

# **Requirements and Procedures for Reporting Information and Data Needed to Operate the Main Transmission System (RTP) and Québec Interconnection**

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## Version history

Version	Description of changes	Date
1	New document	2016-12-23

# 1. Purpose

The purpose of this document is to ensure that Contrôle des mouvements d'énergie (CMÉ), a Hydro-Québec TransÉnergie (HQT) department, in its capacity as Reliability Coordinator (RC), Balancing Authority (BA) and Transmission Operator (TOP), has available to it all the data and information needed to monitor and assess the operation of the Québec Interconnection in accordance with the IRO-010-1a, IRO-010-2 and TOP-003-3 reliability standards.

To encompass the data and information needed, the scope of this document is extended to functions not covered by IRO-010 and TOP-003, in accordance with other applicable standards (see References).

Any entity unable to provide the data and information required herein on the effective date of this document must so inform CMÉ as soon as possible and must provide the data and information no later than three months after the effective date.

Note that registered entities are in no instance exempted by this document from compliance with other requirements in reliability standards applicable to them. The data and information reporting requirements set out in this document complement what other applicable reliability standards require.

This document is available on the site of the Reliability Coordinator for Québec under [Documentation](#).

## 2. Functions covered

When concerned, the entities exercising the functions or roles below are to report to HQT CMÉ the data and information set out in this document.

- Reliability coordinators (RCs) adjacent to the Québec Interconnection
- Transmission operators (TOPs) adjacent to the Québec Interconnection
- Balancing authorities (BAs) adjacent to the Québec Interconnection
- Generator owners (GOs)
- Generator operators (GOPs)
- Transmission owners (TOs)
- Load-serving entities (LSEs)
- Distribution providers (DPs)
- Telecommunications service providers to CMÉ
- Computer service providers to CMÉ
- Planning Coordinator (PC)
- Transmission Planner (TP)

## 3. Data and information for real-time monitoring and control

A number of documents given as references express CMÉ data and information needs. This document thus serves as a compendium including all data CMÉ needs to ensure the RC, BA and TOP roles.

### 3.1 Measurements and signals from facilities and RAS/SPSs

The measurements and signals from elements are used by operating personnel and by computer applications crucial for decision making by System Operators. Operating requirements related to system elements are specified in HQT document GEN-N-900-01 and summarized in individual standard operating requirements (SORs). The table below provides an overview of the documents to consult in order to know CMÉ requirements regarding real-time measurements and signals from the elements listed.

<b>Element</b>	<b>SOR</b> (see columns “CCR via CT” and “CCR lien dédié”) <sup>1</sup>	<b>Functions covered</b>
<b>Generators</b>	BNX-N-ALT	GO/GOP
<b>Busbars</b>	BNX-N-BARRE_HT	GO/GOP/TO/TOP-adj <sup>2</sup>
<b>Series compensators (CXC)</b>	BNX-N-CXC	TO/TOP-adj <sup>2</sup>
<b>Static var compensators (CLC)</b>	BNX-N-CLC	TO/TOP-adj <sup>2</sup>
<b>Synchronous compensators (SC)</b>	BNX-N-CS	TO/TOP-adj <sup>2</sup>
<b>Capacitors (XC)</b>	BNX-N-XC_SHUNT	TO/TOP-adj <sup>2</sup>
<b>Converters (GC)</b>	BNX-N-GC	TO/TOP-adj <sup>2</sup>
<b>Load-shedding devices</b>	BNX-N-DELESTEUR	TOP/DP
<b>Circuit breakers</b>	BNX-N-DISJ	GO/GOP/TO/TOP-adj <sup>2</sup>
<b>Wind turbines</b>	BNX-N-EOLIENNE	GO/GOP
<b>Reactors</b>	BNX-N-INDUCTANCE_SHUNT	GO/GOP/TO/TOP-adj <sup>2</sup>
<b>Lines</b>	BNX-N-LIGNE	TO/TOP-adj <sup>2</sup>
<b>Disconnect switches</b> (except disconnect switches only serving to isolate a circuit breaker)	BNX-N-SECTIONNEUR	GO/GOP/TO/TOP-adj <sup>2</sup>
<b>Transformers</b>	BNX-N-TRANSFO_ART	GO/GOP/TO/TOP-adj <sup>2</sup>
<b>Dams</b>	BNX-N-CENTRALES	GO/GOP
<b>Buildings (735-kV substations)</b>	BNX-N-BATIMENT	TO

