the *System Operations Manual* is provided in *Part 7.0: “System Operations Overview”*, in Section 2, “About This Manual”

Conventions

The *market manual* standard conventions are as defined in the “Market Manual Overview” document.

- End of Section -

1. Introduction

1.1 Purpose

In the “Market Rules, Chapter 5, Section 12.4.1”, the following obligation is placed upon the *IESO*:

“The *IESO* shall develop and notify all *market participants* of standard operating terms, abbreviations and definitions that shall be approved for use in communications between the *IESO* and *market participants*. Such approved, standard operating terms, abbreviations and definitions shall wherever possible be used by the *IESO* and *market participants* in their communications with one another.”

This document is composed of approved standard operating terms, abbreviations and definitions presented in the form of a glossary to satisfy the obligation.

1.2 Scope

This glossary of standard operating terms, abbreviations and definitions is consistent with the market and system operation documents. These documents include:

- *IESO Market Manuals*;
- *NERC* and *NPCC* terms and definitions; and
- *IESO* operating policies.

This glossary excludes any definition that is:

- in the *Market Rules*;
- not relevant to the open-access electricity market; and
- a universally accepted definition such as volt, ohm, watt, etc.

1.3 Who Should Use This Document

This document should be used by anyone seeking clarification or accepted understanding of a term, abbreviation or definition contained within the ‘System Operations Overview’ and ‘System Operating Procedures’.

1.4 Conventions

Source document titles are presented in italics within brackets following the definitions.

A word or words set in bold type within a definition indicate a variation of the term and may be followed by its own definition.

1.5 Contact Information

As part of the participant authorization and registration process, *applicants* are able to identify a range of contacts within their organization that address specific areas of market operations. The *IESO* will seek to contact these individuals for activities documented within this procedure, unless alternative arrangements have been established between the *IESO* and the *market participant*. If a *market participant* has not identified a specific contact, the *IESO* will seek to contact the Main Contact in PLC that is established during the participant authorization process, unless alternative arrangements have been established between the *IESO* and the *market participant*.

If the *market participant* wishes to contact the *IESO*, the *market participant* can contact the *IESO* Help Centre via email at helpcentre@ieso.ca or by the phone number provided on the *IESO*'s public Web site (www.ieso.ca), on the "Contact Us" page. The hours of operation of the *IESO* Help Centre are 08:00 – 17:00 EST Monday to Friday. Messages or emails can be left outside of these hours, which will be logged by the help desk.

– End of Section –

2. Standard Operating Terms

TERM	DESCRIPTION
Adjacent System or Adjacent Control Area	Any system or <i>Control Area</i> either directly interconnected with or electrically close to (so as to be significantly affected by the existence of) another system or <i>Control Area</i> . (Source: NERC Glossary of Terms)
Ampacity	The current carrying capacity of a piece of equipment expressed in amperes.
Apparent Power	The mathematical product of the amperes times the volts. Apparent power is composed of both real, or active, power and reactive power. Apparent power is usually expressed as kilovoltamperes (kVA) or megvoltamperes (MVA). The mathematical expression for apparent power is: $ ApparentPower = \sqrt{P^2 + Q^2}$ where: P = real or active power, and Q = reactive power (Source: NERC Glossary of Terms)
Area	An Area (when capitalized) is a geographical description, e.g., Ontario, New York. When not capitalized, however, "area" may mean a part of a system or systems. (Source: NPCC Glossary of Terms Document A-7)
Automatic Ground Switch	A switch which is closed automatically by protective relaying to create an intentional phase-to-ground fault on a power system element thereby causing remote protective relays to operate. Automatic ground switches are used primarily for transformer protection but also for breaker failure protection where remote trip protections are unavailable or uneconomical.
Automatic Load Rejection	The automatic disconnection of pre-selected customer load in <i>response</i> to a contingency, by means of facilities provided for that purpose in order to maintain integrity of the system. (Source: adapted from NERC Glossary of Terms)
Automatic Reclosure	The automatic closing of a circuit breaker(s) by relay action after it has been tripped by protective relays. The automatic reclosure may be high-speed or timed, supervised or unsupervised.
Autotransformer	A transformer consisting of one electrically continuous winding, with one or more fixed or movable taps, that is intended for use in such a manner that part of the winding is common to both primary and secondary circuits. (See <i>Transformer</i> .)

TERM	DESCRIPTION
Auxiliary System Equipment	Auxiliary System Equipment includes all <i>facilities</i> installed for control or protection of the Bulk Power System, e.g. the Microwave System, the <i>Energy Management System</i> , Generation Rejection <i>facilities</i> , Frequency Trend Relays, etc.
Available	Refers to equipment that is obtainable or accessible and ready for use or service.
Available But Not Operating (ABNO)	Generating units that are operable but not in service.
Availability	A measure of time a generating unit, transmission line, or other <i>facility</i> is capable of providing service, whether or not it actually is in service. Typically, this measure is expressed as a percent available for the period under consideration. <i>(Source: NERC Glossary of Terms)</i>
Average Demand	The electric <i>energy</i> delivered over any interval of time as determined by dividing the total <i>energy</i> by the units of time in the interval. <i>(Source: NPCC Glossary of Terms)</i>
Backup Power	Power provided by contract to a customer when that customer's normal source of power is not available. <i>(Source: NERC Glossary of Terms)</i>
Backup Protection	A timed protection feature which is intended to operate only if the primary relay system features have failed to remove the fault from the system.
Banking	<i>Energy</i> delivered or received by a utility with the intent that it will be returned in kind in the future. <i>(Source: NERC Glossary of Terms)</i>
Baseload	The minimum amount of electric power delivered or required over a given period at a constant rate. <i>(Source: NERC Glossary of Terms)</i>
Basic Minimum Power System	Consists of one or more generating stations, transmission lines, and substations operating in the form of an island. Such a system can be restarted independently and later synchronized to other islands or the main grid. The transmission elements included in the basic minimum power system connect the units which have <i>black start capability</i> to those units without <i>black start capability</i> which have been designated in the restoration plan to be restarted in the first stages of the restoration process. Also included are selected tie lines and corresponding substations which are considered essential to the formation of a larger power system. The intent is to focus on the ability to create smaller electrical systems or islands which can be expanded and synchronized to other such islands and the main grid. <i>(Source: NPCC Glossary of Terms Document A-7)</i>
Blackout	A power supply situation where customer load in an area is completely interrupted either intentionally for operating or maintenance purposes or automatically because of a system disturbance.

TERM	DESCRIPTION
Bottled Energy Power/Capacity	<i>Energy/Power/Capacity</i> which is available at the source but which cannot be delivered to the point of use because of restrictions in the <i>transmission system</i> . <i>(Source: NPCC Glossary of Terms Document A-7)</i>
Bulk Electric System	A term commonly applied to the portion of an electric utility system that encompasses the electrical generation resources and bulk <i>transmission system</i> <i>(Source: NERC Glossary of Terms)</i>
Bus	Conductors in a station to which elements such as transformers or transmission circuits are connected.
Bus Section	A portion of a bus.
Capability	Capability usually refers to the maximum power that a generating unit, generating station, or other electrical apparatus is capable of producing or carrying under specified conditions for a given time interval without exceeding approved limits of temperature or stress. It may also be used in reference to the ability of equipment to perform certain functions. <i>(Source: NPCC Glossary of Terms Document A-7)</i>
Capacitor	A static device, the primary purpose of which is to introduce capacitive reactance into the power system. Capacitors are used to aid in voltage control. They are sometimes referred to as static capacitors. If connected between conductors or between conductors and ground, they are sometimes described as shunt capacitors. If connected in series, they are described as series capacitors.
Capacity	The rated continuous load-carrying ability, expressed in megawatts (MW) or megavolt-amperes (MVA) of generation, transmission, or other electrical equipment. <i>(Source: NERC Glossary of Terms)</i>
Circuit	A set of conductors, insulated from each other and comprising three conductors for a three phase system, through which electric current is intended to flow.
Circuit Breaker	A heavy duty switch which is used to switch circuits or other power system elements in or out of service and which is capable of being automatically opened to <i>disconnect</i> faulted elements from the system.
Close	Closed In a circuit breaker or other switching device, the state when the switch contacts are together, the switch is “on,” and current has a flow path. The opposite of open. Close Operation The movement of contacts from the open to the closed position.
Condenser (Synchronous)	A synchronous condenser is a synchronous machine with no mechanical load which is driven from the system. By varying the field current of the condenser, the driving current taken from the system can be made to either lead or lag the applied voltage with the effect of producing or absorbing reactive power as required for system voltage control.

