Data specification for the Direction principale Contrôle des mouvements d'énergie et exploitation du réseau

Requirements and procedures for reporting information and data needed to operate the Main Transmission System of the Quebec Interconnection

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Effective date: *2022-12-01*
Version: *6*

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Version history

Version	Description of changes	Date
1	First release	2016-12-23
2	– Direction principale – Contrôle des mouvements d'énergie et exploitation du réseau (DPCMEER) [system control and operations] unit becomes Reliability Coordinator for Québec – Reference to IRO-010-1a deleted – Document: Updated entities covered Telecommunications and computer service providers removed Transmission service providers (TSP) and resource planner (RP) added Titles added to some tables – Section 1: Text edited Added paragraph from Section 3 and edited text – Section 2: Changed list of Registered Entities Note 1 added (link between TO and TOP) – Section 3: Reorganized subsections – Section 3.1: Added measurements and signals now required for non-RTP designated elements Changed hyperlink providing access to SOR files Removed file on busbars as it is no longer needed Removed file on load-shedding devices (see Section 3.2) – Section 3.2: New section: "Measurements and signals associated with load-shedding devices" – Section 3.4: New section: "Measurement reporting requirements" – Section 4: Table: "Entity covered" column added – Section 5: Edited text Table: merged rows associated with generating and transmission facilities – Section 6: Reorganized some tables and edited text – Section 7: Reorganized section and edited text – Section 8: New section: "Notification of a modification or change in status" – Section 9: Text edited Changed email address to which entities must forward data and information Section 10: Updated references	2018-03-19
3	- Document title changed	2019-06-01

Version	Description of changes	Date
	- Requesting entity added to data tables - Table 3.1: Minor editing - Tables 3.2 and 3.3: Added communication links status - Table 3.4.1.1: Changed frequency resolution (from tenths to hundredths) - Section 4: Minor editing - Section 5: Minor editing - Table 6.1: Clarified and edited table - Table 6.3.2: Minor editing - Table 6.4: Added definition of "small generating station" - Sections 6.4 and 6.5: Clarified which entities are covered by these sections and reformulations	
4	– Document: HQT become HQTÉ (Hydro-Québec TransÉnergie & Équipements) – Section 1: Added paragraph for entities that have an agreement with DPCMEER – Section 2: New designation – Subsection 2.1: Updated entities covered – Subsection 2.2: New – Subsection 3.2: Updated and deleted third line of table – Section 4: Created subsections 4.1 and 4.2 – Table 4.1: In the "Entity covered" column: PC replaced by GO/TO; load modeling section deleted from table; nameplate requests – Table 4.3: New – Subsection 6.3: Paragraph added – Subsection 6.3.1.1: Last two rows of table moved to table in subsection 6.4 – Subsection 6.6.2: Paragraph added and table updated – Subsection 6.6.3: New – Subsection 8.2: Paragraphs added and subsection updated – References: o Removed: BAL-005-0.2b o Added: COM-001-3, EOP-005-3, FAC-003-3, FAC-003-4 and PRC-012-2 o Updated: EOP-004-4: effective January 1, 2021, superseding EOP-004-2, MOD-031-2 and PRC-001-1.1(ii)	2021-01-14
5	– Document : Removed MOD-020-0, no longer applicable	2022-04-01

Version	Description of changes	Date
	– Document : Removed mention of FAC-008-5 R7 which is considered redundant and covered by TOP-003-3 and IRO-010-2 R1 – Document : Hyperlinks updated – Subsection 6.6.1 : Modifications to the table.	
6	– Data on station testing of maximum active and reactive power footnote added.	2022-12-01

1. Purpose

The purpose of this document is to ensure that Hydro-Québec TransÉnergie & Équipements's "Direction principale – Contrôle des mouvements d'énergie et exploitation du réseau" (DPCMEER) Direction has all the data and information it needs to monitor the Québec Interconnection and meet its operational obligations, including to perform Operational Planning Analyses, Real-time monitoring, and Real-time Assessments, as Reliability Coordinator (RC), Balancing Authority (BA) and Transmission Operator (TOP), in accordance with the IRO-010-2, TOP-003-3 and MOD-031-2 reliability standards.

This data specification includes, but is not limited to:

- A list of data and information needed by the RC, BA and TOP, including non-RTP data and external system data, as deemed necessary by DPCMEER
- Provisions for the notification of any current protection system and special protection system status or degradation that may impact system reliability
- A periodicity for providing data
- The deadline by which the specified data must be provided

DPCMEER's data and information requirements are already set out in several documents referenced herein. This document therefore aims to "collate" all the data and information DPCMEER needs to fulfill its RC, BA and TOP roles.

Any entity that finds itself unable to provide the data or information required under this document as of its effective date must inform DPCMEER of that fact as soon as possible. The entity must then agree with DPCMEER on a timetable for providing the data or information within two months of the effective date of this document.

Please note that this document does not under any circumstances exempt Registered Entities from complying with other reliability standard requirements applicable to them. The data and information reporting requirements set out in this document complement the requirements of other applicable reliability standards.

Where there is an existing agreement between an entity and DPCMEER that effectively amends the provisions of this document, the data must be reported and processed in accordance with the provisions of that agreement.

This document can be found in the Documentation section of the website of the Reliability Coordinator for Québec.