<sup>1</sup> CCR: centre de contrôle du réseau (SCC: System Control Centre)  
CT: centre de téléconduite (TC: telecontrol centre)

<sup>2</sup> TOP-adj: Transmission operators (TOPs) adjacent to the Québec Interconnection. The targeted elements are the ones that can influence RTP or interconnections' System Operating Limits (SOL).



The precision of measured data must stay in the range set out in HQT document GEN-N-900-01 Section 8.4.2 on measurements of electrical quantities and Section 8.4.3 on measurements of mechanical quantities.

Any addition, replacement, modification or dismantling of an element in a facility must be indicated to CMÉ in the previous 3 months commissioning or dismantling of the element.

The list of RAS/SPSs supervised by CMÉ’s System Control Centre (SCC) may be released on request subject to the terms of a confidentiality agreement between CMÉ and the requester. CMÉ reserves the right, however, to refuse to release the list if it considers that the conditions required are not met to its entire satisfaction or the request provides insufficient grounds for doing so.

All RAS/SPSs have a SOR document setting out CMÉ requirements regarding measurements and signals. Minimally, the On/Off status of all RAS/SPSs is sent to the SCC. SORs (in French) are available under the following link: [SORs](#).

Data/information	Unit of measurement	Functions covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting data/information (when applicable)
RAS/SPS status and their components	N/A	GO/GOP TO	On change of status	ICCP	N/A	N/A
Status of RAS/SPS potentially affecting RTP or interconnections’ System Operating Limits or protection of the integrity of RTP elements against severe system phenomena	N/A	TOP-adj	On change of status	ICCP	N/A	N/A

Since every RAS/SPS has different characteristics, states and signal elements, the SOR for each must be consulted to know what other information must be provided.

## 4. Modeling data and test results

The modeling data for elements comprising the RTP must be made available to CMÉ by HQT's planning department (Planification) acting as Transmission Planner (TP) for the Québec Interconnection. This data serves such purposes as input to SCC computer tools used for real-time and planning assessments. These tools are primarily used for pre- and post-contingency analysis. Their use includes the calculation of stability limits. This data must be made available to CMÉ at all times.

Element to model	Parameters to provide	Data transmission format and method	Update frequency and deadline, when applicable
<b>Generation</b> (generators, step-up transformers, etc.)	See Section 3 *	See Section 7 *	See Section 7.2 *
<b>Transmission</b> (lines, transformers, buses, reactors, compensation elements, etc.)	See Section 4 *	See Section 7 *	See Section 7.2 *
<b>Modeling of load</b>	See Section 5 *	See Section 7 *	See Section 7.2 *

\* Document: [Transmission System Modeling Data Requirements and Reporting Procedures](#)

As soon as there is any temporary or permanent change to the ratings of a facility, the facility owner/operator must inform CMÉ 7 days preceding the modification by email to the address in Section 8.

The data associated with the tests specified in [IQ-P-001, Maximum Real and Reactive Power Verification at Generating Facilities of 50 MVA or Higher Capacity](#), must be reported to CMÉ such as indicated to the following table.

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Functions covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Station tests of maximum real and reactive power	MW and Mvar	GO/GOP				See IQ-P-001
Unit tests of maximum real and reactive power	MW and Mvar	TP (data provided by GO and TO)				Interdepartmental exchange between CMÉ and HQT (TP)

## 5. Data related to outage management

Entities covered by this document, other than Hydro-Québec divisions, have a document entitled “Common Operating Instructions”, which is signed by the entity and HQT. Under HQT Standard GEN-N-960-02, the Common Operating Instructions must include a section on outage management. Each of the Common Operating Instructions thus gives in detail the data and information that CMÉ requires and that the entity must provide.