TERM	DESCRIPTION
Conductor	A wire or combination of wires not insulated from one another designed to carry electric current. The conductor may be covered by insulation or bare.
Conductor Galloping	A low frequency, high-amplitude (approximately ten feet or more) vibration disturbance on a transmission conductor, caused by wind and ice accumulation, which may lead to a flashover between adjacent conductors or between a conductor and an adjacent skywire.
Connected Load	The sum of the continuous ratings of the power consuming apparatus connected to the system or any part thereof. The term relates to potential rather than actual load.
Contingency	<p>The unexpected failure or <i>outage</i> of a system component, such as a <i>generator</i>, transmission line, circuit breaker, switch, or other electrical element. A contingency also may include multiple components, which are related by situations leading to simultaneous component <i>outages</i>.</p> <p>NPCC Emergency Criteria Contingencies — The set of contingencies to be observed when operating the bulk power system under <i>emergency</i> conditions.</p> <p>NPCC Normal Criteria Contingencies — The set of contingencies to be observed when operating the bulk power system under normal conditions.</p> <p>Double Element Contingency — A contingency involving the loss of two elements.</p> <p>Single Contingency — A single event, which may result in the loss of one or more elements.</p> <p>Single Element Contingency — A contingency involving the loss of one element.</p> <p>Limiting Contingency — The contingency which establishes the transfer capability.</p> <p>First Contingency Loss — The largest capacity <i>outage</i> including any assigned Ten-Minute Reserve which would result from the loss of a single element.</p> <p>Second Contingency Loss — The largest capacity <i>outage</i> which would result from the loss of a single element after allowing for the First Contingency Loss.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p>
Continuous Rating	<p>The rating – as defined by the equipment owner – that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units that a system, <i>facility</i>, or <i>element</i> can support or withstand indefinitely without loss of equipment life. See also Rating, Normal Rating, <i>Emergency Rating</i></p> <p><i>(Normally not used in NPCC (Source NPCC Document A-7))</i></p>

TERM	DESCRIPTION
Control Area	An electric system or systems, bounded by <i>interconnection</i> metering and telemetry, capable of controlling generation to maintain its <i>interchange schedule</i> with other <i>Control Areas</i> and contributing to frequency <i>regulation</i> of the <i>Interconnection</i> (Source: <i>NERC Glossary of Terms</i>)
Controlling Authority	A person or officer responsible for performing, directing, or authorizing changes in the conditions or physical position of specific apparatus or devices. (Source: <i>OEB - Transmission System Code</i>)
Critical Components	Equipment required for continued and proper operation of a key <i>facility</i> in the event of a total loss of AC supply. Critical components include, but are not limited to, black start generating units, substation backup power supplies, <i>control centre</i> and telecommunication centre backup power supplies and computer systems, <i>control centre</i> and telecommunication centre computer room air conditioning and telecommunication <i>facilities</i> backup power supplies. (Source: <i>NPCC Policy 'A3', "Emergency Operating Criteria"</i>)
Critical Contingency	The single or double element contingency that determines a <i>Security Limit</i> .
Critical Element(s)	An element, the status of which will affect a <i>Security Limit</i> .
Critical Loads	<p>Critical loads are those loads that are necessary to restore at an early stage of the restoration process to enable and facilitate restoration of the <i>electricity system</i> to its pre-contingency state to the extent practical. Critical loads include AC and DC <i>station service</i> loads necessary to power essential power system auxiliaries at generating stations, transmission stations, step down transformer stations, <i>control centres</i> and those electricity sector authority centres involved with the restoration. The power supplies to power critical components are also critical loads. Critical loads also include those loads external to the <i>Transmission System</i> (i.e. embedded within a <i>Distribution System</i>) upon which the restoration of the <i>IESO-controlled grid</i> is dependent - for example, telecommunications essential to operational voice communications media, monitoring and control functions to operate devices and protection signals necessary for protection systems (i.e., protective relaying schemes).</p> <p>Any load that is required to be restored to lower the voltage profile of the <i>transmission system</i> or to otherwise aid restoration, though not pre-designated as critical load, may also be considered as critical load.</p>
Customer Appeal	A communication process to elicit customer support for voluntary load <i>curtailment</i> in the event of <i>emergencies</i> on the <i>IESO-controlled grid</i>
Delayed Fault Clearing	Fault clearing consistent with correct operation of a breaker failure scheme and its associated breakers, or of a backup relay scheme with an intentional time delay.

TERM	DESCRIPTION
<i>Delivery Point Average Interruption Duration</i>	The average interruption duration for <i>delivery points</i> interrupted during a specified time period. It is determined by dividing the sum of all <i>delivery point</i> interruption durations in a specified period by the number of sustained <i>delivery point</i> interruptions during that period.
<i>Delivery Point Performance Index</i>	A measure of the continuity of service. It is a weighted average of momentary interruptions, sustained interruptions and interruption durations.
<i>Delivery Point Supply Reliability</i>	A measurement of the performance of the bulk power system relating to its ability to maintain continuity of supply to the <i>delivery points</i> at the interface between the bulk power system and the <i>retail</i> or distribution system
<i>Demand Management</i>	Measures initiated by the <i>IESO</i> or taken by distributors to influence the amount and timing of customer electricity <i>demand</i>
<i>Derating (Generator)</i>	<p>A reduction in a generating unit's Net Dependable Capacity.</p> <p>Forced Derating — An unplanned component failure (immediate, delayed, postponed) or other condition that requires the output of the unit be reduced immediately or before the next weekend.</p> <p>Maintenance Derating — The removal of a component for scheduled repairs that can be deferred beyond the end of the next weekend, but requires a reduction of Capacity before the next <i>planned outage</i>.</p> <p>Planned Derating — The removal of a component for repairs that is scheduled well in advance and has a predetermined duration.</p> <p>Scheduled Derating — A combination of maintenance and planned deratings.</p> <p><i>(Source: NERC Glossary of Terms)</i></p>
<i>DESN Station (Dual Element Spot Network)</i>	A particular configuration of a step-down transformer station having no high-side circuit breakers serving local load, based on a two-line supply, and designed to avoid interruption of load in the event of loss of one line. Sometimes referred to as a "Jones" station.
<i>Direct Operational Control</i>	<p>Refers to the physical control of devices and auxiliary system equipment (such as the close and open control of a circuit breaker or the on or off control of <i>voltage reduction capability</i>) by remote or direct means (such as: SCADA, supervisory control or hardware bench board control) such that the operation can be accomplished promptly.</p> <p>Direct operational control does not include local physical control via mechanism box controls or from the <i>unattended facility</i> location's switchyard or plant control room.</p>
<i>Direct the Operation</i>	Refers to the <i>IESO</i> 's issuance of operating instructions to maintain <i>reliability</i> of the <i>IESO-controlled grid</i> and enable the operation of the <i>IESO-administered markets</i> .