For entities in Québec that own or operate facilities connected to the HQT system, outage requests for equipment, RAS/SPSs or other protection systems must be sent to the regional telecontrol centre.

For other entities, outage requests for equipment, RAS/SPSs or other protection systems must be sent directly to CMÉ in accordance with the Common Operating Instructions in effect.

Outages management to HQT is under HQT Standard TEC-GES-N-02 *Outage management* and Operating Procedure GEN-D-007 *Outages Requiring System Operations and Control (DCMÉ) Approval*.

Outages may be requested for the purpose of (scheduled or unscheduled) maintenance, asset sustainment or growth but such outages must be coordinated in order to ensure safe, reliable transmission system operation. Emergency outage requests must also be sent to CMÉ.

Data/information	Unit of measurement	Functions covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Generation equipment	N/A	GO/GOP	Annual planning OR Scheduled, unscheduled or emergency outage request	Telephone, email or Hydro-Québec intranet interface	See reference documents above for outages management	See reference documents above for outages management

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Functions covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Transmission equipment (including interconnection facilities)	N/A	TOP/TOP-adj	Annual planning OR Scheduled, unscheduled or emergency outage request	Telephone, email or Hydro-Québec intranet interface	See reference documents above for outages management	See reference documents above for outages management
Equipment <sup>3</sup> associated with a telecommunication system, RAS/SPS or other protection system	N/A	TO GO/GOP Telecommunications service provider	Annual planning OR Scheduled, unscheduled or emergency outage request	Telephone, email or Hydro-Québec intranet interface	See reference documents above for outages management	See reference documents above for outages management
System Control Centre (SCC) computer or telecommunications equipment	N/A	Computer service providers	Annual planning OR Scheduled, unscheduled or emergency outage request	Telephone, email or Hydro-Québec intranet interface	See reference documents above for outages management	See reference documents above for outages management

<sup>3</sup> Outages of this type of equipment can have impacts on RAS/SPS and/or other protection systems that are used to ensure the stability and safety of the RTP and interconnections and their facilities. As soon as a component of such systems is incapable of performing its function, its status must be reported immediately to CME, with no intentional delay.

## 6. Forecast data, mitigating actions and other data needed for resource and demand balancing

### 6.1 Data needed to calculate operating reserves

Data/information	Unit of measurement	Functions covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Normal effective capacity or data needed to calculate it in real time	MW	GO/GOP	At least once the hour	IT transfer or dynamic calculation module	Numerical value or data necessary for his calculation	N/A
Stability effective capacity or data needed to calculate it in real time	MW	GO/GOP	At least once the hour	IT transfer or dynamic calculation module	Numerical value or data necessary for his calculation	N/A
Upper threshold for power plants assigned to “load frequency controller”	MW	GO/GOP	At least once the hour	IT transfer or dynamic calculation module	Numerical value or data necessary for his calculation	N/A

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Functions covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Lower threshold for power plants assigned to “load frequency controller”	MW	GO/GOP	At least once the hour	IT transfer or dynamic calculation module	Numerical value or data necessary for his calculation	N/A
Capacity that is recallable or can be interrupted in less than 10 or 30 minutes	MW	BA-adj	At least once the hour	Exchanges Programs with neighboring system or contractual agreed value with a customer	Hourly program in text file or via WebTag	N/A
Capacity that is callable and dispatchable in less than 10 or 30 minutes	MW	BA-adj	At least once the hour	Exchanges Programs with neighboring system or contractual agreed value with a customer	Hourly program in text file or via WebTag	N/A

## 6.2 Data needed to calculate or correct area control error (ACE)

The power system has two systems for controlling frequency: primary regulation, which is associated with active control of the speed governor, and secondary regulation, which is related to an automatic control the “load frequency controller” (LFC). The data required below is related to secondary regulation by the LFC.