Directing the Operation	See Direct the Operation.
Direction	See Direct the Operation.
Disconnect Switch	A mechanical switching device used for isolating equipment or a circuit from the source of power. It is required to carry load current continuously and to carry abnormal or short circuit currents for short intervals as specified. It is also required to open or close circuits, either when negligible current is broken or made or when no significant change in the voltage across the terminals of each of the switchpoles occurs. <i>Disconnect</i> switches may have individual or gang-operated poles and may be either motor or manually operated.
Distributing Station	A group of electrical components forming a station which receives electrical <i>energy</i> at transmission or subtransmission voltages and transforms it to a lower level of voltage suitable for distributing the <i>energy</i> to local customers by distribution feeders.
Distribution Facilities	The <i>facilities</i> used for transmitting <i>energy</i> from the subtransmission <i>facilities</i> (distributing station), or directly from the transmission <i>facilities</i> (regional supply station) where no subtransmission <i>facilities</i> exist, to the ultimate users of <i>energy</i> . They include local distribution lines and transformers reducing the distribution voltage to the level at the customer's entrance.
Distribution Lines	Lines, overhead or underground, at voltages as high as 34.5 kV but usually below 13.8 kV, for transporting small amounts of power from a distributing station or a regional supply centre to the customers' local transformer.
Disturbance	An unplanned event that produces an abnormal system condition. (<i>Source: NERC Glossary of Terms</i>)
Double-Circuit Line	A line of supporting structures which carries two power circuits.
Duplicate Protection	One of two functionally equivalent, but not necessarily identical protection schemes on a system element. Duplicate protections are installed to provide redundancy in the event that one of the protections fails to operate, and also to permit work on one of the protections without requiring the removal of the associated system element from service.
Dynamic Rating	The process that allows a system element rating to vary with the changing environmental conditions in which the element is located. (<i>Source: NPCC Glossary of Terms</i>)
EHV (Extra High Voltage)	Transmission lines or equipment with a voltage higher than commonly used. At present, EHV is generally considered as 345 kV or higher.
Electrical Energy	The generation or use of electric power by a device over a period of time, expressed in kilowatt-hours (kWh) or other multiples of watt-hour. (<i>Source: NERC Glossary of Terms</i>)

Electrical Island	A portion of a power system or several power systems, that is electrically separated from the main grid.
Element	<p>Any electric device with terminals that may be connected to other electric devices, such as a <i>generator</i>, transformer, circuit, circuit breaker, or bus section.</p> <p>Limiting Element — The element that is either operating at its appropriate rating or would be following the limiting contingency and, as a result, establishes a system limit.</p> <p>(Source: NERC Glossary of Terms)</p>
Emergency Limits	<i>Security Limits</i> based on contingency criteria applicable under an <i>emergency operating state</i> .
Emergency Preparedness Planning Coordinator	<p>Responsible for the <i>registered market participant's</i> coordination of emergency preparedness planning requirements with the <i>IESO</i>. This function includes, in whole or in part and without limitation, the responsibility to:</p> <ul style="list-style-type: none"> • prepare your organization's <i>market participant emergency preparedness plan</i>, which includes the submission to the <i>IESO</i> of the 'Market Participant Emergency Preparedness Plan – Review of Submission Checklist'; • sign or recommend the signing of the above checklist; and • coordinate as required with the <i>IESO</i> and other <i>market participants</i> planning and participation in exercises and drills. <p>The <i>emergency</i> preparedness planning coordinator position is recommended to be assumed by an individual with sufficient authority to represent your organization in planning for emergency response and assigning and/or acquiring sufficient resources to be prepared to cope with emergencies in accordance with your organization's policies. This does not preclude a <i>restoration plan planning coordinator</i> from also serving in this function.</p> <p>The <i>emergency</i> preparedness planning coordinator need not to have responsibilities in the real time operation of any <i>registered facilities</i>. The <i>emergency</i> preparedness planning coordinator can also act in accordance with assigned accountabilities to mitigate emergencies including marshalling and assigning of resources and performing communications of a non-real time operational nature to external parties and in accordance with your organization's senior management communication chain. Such actions can serve to manage and mitigate the impacts of an emergency on the health and safety of employees and the public, including environmental impacts.</p>

Emergency Rating	<p>The rating as defined by the equipment owner that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units, that a system, <i>facility</i>, or element can support or withstand for a finite period. The rating assumes acceptable loss of equipment life or other physical or safety limitations for the equipment involved.</p> <p><i>(Source: NERC Glossary of Terms)</i></p>
Energized	Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.
Extreme Weather	A forecast that conditions exist for a severe thunderstorm or tornado within the next half hour, or that a tornado is occurring, or that wind gusts equal to or exceeding 130 km/h are forecast or are occurring.
Fault	<p>An event occurring on an electric system such as a short-circuit, a broken wire, or an intermittent connection.</p> <p><i>(Source: NERC Glossary of Terms)</i></p> <p>Permanent Fault — A fault which prevents the affected <i>element</i> from being returned to service until physical actions are taken to effect repairs or to remove the cause of the fault.</p> <p>Transient Fault — A fault which occurs for a short or limited time, or which disappears when the faulted <i>element</i> is separated from all electrical sources and which does not require repairs to be made before the <i>element</i> can be returned to service either manually or automatically.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p>
Fault Clearing	<p>The electrical separation of a faulted element from all sources of dynamic power.</p> <p>Delayed fault clearing — Fault clearing consistent with correct operation of a breaker failure protection group and its associated breakers, or of a backup protection group with an intentional time delay.</p> <p>High speed fault clearing — Fault clearing consistent with correct operation of high-speed relays and the associated circuit breakers without intentional time delay. Notes: The specified time for high-speed relays in present practice is 50 milliseconds (three cycles on a 60Hz basis) or less. [IEEE C37.100-1981]. For planning purposes, a total clearing time of six cycles or less is considered high speed.</p> <p>Normal fault clearing — Fault clearing consistent with correct operation of the protection system and with the correct operation of all circuit breakers or other automatic switching devices intended to operate in conjunction with that protection system.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p>
Fault Current	An electric current that flows from one conductor to ground or to another conductor owing to an abnormal connection (including an arc) between the two.
Fault Impedance	The impedance of that part of the fault path associated with the fault itself.
Fault MVA	The product of the fault current and the prefault voltage at the point of the fault.
Fault Severity	See Fault.

Feeders	The subtransmission lines or local distribution lines emanating from a transformer or distributing station.
First Contingency Loss	The largest <i>capacity outage</i> including any assigned Ten-Minute Reserve which would result from the loss of a single <i>element</i> . (Source: NPCC Glossary of Terms) For the IESO-controlled grid this typically represents the largest net (gross for nuclear <i>generators</i> operating <i>capacity outage</i> including any assigned Ten-Minute Reserve, which would result from the loss of a single Element, or a Darlington nuclear unit reactor.
Forced Derating	A reduction in unit power below The <i>Maximum Continuous Rating</i> as a result of the <i>forced outage</i> of an item of equipment. This also includes the derating during start-up following any <i>forced outage</i> of the unit.
Forced Outage	The removal from service of a generating unit, transmission line, or other <i>facility</i> for <i>emergency</i> reasons or a condition in which the equipment is unavailable due to unanticipated failure. (Source: NPCC Glossary of Terms)
Forced Outage Rate (FOR)	The ratio of hours a <i>facility</i> is on <i>forced outage</i> to the hours of operation for the <i>facility</i> plus the hours the <i>facility</i> is on <i>forced outage</i> .
Frequency Control	This describes a condition where the output of designated generators are controlled to respond to changes in frequency only.
Generating	This describes a condition wherein the turbine is providing sufficient <i>energy</i> (driving torque) to supply the <i>generator</i> losses and provide a net electrical output to the system
Generation (Electricity)	The process of producing electrical <i>energy</i> from other forms of <i>energy</i> ; also, the amount of electric <i>energy</i> produced, usually expressed in kilowatthours (kWh) or megawatthours (MWh). Generation, Gross — The electrical output at the terminals of the <i>generator</i> , usually expressed in megawatts (MW). Generation, Net — Gross generation minus <i>station service</i> or unit service power requirements, usually expressed in megawatts (MW). (Source: NERC Glossary of Terms)
Generation Rejection	The process of deliberately and automatically removing pre-selected generation from a power system, or initiating HVdc power runback, in <i>response</i> to a contingency or an abnormal condition in order to maintain the integrity of the system. Synonym: <i>Generator Dropping</i> . (Source: NPCC Glossary of Terms)
Generation Reserve Requirement	The <i>generation capacity</i> required in excess of that capacity required to supply peak <i>demand</i> and the capacity required to meet a specified <i>Generation Adequacy Standard</i> .

Generation Runback	The deliberate and automatic controlled reduction of <i>generator</i> output of pre-selected generating units via <i>special protection systems</i> provided for that purpose.
Ground Fault	A fault involving failure of insulation between a phase conductor or conductors and ground.
Ground Switch	A <i>disconnect</i> switch, usually gang-operated and manually controlled, used to <i>connect</i> the phases of an isolated circuit to ground.
Grounding Transformer	A transformer intended primarily to provide a neutral point for grounding an electrical network.
High Risk Condition	Any condition under which the risk of experiencing some contingencies will temporarily and significantly exceed the long-term average value.
High-Risk Security Limits	<i>Security Limits</i> which are developed for applications in <i>high risk operating states</i> for certain portions of the <i>IESO controlled grid</i> to avoid or to minimize the frequency or occurrence of specific consequences arising from design criteria contingencies, or to respect contingencies beyond design criteria.
Imbalance	A condition where the generation and <i>interchange schedules</i> do not match <i>demand</i> .
Industrial Appeal	<p>A request for voluntary load <i>curtailment</i> made by the <i>IESO</i> directly to:</p> <ul style="list-style-type: none"> • <i>Connected wholesale customers</i> in Ontario, and • Large industrial and large commercial customers (over 5 000 kW) embedded within a distribution system. <p>An Industrial Appeal can be either of the following:</p> <ul style="list-style-type: none"> • Limited Industrial Appeal: An appeal with application limited to the extent that industrial production is not materially affected. The appeal message requests industries to voluntarily reduce electricity consumption to the extent possible without impacting production. • Full Industrial Appeal: The appeal in this case should request industries to voluntarily reduce electricity consumption, even at the expense of lowering or rescheduling production.
Instability	The inability of a power system to reach a new state of equilibrium following an abnormal system condition or disturbance.
Instantaneous Protection	Any protection feature which responds to a fault and initiates tripping of the required breakers without any intentional time delay, beyond that required to ensure its own correct operation.
Instrument Transformer	A transformer that is intended to reproduce, in its secondary circuit, a voltage or current proportional to that of its primary circuit, with its phase relations substantially preserved. These transformers are utilized to provide indication for measuring, control, or protective devices.
Interconnection Capability	The maximum rated electrical capability of the <i>interconnection</i> under defined circumstances (e.g., the winter continuous rating, the summer continuous rating, etc).

<i>Interconnection Delivery Point</i>	A point on the Border of a power system where <i>energy</i> passes from one electric power system to another.
Interface	The specific set of transmission elements between two areas or between two areas comprising one or more electrical systems. <i>(Source: NERC Glossary of Terms)</i>
Intermediary Control Area	A <i>Control Area</i> that has connecting <i>facilities</i> in the scheduling path between the sending and receiving <i>Control Areas</i> and has <i>operating agreements</i> that establish the conditions for the use of such <i>facilities</i> .
Interruption	The disconnection of the power supply to a load.
Island	Refer to Electrical Island.
Key Facilities	<i>Facilities</i> required to establish a basic minimum power system following a system blackout. These <i>facilities</i> are essential to the restoration plan of the <i>control area</i> and include generating stations having black start units and other selected generating stations, transmission elements which are part of the basic minimum power system, and <i>control centres</i> and , telecommunication centres and telecommunication <i>facilities</i> which are necessary to support protection and control <i>facilities</i> , voice and data between and within <i>control centres</i> and voice and data between <i>control centres</i> and key generating /transmission substations. <i>(Source: NPCC Policy ‘A3’, ”Emergency Operating Criteria”)</i>
Limited Time Ratings (LTR)	A set of 5-minute, 15-minute and 120-minute ampacity ratings to accommodate shorter time interval <i>emergency</i> loading periods.
Load	An end-use device or customer that receives power from the electric system. Load should not be confused with <i>Demand</i> , which is the measure of power that a load receives or requires. See <i>Demand</i> . <i>(Source: NERC Glossary of Terms)</i>
Load Cycle	The normal pattern of <i>demand</i> over a specified time period associated with a device or circuit. <i>(Source: NERC Glossary of Terms)</i>
Load Displacement Generation	Generation produced by a load customer for the purpose of reducing its purchases from the wholesale or <i>retail</i> market.
Load Rejection	The process of deliberately and automatically removing pre-selected load from a power system by means of a <i>special protection system</i> , in <i>response</i> to a contingency or an abnormal condition in order to maintain the integrity of the system. <i>(Source: NPCC Glossary of Terms)</i>
Load Serving Entities (LSEs)	Load serving entities (LSEs) include <i>distributors</i> and <i>connected wholesale customers</i> .

Load Shedding	<p>The process of deliberately removing (either manually or automatically) preselected customer <i>demand</i> from a power system in <i>response</i> to an abnormal condition to maintain the integrity of the system and minimize overall customer <i>outages</i>.</p> <p>(Source: NPCC Glossary of Terms)</p>
Local Distribution Company (LDC)	See <i>Market Rules</i> for definition of distributor.
Long Time Emergency (LTE) Rating	<p>The maximum loading of electrical equipment based on nominal ambient conditions and recognizing the nominal load cycle for a period such as 4 hours or 24 hours.</p> <p>(Source: adapted from NPCC Glossary of Terms)</p>
Loop Flows	See <i>Parallel Path Flows</i> .
Loss of Load Probability (LOLP)	<p>The expected number of days in the year when the daily peak <i>demand</i> exceeds the available generating capacity. It is obtained by calculating the probability of daily peak <i>demand</i> exceeding the available for each day and adding these probabilities for all the days in the year. The index is referred to as Hourly Loss-of-Load-Probability if hourly <i>demands</i> are used in the calculations instead of daily peak <i>demands</i>. LOLP also is commonly referred to as Loss-of-Load-Expectation.</p>
Maintenance	Any activity carried out on equipment, or to repair the equipment in order to ensure that the equipment continues to perform its intended functions.
Maintenance Outage	An outage whose starting time could not be postponed from one season to another but when the outage was taken could have been postponed beyond the next weekend.
Manual Control	Control of the operation of equipment whether manually or power operated, by operator action .
Margin	<p>The difference between net capacity resources and net internal <i>demand</i>.</p> <p>Margin is usually expressed in megawatts (MW).</p> <p>Adequate Regulating Margin — The minimum on-line capacity that can be increased or decreased to allow the electric system to respond to all reasonable instantaneous <i>demand</i> changes to be in compliance with the Control Performance Criteria.</p> <p>Available Margin — The difference between Available Resources and Net Internal <i>Demand</i>, expressed as a percent of Available Resources. This is the capacity available to cover random factors such as <i>forced outages</i> of generating equipment, <i>demand</i> forecast errors, weather extremes, and capacity service schedule slippages.</p> <p>Capacity Margin — The difference between net capacity resources and net internal <i>demand</i> expressed as a percent of net capacity resources.</p> <p>(Source: NERC Glossary of Terms)</p>

Maximum Continuous Rating	The design or tested maximum electrical output for a generating unit operating continuously.
Mean Time Between Failures (MTBF)	The average time (preferably expressed in hours) between failures of a continuously operating device, circuit or system.
Median Forecast	The central tendency of the load forecast bandwidth; there is a 50 per cent chance that <i>demand</i> will be lower than this level, and a 50 per cent chance that it will be higher.
Momentary Forced Outage	A momentary <i>forced outage</i> is an <i>outage</i> with an immediately self-clearing cause so that the affected component can be restored to service, either automatically or as soon as a circuit-interrupting device can be reclosed.
Multi-Interval Optimization (MIO)	Applied to the Real Time Constrained sequence only, MIO is an optimization technique to maximize the weighted sum of the gain from trade amongst market participants for the next 11 intervals.
Net Maximum Continuous Rating - Adjusted (MW)	The net electric output which a generating unit is currently able to produce continuously. Note: This may include seasonal effects or other “long term” deratings.
Net Minimum Continuous Load	Adjusted (for fossil-fired units only): The net minimum electric output which a generating unit can maintain for an eight-hour period. Note: Ignition support for flame stability will normally be required.
Net Minimum Continuous Load – Normal (MW)	The net minimum electric output which a fossil-fired generating unit can maintain continuously without ignition support.
Net Operating Range (MW)	The range of net electric output of a generating unit from the Net Peaking Capacity to the Net Minimum Continuous Load – Adjusted. If a Net Minimum Continuous Load – Adjusted does not exist then the lower limit of the operating range is the Net Minimum Continuous Load – Normal.
Net Peak Capacity (MW)	The net maximum allowable electric output which a generating unit is currently able to produce for a specified time period. This Net Peaking Capacity is the upper limit of the operating range of the unit.
Net Schedule	The algebraic sum of all scheduled transactions across a given transmission path or between <i>Control Areas</i> for a given period or instant in time. <i>(Source: NERC Glossary of Terms)</i>
Network	The term used to describe a bulk power electrical system and the transmission lines which connect the system <i>generators</i> and loads together.
Non-Synchronized Reserve	That portion of operating capacity which is available for synchronizing to the network and that capacity which can be made available by curtailing <i>dispatchable loads</i> . <i>(Source: adapted from NPCC Glossary of Terms)</i>