Data/information	Unit of measurement	Functions/ Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Frequency	Hz	HQT (TO)	< 1 s	Interdepartmental exchange between CMÉ and HQT (TO)	N/A	N/A
LFC control status of units	On/Off	GO/GOP	On change of state	ICCP	N/A	N/A

The real generation of units is also needed by the LFC but that data is already required by the SORs in Section 3.

As mentioned in Section 3, the precision of measured data must stay in the range set out in HQT Standard GEN-N-900-01 Section 8.4.2 on measurements of electrical quantities and Section 8.4.3 on measurements of mechanical quantities.



### 6.3 Demand forecasting

Note that the data/information required herein is used to forecast the Québec Interconnection energy demand (BQ). That data/information corresponds to recurring demand as required by MOD-031-2.

#### 6.3.1 Short term

##### 6.3.1.1 Interchange schedule (ITS; OASIS)

Note that under this document, the data/information associated with the interchange schedule below is not required. Such data is given for information purposes.

Data/information	Unit of measurement	Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
<p><b><i>Interchange schedule. All interchanges must be characterized by the following data:</i></b></p> <p>Name of purchasing-selling entity (PSE)</p> <p>OASIS transmission service number</p> <p>Name of interconnection path</p> <p>Capacity of the transaction (MW)</p>	N/A	HQT (TSP)	Every time a tag is added/modified	<p>OATI/ webTAG</p> <p>ITS</p> <p>Retrieved by the Hydro-Québec operating core using an Application Programming Interface provided by OATI</p>	Application	

### 6.3.1.1 Forecast Québec needs (BQ)

Note that the data/information listed below does not contain weather data, which is obtained through public/government departments (e.g., Environment Canada).

Data/information	Unit of measurement	Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Validated actual last 7-day and forecast next 42-day hourly variations in industrial load by BQ region and subsystem	MW	Actual last 7-day hourly consumption of major industrial customers HQD (DP)  Forecast next 42-day consumption variations (drops and interruptions) for major customers HQD (DP)	Hourly    On request		Oracle	

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Functions/Entities covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Validated actual last 1-day and forecast next 28-day hourly IPP output by BQ region and subsystem	MW	Validated actual last 1-day and forecast next 28-day hourly IPP output from HQD (DP)	Twice daily	FTP	ASCII	9 h AM
		Validated actual last 1-day and forecast next 28-day hourly IPP output from GO/GOP	Twice daily			
Validated actual last 50-day hourly consumption by BQ region and subsystem	MW	Actual hourly data from Spectrum (CMÉ) Hourly and monthly energy of meters from HQP and HQD (DP)	Twice daily	Integration Bus (Interdepartmental exchanges HQT)	XML	8 h AM
Gross actual last 1-day consumption per minute by BQ region and subsystem	MW	CMÉ	Every 5 minutes	Integration Bus (Interdepartmental exchanges HQT)	.CSV	N/A
Calculations, configurations, adjustments and hourly corrections	MW	CMÉ	Every 5 minutes	Integration Bus and orchestration (Interdepartmental exchanges HQT)	ORACLE and XML	N/A

### 6.3.2 Long term

Data/information	Unit of measurement	Functions/ Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Two-year forecast peaks and monthly energy balances	MWh	HQD (DP)	Annual planning	Emailed	Excel file	End of July
Two-year forecast of hourly consumption, DP regular needs	MW	HQD (DP)	Annual planning	Emailed	Emailed	End of July
One-year forecast of hourly IPP output	MW	HQD (DP) GO/GOP	Every 6 months	Emailed	Excel file	End of July
One-year forecast of major industrial customer load variations	MW	HQD (DP)	On request	Emailed	Excel file	End of July
Existing and future official list of IPPs		HQP (RP)	Every 4 months	Emailed	Excel file	Autumn
Calculations, configuration, and hourly and weekly adjustments	MW	HQT-CMÉ	Yearly	Web interface	AIX, ORACLE	End of September