Normal Operating State Security Limits	<i>Security Limits</i> based on contingency criteria applicable under a <i>normal operating state</i>
Normal Fault Clearance	Fault clearing consistent with correct operation of the protection system and with the correct operation of all circuit breakers or other automatic switching devices intended to operate in conjunction with that protection system. (Source: NPCC Glossary of Terms)
Normal Fault Clearing Time	The maximum elapsed time required to clear a particular fault, based on the correct operation of the fastest protection feature provided to respond to such a fault.
Normal Transfer Capability	The amount of power transfer allowed between areas or within an area such that, when operating within normal operating limits, the following conditions apply: <ul style="list-style-type: none"> • pre-contingency voltages and equipment loadings are within their normal operating ranges, and • following the most severe contingency for which the operating limits were developed, post-contingency voltages and equipment loadings should be within prescribed limits.
North American Electric Reliability Council (NERC)	A not-for-profit company formed by the electric utility industry in 1968 to promote the <i>reliability</i> of the electricity supply in North America. <i>NERC</i> consists of nine Regional Reliability Councils and one <i>affiliate</i> whose members account for virtually all the electricity supplied in the United States, Canada, and a portion of Baja California North, Mexico. The members of these Councils are from all segments of the electricity supply industry — investor-owned, federal, rural electric cooperative, state/municipal, and provincial utilities, independent power producers, and power marketers. The <i>NERC</i> Regions are: East Central Area Reliability Coordination Agreement (ECAR); Electric Reliability Council of Texas (ERCOT); Mid-Atlantic Area Council (MAAC); Mid-America Interconnected Network (MAIN); Mid-Continent Area Power Pool (MAPP); Northeast Power Coordinating Council (<i>NPCC</i>); Southeastern Electric Reliability Council (SERC); Southwest Power Pool (SPP); Western Systems Coordinating Council (WSCC); and Alaskan Systems Coordination Council (ASCC, <i>Affiliate</i>).

Northeast Power Co-ordinating Council (NPCC)	<p>The Northeast Power Co-ordinating Council (<i>NPCC</i>) is an electric regional <i>reliability</i> council which was formed shortly after the 1965 Northeast Blackout to promote the <i>reliability</i> and efficiency of the interconnected power systems within its geographic area. The <i>NPCC</i> geographic areas contains in Ontario, Quebec, New Brunswick, New York and New England.</p> <p>The Council has developed a number of fundamental Criteria Documents that clearly define the principles which need to be followed to assure that <i>NPCC</i> can accomplish its mission of promoting a reliable interconnected power system. <i>NPCC</i> also conducts regular <i>reliability</i> assessment of members' conformance to its Criteria, Guides and Procedures.</p> <p><i>NPCC</i> is one of ten Regional Reliability Councils throughout the United States, Canada and portions of Mexico that form the North American Electric Reliability Council (<i>NERC</i>). As a member of <i>NERC</i>, <i>NPCC</i> provides regional input into matters concerning the <i>reliability</i> of the electric power system on a national level.</p>
NPCC Reportable Event	<p>System disturbances involving losses of load, generation or transmission <i>facilities</i> within <i>NPCC Control Areas</i> which equal or exceed the following criteria are reportable events:</p> <ul style="list-style-type: none"> • Actual net interchange deviations equal to or greater than 500 MW (Maritime: 300 MW). • Loss of generation or load equal to or greater than 500 MW (Maritime: 300 MW). • System frequency deviations equal to or greater than 0.03 Hz (Hydro-Quebec: 0.5 Hz). (System frequency deviations that occur for events outside of the <i>NPCC</i> are reported for analysis of frequency <i>response</i>, but are not included in the reporting for the <i>NERC</i> Disturbance Control Standard.) <p>(Source: <i>NPCC Glossary of Terms</i>)</p>
OASIS (Open – Access Same-Time Information System)	<p>An electronic posting system for transmission access data that allows all <i>Transmission Customers</i> to view the data simultaneously.</p> <p>(Source: <i>NERC Glossary of Terms</i>)</p>
Off-Load	<p>Indicates a state of being electrically connected to a voltage source but not producing or transferring real power.</p>
Off Peak	<p>Those hours or other periods defined by contract or other agreements or guides as periods of lower electrical <i>demand</i>.</p> <p>(Source: <i>NERC Glossary of Terms</i>)</p>
Off-Potential	<p>Indicates a state of being electrically disconnected from all voltage sources but not grounded.</p>
On-Load	<p>Indicates a state of being electrically connected to a voltage source and providing or transferring real power.</p>
On-Peak	<p>Those hours or other periods defined by contract or other agreements or guides as periods of higher electrical <i>demand</i>.</p> <p>(Source: <i>NERC Glossary of Terms</i>)</p>

On-Potential	Indicates a state of being electrically connected to a voltage source.
Open	In a circuit breaker or other switching device, the state when the switch contacts are apart, the switch is “off,” and current cannot flow. The opposite of closed. Open Operation The movement of contacts from the closed to the open position.
Operate in Parallel (Elements)	The condition in which elements of the system such as transmission circuits or transformers are connected directly or indirectly to the same terminals and share changes in power flows in a constant relationship to each other.
Operate in Parallel (Systems)	The condition in which two or more power systems are connected so that all systems operate at exactly the same average electrical speed.
Operating Capacity	The capacity claimed for any generating source recognizing any temporary deratings, governor load limits, proven maximum loading rates, starting times, and equipment limitations including transmission operating limits. <i>(Source: NPCC Glossary of Terms)</i>
Operating Criteria	The fundamental principles of reliable <i>interconnected systems</i> operation. <i>(Source: NERC Glossary of Terms)</i>
Operating Guides	Operating practices that a <i>Control Area</i> or systems functioning as part of a <i>Control Area</i> may wish to consider. The application of Guides is optional and may vary among <i>Control Areas</i> to accommodate local conditions and individual system requirements. <i>(Source: NERC Glossary of Terms)</i>
Operating Instructions	Training documents, appendices, and other documents that explain the Criteria, Requirements, Standards, and Guides. <i>(Source: NERC Glossary of Terms)</i>
Operating Limit	The maximum value of the most critical system operation parameter(s) which meet(s): <ul style="list-style-type: none"> • pre-contingency criteria as determined by equipment loading capability and acceptable voltage conditions; • stability criteria; and • post-contingency loading and voltage criteria. Also known as operating <i>security limit</i> . <i>(Source: NPCC Glossary of Terms)</i>
Operating Policies	The doctrine developed for <i>interconnected systems</i> operation. This doctrine consists of Criteria, Standards, Requirements, Guides, and instructions and apply to all <i>Control Areas</i> . <i>(Source: NERC Glossary of Terms)</i>
Operating Requirements	Obligations of a <i>Control Area</i> and systems functioning as part of a <i>Control Area</i> . <i>(Source: NERC Glossary of Terms)</i>

Operating Standards	The obligations of a <i>Control Area</i> and systems functioning as part of a <i>Control Area</i> that are measurable. A Standard may specify monitoring and surveys for compliance. (Source: NERC Glossary of Terms)
Overload Capability	The maximum load that a machine, apparatus, or device can carry for a specified period of time under specified conditions when operating beyond its normal rating but within the limits of the manufacturer's guarantee, or in the case of expiration of the guarantee, within safe limits as determined by the owner.
Parallel Path Flows	The difference between the scheduled and actual power flow, assuming zero inadvertent interchange, on a given transmission path. Synonyms: Loop Flows, Unscheduled Power Flows, and Circulating Power Flows. (Source: NERC Glossary of Terms)
Peak Demand	The highest electric requirement occurring in a given period (e.g., an hour, a day, month, season, or year). For an electric system, it is equal to the sum of the metered net outputs of all <i>generators</i> within a system and the metered line flows into the system, less the metered line flows out of the system. (Source: NERC Glossary of Terms)
Permanent Fault	A fault which prevents the affected component or element from being returned to service until physical actions are taken to effect repairs or to remove the cause of the fault. (Source: NPCC Glossary of Terms)
Phase Conductor	One conductor of a polyphase (usually three phase) electrical supply.
Phase Fault	A fault not involving ground. In a three-phase network, a phase-to-phase or three-phase fault.
Planning Guides	Good planning practices and considerations that Regions, subregions, power pools, or individual systems should follow. The application of Planning Guides may vary to match local conditions and individual system requirements. (Source: NERC Glossary of Terms)
Planning Policies	The framework for the <i>reliability</i> of interconnected bulk electric supply in terms of responsibilities for the development of and conformance to NERC Planning Principles and Guides and Regional planning criteria or guides, and NERC and Regional issue resolution processes. NERC Planning Procedures, Principles, and Guides emanate from the Planning Policies. (Source: NERC Glossary of Terms)
Planning Principles	The fundamental characteristics of reliable interconnected bulk electric systems and the tenets for planning them. (Source: NERC Glossary of Terms)
Planning Procedures	An explanation of how the Planning Policies are addressed and implemented by the NERC Engineering Committee, its subgroups, and the Regional Councils to achieve bulk electric system <i>reliability</i> . (Source: NERC Glossary of Terms)

Planning Week	The 7-day period beginning with a Monday.
Potential	The voltage at a point relative to some reference point.
Power	<p>Apparent Power — The product of the volts and amperes. It comprises both <i>real (or active)</i> and <i>reactive</i> power, usually expressed in kilovoltamperes (kVA) or megavoltamperes (MVA).</p> <p>Reactive Power — The portion of electricity that establishes and sustains the electric and magnetic fields of alternating-current equipment. Reactive power must be supplied to most types of magnetic equipment, such as motors and transformers. It also must supply the reactive losses on transmission <i>facilities</i>. Reactive power is provided by <i>generators</i>, synchronous condensers, or electrostatic equipment such as capacitors and directly influences electric system voltage. It is usually expressed in kilovars (kvar) or megavars (Mvar).</p> <p>Real (or Active) Power — The rate of producing, transferring, or using electrical <i>energy</i>, usually expressed in kilowatts (kW) or megawatts (MW).</p> <p><i>(Source: NERC Glossary of Terms)</i></p>
Power Factor	The ratio of active power, measured in watts, to apparent power, measured in volt-amperes.
Power Swing	<p>An unscheduled change in the power flows on a system, usually of an oscillatory nature, caused by a lack of equilibrium between the synchronous machines on the system or between parts of the system itself. Power swings may result from faults on the system, from switching operations, or from improper operation of governors or voltage regulators.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p>
Priority Loads	Priority loads are a category of load, as identified in Market Manual 7.10: Ontario Electricity Emergency Plan (OEEP), that should be restored promptly to mitigate the impact on public health and safety, the environment, or the economy.

<p>Protection</p>	<p>The provisions for detecting power system <i>faults</i> or abnormal conditions and taking appropriate automatic corrective action.</p> <p>Protection group</p> <p>A fully integrated assembly of <i>protective relays</i> and associated equipment that is designed to perform the specified protective functions for a power system <i>element</i>, independent of other groups.</p> <p>Notes:</p> <ul style="list-style-type: none"> • Various identified as Main Protection, Primary Protection, Breaker Failure Protection, Back-Up Protection, Alternate Protection, Secondary Protection, A Protection, B Protection, Group A, Group B, System 1 or System 2. • Pilot protection is considered to be one protection group. <p>Protection system</p> <p>Element Basis</p> <p>One or more protection groups; including all equipment such as <i>instrument transformers</i>, station wiring, circuit breakers and associated trip/close modules, and communication <i>facilities</i>; installed at all terminals of a power system <i>element</i> to provide the complete protection of that <i>element</i>.</p> <p>Terminal Basis</p> <p>One or more protection groups, as above, installed at one terminal of a power system <i>element</i>, typically a transmission line.</p> <p>Pilot Protection</p> <p>A form of line protection that uses a communication channel as a means to compare electrical conditions at the terminals of a line.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p> <p>Timed Protection</p> <p>Any protection feature which operates with an intentional time delay, generally to ensure coordination with other protections</p>
<p>Protection Zone</p>	<p>A portion of the electrical power system (generally defined by the location of the current transformers which constitute the input to the protection) within which faults are intended to be detected by specific protections. Protection zones generally arranged to overlap in order to insure total coverage.</p>
<p>Protective Relay</p>	<p>A device whose function is to monitor system or equipment conditions and to detect defective equipment or other dangerous or undesired conditions and to initiate suitable, pre-determined action. A protective relay may be classified according to its input quantities, operating principle, or performance characteristics.</p> <p><i>(Source: adapted from NPCC Glossary of Terms)</i></p>

Protective Relaying Scheme	An assembly of protective and auxiliary relays electrically interconnected and provided with appropriate input quantities, power supply, etc, so as to perform the required functions detecting fault or abnormal conditions, and initiate appropriate corrective action. A Protective Relay Scheme may consist of a single protection “feature” (e.g., gas protection on a transformer) or it may incorporate a multiplicity of protection features (e.g. a transmission line protection may include instantaneous overcurrent, instantaneous distance, timed distance, permissive overreach, direct transfer tripping, overvoltage, etc.)
Public Appeal	A general request for voluntary load <i>curtailment</i> directed to all customers by way of the media.
Radial Circuit	A circuit which has only one possible source of supply.
Ramp Period	The time between ramp start and end times usually expressed in minutes. <i>(Source: NERC Glossary of Terms)</i>
Ramp Rate (Schedule)	The rate, expressed in megawatts per minute, at which a <i>generator</i> can increase or decrease its power output. (see <i>Response Rate</i>) The rate, expressed in megawatts per minute, at which the <i>interchange schedule</i> is attained during the ramp period. <i>(Source: NERC Glossary of Terms)</i>
Rating	The operational limits of an electric system, <i>facility</i> , or element under a set of specified conditions. Continuous Rating — The rating as defined by the equipment owner that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units that a system, <i>facility</i> , or element can support or withstand indefinitely without loss of equipment life. Normal Rating — The rating as defined by the equipment owner that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units that a system, <i>facility</i> , or element can support or withstand through the daily <i>demand</i> cycles without loss of equipment life. Emergency Rating — The rating as defined by the equipment owner that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units, that a system, <i>facility</i> , or element can support or withstand for a finite period. The rating assumes acceptable loss of equipment life or other physical or safety limitations for the equipment involved. Long Time Emergency (LTE) Rating — The maximum rating of electrical equipment based on nominal ambient conditions and recognizing the nominal <i>load cycle</i> for a long period such as 24 hours. Short Time Emergency (STE) Rating — The maximum loading of electrical equipment which can be sustained for 15 minutes based on nominal ambient conditions and recognizing pre-loading conditions. <i>(Source: NPCC Glossary of Terms)</i>

Recall Time	The amount of time required to return to service the <i>facility</i> or equipment scheduled for the <i>outage</i> . The time estimate will cover the period from when a request is made by <i>IESO</i> to have the equipment returned to service to the time it becomes fully available assuming the equipment has been released and its <i>outage</i> has begun.
Recallability	The right of a transmission provider to interrupt all or part of a <i>transmission service</i> for any reason, including economic, that is consistent with Federal <i>Energy Regulatory Commission</i> policy and the transmission provider's <i>transmission service</i> tariffs or contract provisions. (Source: <i>NERC Glossary of Terms</i>)
Relay Margin	The difference between the normal maximum deviations of the measured quantities (generally power swings or loads) and the settings of any protective relays which respond to the same quantities. This difference is often normalized and expressed as a percentage of the relay setting.
Relay Reach	Relay setting, particularly in reference to protective relays used in transmission line protections. The "reach" is expressed in ohms, miles or percentage of line length, to identify the line section within which faults would be detected by the relay in question.
Relay Setting	A specified value, or set of values, at which a relay will operate (i.e., at which its output circuitry will change state to initiate subsequent action).
Relay Zone	An operating element of a protective relay or feature of a protection scheme (e.g., Zone 1 and Zone 2 of a transmission line protection) provided to permit discrimination between faults according to location thereby to initiate appropriate action.
Reliability Coordinator	An entity that provides the <i>reliability</i> assessment and <i>emergency</i> operations coordination for a <i>Control Area</i> or a group of <i>Control Areas</i> . <i>Reliability Coordinators</i> must not participate in the <i>wholesale</i> or <i>retail</i> merchant functions.
Reliability Criteria	Principles used to design, plan, operate, and assess the actual or projected <i>reliability</i> of an electric system. (Source: <i>NERC Glossary of Terms</i>)
Remote Control	Control of device operation from a distance by means of a control link, usually electrical, between the control device and the apparatus to be operated. The link may be over direct wires, over power line carriers or microwave channels, or by mechanical means.
Remote trip	A protection feature whereby automatic tripping is achieved at a location remote from the initiating protective relay by means of DC signaling on metallic conductors.
Repreparation Time	The elapsed time from the occurrence of a contingency until a specified level of <i>IESO-controlled grid security</i> is achieved.
Rerating	A change in the capability of a <i>generator</i> due to a change in conditions such as age, upgrades, auxiliary equipment, cooling, etc. (Source: <i>NERC Glossary of Terms</i>)