## 6.4 Forecast generation (generation plan)

Data/information	Unit of measurement	Functions/ Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Wind generation (by wind farm and/or grouped generation)	MW	HQD	Schedule on 7 days correct every hour	Web services / IT transfer	File including hourly programs	N/A
Forecast generation schedule of run-of-river and small generating stations	MW	GO/GOP	At least once a day for the next 240 hours.	Web services / IT transfer	File including hourly programs	Before 10 h AM
Forecast generation schedule of thermal power plants	MW	GO/GOP	At least once a day for the next 240 hours.	Web services / IT transfer	File including hourly programs	N/A
Capacity from non-wind IPPs by subsystem	MW	GO/GOP	At least once a day for the next 240 hours.	Web services / IT transfer	File including hourly programs	N/A
Maximum generation program for power plants of 50 MW or Higher Capacity	MW	HQT (CMÉ)	At least once a day for the next 240 hours.	Web services / IT transfer/ Specific calculation methodology	File including hourly programs OR Calculation module	Before 10 h AM

## 6.5 Forecast Exchanges

Data/information	Unit of measurement	Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
HQP interchange schedule	MW	HQT (TSP)	At least once a day for the next 240 hours	Web services / IT transfer	File including hourly programs	N/A
HQD interchange schedule	MW	HQT (TSP)	At least once a day for the next 240 hours	Web services / IT transfer	File including hourly programs	N/A

## 6.6 Mitigating actions

### 6.6.1 Sequence of Hydro-Québec Production mitigating actions

Data/information	Unit of measurement	Entities covered	Update frequency	Communication protocol or interchange method	Format	Deadline for reporting (when applicable)
Sequence of emergency operating measures	N/A	HQP (GOP)	Once hourly	FTP	.CSV	40 minutes after each clock hour

**6.6.2 Interruptible loads**

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Entities covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Weekday prior notice	Hour	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year
Weekend prior notice	Hour/day	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year
Maximum number of interruptions per day	Integer	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year
Minimum time between successive interruptions	Hours	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year
Maximum number of interruptions per winter period	Integer	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Entities covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Duration of an interruption	Hours	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year
Maximum duration of interruptions per winter period	Hours	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year
Agreement validity period	Hours	HQD/HQP	Yearly Or When changed	Emailed	File	December 1 of each calendar year

Note that certain values can be limited. For example, the maximum number of interruptions per day could be set to 1 or 2.



**6.6.3 Data related to target loads for load shedding**

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Entities covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Nominal capacity of a feeder (if targeted for load shedding)	MW	HQD (DP)	Yearly	Emailed	Excel file	October 1 of each calendar year
Priority of feeder	Rank	HQD (DP)	Yearly	Emailed	Excel file	October 1 of each calendar year

## 7. Additional data/information

CMÉ may also require that computer/telecommunication service providers produce additional information when required to complete its real-time and planning analyses. HQT Operating Information GEN-R-088 on failures of SCC ECA equipment (System Control Centre data acquisition equipment) identifies the telecommunication links supervised by the Hydro-Québec SCC.

Entities owning one or more RAS/SPS, aimed by the section 3 of this present document, must also send CMÉ technical documentation describing the RAS/SPS operating logic. Microsoft Office and PDF file formats are accepted.

Other data/information are also required for purposes of analysis and forecast. The data enumerated below are necessary for the good operation of multiple CMÉ applications - (e.g. SYGIVRE). These applications are used by the System Operators in order to help the decision-making. The data listed in the table below are required for facilities under the HQT responsibility. CMÉ will inform HQT of the targeted facilities list 24 months before data will be required.