<p>Resource Adequacy Design Criteria</p>	<p>Sufficient generation reserve must be available such that, after allowing for <i>interconnection</i> assistance and <i>emergency</i> operating actions, the expected loss of load probability (LOLP), caused by a deficiency of generation, is less than 1 day in 10 years.</p>
<p>Response Rate (Ramp Rate)</p>	<p>Electricity Response Rate — The rate of load change that a generating unit can achieve under <i>emergency</i> conditions, such as loss of a unit, expressed in Megawatts per minute (MW/Min).</p> <p>Normal Response Rate — The rate of load change that a generating unit can achieve for normal loading purposes expressed in megawatts per minute (MW/Min).</p> <p><i>(Source: NERC Glossary of Terms)</i></p>
<p>Restoration Plan Planning Coordinator</p>	<p>Responsible for the coordination of a <i>registered market participant's</i> restoration planning requirements with the <i>IESO</i> for that <i>market participant's registered facilities</i>. This function includes, in whole or in part and without limitation, the responsibility to:</p> <ul style="list-style-type: none"> • prepare the <i>restoration plan market participant's restoration plan market participant attachment</i>, which includes the submission to the <i>IESO</i> of the required documentation in accordance with the 'OPSRP Restoration Plan Participant Attachment Submission Checklist' (OPSRP Appendix J); • sign or recommend the signing of the above checklist; • coordinate as required with the <i>IESO</i> and other <i>market participants</i> in planning and participation in exercises and drills; • coordinate as required with the <i>IESO</i> and the <i>market participant's transmitter</i> in planning and participation in Integrated Tests (black start and line energization pursuant to Appendix E3); • plan for and administrate the testing of Critical Components and fulfill necessary reporting requirements to the <i>IESO</i>; and • coordinate review of <i>OPSRP</i> revisions or related technical considerations. <p>The restoration plan planning coordinator is recommended to be fulfilled by an individual with a technical / operational background as the coordinator will function as a Subject Matter Expert (SME) on operational matters related to the operation of the <i>market participant's facilities</i>.</p> <p>The restoration plan planning coordinator need not to have responsibilities in the real time operation of the <i>market participant's facilities</i>. This does not preclude a <i>facility</i> location operator also serving in this function but is stated to recognize the planning nature of the role.</p>

Restricted	Constraint of an element of the power system (e.g. generators, transmission elements) at a certain time imposed by system reliability issues, equipment, environmental or fuel supply conditions, etc.
Rotational Load Shedding	Form of <i>demand</i> control whereby portions of load in an electrical area are sequentially interrupted and restored, commonly on a 30-minute rotation.
Scheduled Derating	A reduction in unit power below the <i>Maximum Continuous Rating</i> as a result of a <i>planned</i> or maintenance <i>outage</i> of an item of equipment. This also involves the derating during start-up following any maintenance or <i>planned outage</i> of the unit.
Separated	May refer to any one of the following: <ul style="list-style-type: none"> • A portion of the ICG that has been electrically isolated, forming an electrical island. • A section of the ICG which has undergone a major disconnection from the normal configuration in the ICG. • Any facility which has been disconnected from the ICG.
Short Circuit	An abnormal connection including an arc of relatively low impedance, whether made accidentally or intentionally, between two points of different potential. Note: The term fault or short-circuit fault is used to describe a short circuit. <i>(Source: NPCC Glossary of Terms)</i>
Shutdown	The condition of a generation unit where the generator rotor is slowly going to stop or is at rest.
Significant Event	A significant event is a contingency on the bulk <i>electricity system</i> less severe than a system disturbance, but requiring assessment, analysis and special reporting by <i>IESO</i> and <i>Market Participants</i> of actual or potential impact on the <i>reliability</i> of the <i>IESO Controlled Grid</i> . <i>(Source: internal IESO documentation only)</i>
Single Circuit Line	A line of supporting structures which carries only one circuit.
Skywire	Multiple-grounded wire or wires placed above the phase conductors for the purpose of intercepting direct strokes of lightning in order to protect the phase conductors. They also carry fault current.
Speed No Load	A condition wherein a generator turbine is providing only enough energy (driving torque) to overcome machine losses. It is at synchronous speed and the unit breaker/disconnect is closed. No real power is flowing between the unit and the system.

Stability	<p>The ability of an electric system to maintain a state of equilibrium during normal and abnormal system conditions or disturbances.</p> <p>Small-Signal Stability — The ability of the electric system to withstand small changes or disturbances without the loss of synchronism among the synchronous machines in the system.</p> <p>Transient Stability — The ability of an electric system to maintain synchronism between its parts when subjected to a disturbance and to regain a state of equilibrium following that disturbance.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p> <p>Steady-State Stability - The ability of the power system to remain in equilibrium following relatively small disturbances such as normal load changes and to damp out any oscillations caused by such changes.</p>
Stability Limit	<p>The maximum power flow possible through some particular point in the system while maintaining stability in the entire system or the part of the system to which the stability limit refers.</p> <p><i>(Source: NPCC Glossary of Terms)</i></p> <p>Transient Stability Limit - The maximum power flow possible through some particular point in the system when the entire system or the part of the system to which the stability limit refers is operating with transient stability.</p>
Stepdown Transformer	<p>A transformer in which the <i>energy</i> transfer is normally from the high voltage to the low voltage.</p>
Stepup Transformer	<p>A transformer in which the <i>energy</i> transfer is normally from the low voltage to the high voltage.</p>
Substation	<p>A <i>facility</i> for switching electrical elements, transforming voltage, regulating power, or metering.</p> <p><i>(Source: NERC Glossary of Terms)</i></p>
Subtransmission Facilities	<p>The <i>facilities</i> used for transmitting <i>energy</i> from the transmission <i>facilities</i> to the <i>distribution facilities</i> or to local customers. They include subtransmission lines and distributing stations</p>
Subtransmission Line	<p>A power circuit, overhead or underground, usually at voltages between 44 kV and 4 kV for transmitting power from Bulk Power System <i>delivery points</i> at area supply stations to <i>distribution</i> stations or to local three-phase customers.</p>
Supervised Reclosure	<p>Automatic reclosure of a circuit breaker(s) which is permitted to occur only if certain prerequisite conditions are met (e.g., line undervoltage, voltage presence, synchronism check, etc).</p>
Supervisory Control	<p>A form of remote control comprising an arrangement for the selective control of remotely located <i>facilities</i> by an electrical means over one or more communications media.</p> <p><i>(Source: NERC Glossary of Terms)</i></p>

Supervisory Control and Data Acquisition (SCADA)	A system of remote control and telemetry used to monitor and control the electric system. <i>(Source: NERC Glossary of Terms)</i>
Surge	A transient variation of current, voltage, or <i>power</i> flow in an electric circuit or across an electric system. <i>(Source: NPCC Glossary of Terms)</i>
Switching Station	A station whose function is to interconnect transmission lines through circuit breakers. Its purpose is to permit subdivision of the <i>transmission system</i> to limit the amount of it that is lost as the result of a fault, or to allow portions of the system to be removed from service for operating or maintenance purposes.
Synchronize	The process of connecting two previously separated alternating current apparatuses after matching frequency, voltage, phase angles, etc. (e.g., paralleling a <i>generator</i> to the electric system). <i>(Source: NERC Glossary of Terms)</i>
Synchronized	Two previously separated electrical apparatus that are electrically connected together after matching frequency, voltage magnitude and voltage angles.
Synchronous Condenser	A synchronous machine which operates without mechanical load to supply or absorb reactive power for voltage control purposes. <i>(Source: NPCC Glossary of Terms)</i>
System	An interconnected combination of generation, transmission, and distribution components. <i>(Source: adapted from NERC Glossary of Terms)</i>
System Component	An individual item of electrical apparatus connected directly to the high tension portion of the power system; for example, a <i>generator</i> , transformer, breaker, wavetrapp, <i>disconnect</i> switch, <i>instrument transformer</i> or bus section. Ancillary apparatus such as protective relays are not considered to be system components. Note: IEEE definition of Component is: a piece of equipment, a line, a section of line or a group of items that are viewed as an entity for purposes of reporting, analysing and predicting <i>outages</i>
System Disturbance	A system disturbance is an unplanned event that produces an abnormal system condition on the bulk <i>electricity system</i> resulting in widespread interruption of customer load. It may be associated with a fault, and may be characterized by any of the following phenomena: the loss of power system stability, cascading <i>outages</i> of transmission circuits, abnormal ranges of frequency or voltage. <i>(Source: NERC Glossary of Terms, NPCC Glossary of Terms, SCO Event Reporting)</i>
System Element	A system component or a set of system components which form a single zone of protection bounded by one or more circuit breakers.
System Operator	An individual at an electric system control center whose responsibility it is to monitor and control that electric system in real time. <i>(Source: NERC Glossary of Terms)</i>

Telemetry	The process by which measurable electrical quantities from substations and generating stations are instantaneously transmitted using telecommunication techniques. <i>(Source: NERC Glossary of Terms)</i>
Thermal Rating	The maximum amount of electrical current that a transmission line or electrical <i>facility</i> can conduct over a specified time period before it sustains permanent damage by overheating or before it violates public safety requirements. <i>(Source: NERC Glossary of Terms)</i>
Three-Phase Circuit	An alternating current circuit in which three "phase conductors" are energized by alternating electromotive forces which differ in phase by one-third of a cycle, that is 120 degrees. In practice the phase relationships may vary several degrees. Three-phase <i>transmission systems</i> are more efficient than single-phase systems and are in almost universal use in the electrical utility industry.
Three-Phase Fault	An abnormal connection in the three phases of a three-phase network are electrically connected to each other.
Tie Line	A circuit connecting two or more <i>Control Areas</i> or systems of an electric System <i>(Source: NPCC Glossary of Terms)</i>
Tie Line Bias	A mode of operation under <i>automatic generation control</i> in which the <i>area control error</i> is determined by the actual net interchange minus the biased scheduled net interchange. <i>(Source: NPCC Glossary of Terms)</i>
Time Error	An accumulated time difference between <i>Control Area</i> system time and the time standard. Time error is caused by a deviation in <i>Interconnection</i> frequency from 60.0 Hertz. <i>(Source: NERC Glossary of Terms)</i>
Time Error Correction	An offset to the <i>Interconnection's</i> scheduled frequency to correct for the time error accumulated on electric clocks. <i>(Source: NERC Glossary of Terms)</i>
Transfer Capability	The measure of the ability of interconnected electric systems to move or transfer power <i>in a reliable manner</i> from one area to another over all transmission lines (or paths) between those areas under specified system conditions. The units of transfer capability are in terms of electric power, generally expressed in megawatts (MW). In this context, "area" may be an individual electric system, power pool, <i>Control Area</i> , subregion, or <i>NERC Region</i> , or a portion of any of these. Transfer capability is directional in nature. That is, the transfer capability from "Area A" to "Area B" is <i>not</i> generally equal to the transfer capability from "Area B" to "Area A." <i>(Source: NERC Glossary of Terms)</i>
Transfer Trip	A protection feature whereby automatic tripping is achieved at a location remote from the initiating relay by any communications means other than DC signalling on metallic conductors (i.e., voice frequency tones, power line carrier, etc).

Transformation	Transforming electrical <i>energy</i> from one voltage to another.
Transformer	The apparatus which increases or decreases the voltage of electricity. It is an electromagnetic device consisting of a tapped winding or with two or more coupled windings whose primary purpose is to change AC voltage levels. Power transformers usually have a magnetic core and most larger units have the windings submerged in insulating oil, or other liquid, which serves as an insulant and cooling medium. The type of winding or the use for which the transformer is designed may be designated by a suitable prefix, i.e., autotransformer, grounding transformer.
Transformer Station	A group of electrical components or elements including transformers arranged to transfer power from one voltage level to another. A transformer station may also function as a switching station at the various voltage levels and provide for an interchange or redistribution of power among the circuits at each voltage level.
Transformer Taps	Connections made to intermediate points of a winding of a transformer so that the number of turns in various sections of the winding can be changed. The effect of making connections to different transformer taps is to produce changes in the ratio of voltages between the input and output sides of the transformer. In some instances, this change in ratio or change in taps can be made while the transformer is still in service.
Transmission	An interconnected group of lines and associated equipment for the movement or transfer of electric <i>energy</i> between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems. Bulk Transmission — A functional or voltage classification relating to the higher voltage portion of the <i>transmission system</i> . Subtransmission — A functional or voltage classification relating to the lower voltage portion of the <i>transmission system</i> . (Source: NERC Glossary of Terms)
Transmission Constraints	Limitations on a transmission line or element that may be Reached during normal or contingency system operations.
Transmission Line Capacity	The <i>maximum continuous rating</i> of a transmission line. The rating may be limited by thermal considerations, capacity of associated equipment voltage <i>regulation</i> system stability or other factors.
Transmission Losses	The difference (in MW) between the total power generated and the power delivered to the end users.
Tripping Zone	A portion of the power system which must removed from service in order to clear a fault there. Note that a tripping zone may encompass one or more protection zones.
Turning gear	A set of gears driven manually or by motor, which slowly rotate the hot shafts of large generators in order to avoid sagging.

Type I Special Protection System	An <i>SPS</i> which recognizes or anticipates abnormal system conditions resulting from design and operating criteria contingencies, and whose mis-operation or failure to operate would have a significant adverse impact outside of the <i>local area</i> . The corrective action taken by the <i>SPS</i> along with the actions taken by other protection systems are intended to return power system parameters to a stable and recoverable state. (Source: NPCC Document B-11 Special Protection Systems Guideline)
Type II Special Protection System	An <i>SPS</i> which recognizes or anticipates abnormal system conditions resulting from extreme contingencies or other extreme causes, and whose mis-operation or failure to operate would have a significant adverse impact outside of the <i>local area</i> . In the application of these systems, their <i>security</i> is the prime concern. (Source: NPCC Document B-11 Special Protection Systems Guideline)
Type III Special Protection System	An <i>SPS</i> whose misoperation or failure to operate results in no <i>significant adverse impact</i> outside the <i>local area</i> . It should be recognized that a Type III <i>SPS</i> may, due to system changes, become Type I or Type II. (Source: NPCC Document B-11 Special Protection Systems Guideline)
Voltage Collapse	An event that occurs when an electric system does not have adequate reactive support to maintain voltage stability. Voltage Collapse may result in <i>outage</i> of system elements and may include interruption in service to customers. (Source: NERC Glossary of Terms)
Voltage Gradient	Rate of change of voltage with distance in such units as kilovolts per metre.
Voltage Limits	Normal Voltage Limits — The operating voltage range on the <i>interconnected systems</i> that is acceptable on a sustained basis. Emergency Voltage Limits — The operating voltage range on the <i>interconnected systems</i> that is acceptable for the time sufficient for system adjustments to be made following a <i>facility outage</i> or system disturbance. (Source: NERC Glossary of Terms)
Voltage Reduction	A means to reduce the <i>demand</i> by lowering the customer's voltage. (Source: NERC Glossary of Terms)
Voltage Stability	The condition of an electric system in which the sustained voltage level is controllable and within predetermined limits. (Source: NERC Glossary of Terms)
Warm Start Up	A start up after a generating unit has been shut down for a period between 16 and 60 hours.
Weather Advisory Area	An area within 50 km of transmission- <i>facilities</i> for which the implementation of High-Risk Mode Limits may be required.

- End of Section –

References

Document ID	Document Title
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
N/A	Northeast Power Coordinating Council Glossary of Terms
N/A	North American Electric Reliability Council Glossary of Terms

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