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Entities covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Phasor or necessary data for the angular displacement calculation	Real and complex voltage values	HQT (TO)	1/60 sec	Macrodyne OR equivalent (e.g. C37.118)	Macrodyne or equivalent data (e.g. synchrophasor; PMU)	N/A
Voltage total harmonic distortion OR necessary data for its calculation (e.g. even harmonic values)	% (OR real and complex harmonic values)	HQT (TO)	< 5 sec	Macrodyne or equivalent	Macrodyne or equivalent	N/A
Latitude/longitude	Degrees	HQT (TO)	On data change	Modem	Proprietary format	N/A
Lightning strikes moment	Month/day/hour/minute/sec/msec	HQT (TO)	On detection	Modem	Proprietary format	N/A
Lightning discharge	kA	HQT (TO)	On detection	Modem	Proprietary format	N/A
Temperature	Degrees C	HQT (TO)	<1 minute	Modem	Proprietary format	N/A

<b>Data/information</b>	<b>Unit of measurement</b>	<b>Entities covered</b>	<b>Update frequency</b>	<b>Communication protocol or interchange method</b>	<b>Format</b>	<b>Deadline for reporting (when applicable)</b>
Moisture	%	HQT (TO)	<1 minute	Modem	Proprietary format	N/A
Wind speed	m/s	HQT (TO)	<1 minute	Modem	Proprietary format	N/A
Wind direction	Degrees	HQT (TO)	<1 minute	Modem	Proprietary format	N/A
Number of frost sensor reset	Integer	HQT (TO)	<1 minute	Modem	Proprietary format	N/A
Accumulated ice weight	Newton (tension sensor)	HQT (TO)	<1 minute	Modem	Proprietary format	N/A
Sensor Functional state	In trouble, alarming, in service	HQT (TO)	<1 minute	Modem	Proprietary format	N/A

## 8. Other matters

CMÉ has specified in the tables in this document, when available, the data formats, communication protocols and interchange methods that it accepts. Any entity wishing to propose alternatives must submit a request to the following email address: [fiabilite@hydro.qc.ca](mailto:fiabilite@hydro.qc.ca).

### 8.1 Transmitting data

The transmitting of information and data and all communications regarding the requirements and procedures for reporting the data and information needed to operate the Québec Interconnection RTP must be sent to the following email address:

[fiabilite@hydro.qc.ca](mailto:fiabilite@hydro.qc.ca).

Should a computer or telecommunication problem prevent data transmission in real time to CMÉ, the entity must contact CMÉ either directly or through an HQT regional telecontrol centre as stipulated in the applicable Common Operating Instructions.

### 8.2 Data conflicts

If CMÉ detects inconsistent data, it will contact the entity concerned. CMÉ will collaborate with the entity in order to resolve the inconsistency in a manner that is acceptable to both parties and that ensures RTP and interconnections reliability.

### 8.3 Security protocol

Data shall be exchanged between CMÉ and RCs, TOPs and BAs adjacent to the Québec Interconnection by means of NERCnet. NERC is in charge of NERCnet technical support and maintenance.

HQ units may also submit their data by means of Hydro-Québec's file storage software system, *HydroDoc (Enterprise Connect)*.

## 9. References

- [1] BAL-005-0.2b – [Automatic Generation Control](#)
- [2] FAC-008-3 – [Facility Ratings](#)
- [3] IRO-010-1a – [Reliability Coordinator Data Specification and Collection](#) and IRO-010-2 – [Reliability Coordinator Data Specification and Collection](#)
- [4] IRO-017-1 – [Outage Coordinator](#)
- [5] IQ-P-001 – [Maximum Real and Reactive Power Verification at Generating Facilities of 50 MVA or Higher Capacities](#)
- [6] MOD-020-0 – [Providing Interruptible Demands and Direct Control Load Management Data to System Operators and Reliability Coordinators](#)
- [7] MOD-031-2 – [Demand and Energy Data](#)
- [8] MOD-032-1 – [Data for Power System Modeling and Analysis](#)
- [9] TOP-003-3 – [Operational Reliability Data](#)
- [10] MOD-025-2 – [Verification of Generator Gross and Net Reactive Power Capability](#)
- [11] GEN-N-002 – *Standard Operating Requirements for Controlling the Main Transmission System*
- [12] GEN-N-900-01 – *Besoins normalisés en exploitation (BENEX) relatifs à la conduite des installations et les données requises pour la téléconduite (volet commande) [SORs for controlling facilities and data required for telecontrol]*
- [13] [SORs](#) (in French)