2. Entities covered and demonstration of compliance

2.1 Entities covered

Entities performing the functions listed below must provide the data and information indicated in this document to DPCMEER whenever applicable:

- Reliability Coordinators (RC) adjacent to (neighboring) the Québec Interconnection
- Transmission Operators (TOP) adjacent to (neighboring) the Québec Interconnection (TOP-adj)
- Balancing Authorities (BA) adjacent to (neighboring) the Québec Interconnection (BA-adj)
- Generator Owners (GO)
- Generator Operators (GOP)
- Transmission Owners (TO)
- Distribution Providers (DP)
- Transmission Service Providers (TSP)
- Resource Planner (RP)

2.2 Demonstration of compliance

This specification collates the requirements of several standards. The table below seeks to identify which evidence an entity will need to provide to regulatory agencies during a monitoring activity (e.g., audit).

Audited standard	Audited requirement	Section(s) of this document	Application criteria
MOD-031-2	R2	6.3	
PRC-012-2	R1	8.2	
EOP-004-4	R1 and R2	8.2	Entity must ensure DPCMEER is included in the distribution list of its event reporting Operating Plan
EOP-005-3	R14.2	4.2 (Table 4.3)	
FAC-008-5	R8	8.2	
IRO-010-2	R3	All sections except those specifically covered by one of the above standards	Only information for which the requesting entity is the “RC”
TOP-003-3	R5	All sections except those specifically covered by one of the above standards	Only information for which the requesting entity is “TOP” or “BA”

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

Element measurements and signals are used by operating personnel and in computer applications critical to real-time decision-making by DPCMEER system operators. Measurements and signals must be reported through ICCP[1] points or via another DPCMEER-specified communication tool. Whenever it updates the data and information to be provided as set out below, DPCMEER will grant entities reasonable time to submit the new measurements and signals.

3.1 Measurements and signals for RTP elements and non-RTP designated elements

The table below lists HQTÉ's Standard Operating Requirement (SOR) files, which specify DPCMEER's requirements regarding real-time measurements and signals for Main Transmission System (RTP) elements.

SOR files are available (in French) through the following link: SOR files.

The files also include real-time measurements and signals required by DPCMEER for some designated elements not associated with the Main Transmission System.

Note that DPCMEER sends each Registered Entity a list of non-RTP elements for which measurements or signals are required.

In the files, measurements and signals required for Main Transmission System (RTP) elements are shown in upper case and those required for non-RTP designated elements are shown in lower case.

1 Inter-Control Center Communications Protocol

Table 3.1: Measurements and Signals for RTP Elements and Designated Elements

Element	SOR file	Requesting entity	Entity covered
Building	BNX-N-BATIMENT	TOP	TO
Generating station and dam	BNX-N-CENTRALES	BA	GOP
Static compensator (SVC)	BNX-N-CLC	TOP	TO, TOP-adj
Synchronous compensator (CS)	BNX-N-CS	TOP	TO, TOP-adj
Series compensator (CXC)	BNX-N-CXC	TOP	TO, TOP-adj
Shunt capacitor (XC)	BNX-N-XC_SHUNT	TOP	TO, TOP-adj
Circuit breaker	BNX-N-DISJ	BA, TOP	GOP, TO, TOP-adj
Wind turbine[2]	BNX-N-EOLIEN	BA	GOP
Converter unit (GC)	BNX-GC	TOP	TO, TOP-adj
Generating unit	BNX-N-ALT	BA	GOP
Shunt reactor (XL)	BNX-N-INDUCTANCE_SHUNT	TOP	GOP, TO, TOP-adj
Line	BNX-N-LIGNE	TOP	TO, TOP-adj
Disconnect switch (except disconnect switches that serve only to isolate a circuit breaker)	BNX-N-SECTIONNEUR	BA, TOP	GOP, TO, TOP-adj
Transformer	BNX-N-TRANSFO_ART	TOP	GOP, TO, TOP-adj

2 All measurements and signals required from wind farms are grouped under the same equipment category (i.e., wind turbines).

3.2 Measurements and signals for load-shedding devices

The applicable load-shedding devices are those that are controlled by special protection systems (SPS/RAS) and underfrequency load shedding systems.

The applicable TO and DP entities are those that own or operate these load-shedding devices.

Data/information	Unit of measurement	Requesting entity	Entity covered	Update frequency	Communication protocol or exchange method	Format	Reporting deadline (when applicable)
Voltage measurement on high-voltage side of substation where load-shedding device is located	kV	BA, TOP	TO, DP	Every 5 s	"Serial load-shedding device" HQTÉ protocol	Series (RS-232)	N/A
Status of load-shedding device and its communication links (ON/OFF)	N/A	BA, TOP	TO, DP				

3.3 Measurements and signals for special protection systems

The list of special protection systems (SPS/RAS)[3] monitored by the DPCMEER system control center (SCC) may be made available subject to a confidentiality agreement between DPCMEER and the requesting entity. DPCMEER nevertheless reserves the right to decline to release the list if it deems that the required conditions have not been met to its entire satisfaction or that there are insufficient grounds for the request.

For all SPS/RAS in Québec, there is a Standard Operating Requirements (SOR) file setting out DPCMEER's requirements regarding measurements and signals. At the least, the ON/OFF status of all SPS/RAS is reported to the SCC. DPCMEER will contact entities responsible for one or more listed SPS/RAS to inform them of the requirements regarding measurements and signals.

Data/information	Unit of measurement	Requesting entity	Entity covered	Update frequency	Communication protocol or exchange method	Format	Reporting deadline (when applicable)
Status of SPS/RAS, their communication links and their components (ON/OFF and degradation)	N/A	RC, BA, TOP	GOP TO	On change of status	ICCP	N/A	N/A
Status of SPS/RAS that could affect the operating limits of the Main Transmission System (RTP) or interconnections, or the protection of the integrity of its components against severe system phenomena (ON/OFF and degradation)	N/A	RC, BA, TOP	TOP-adj	On change of status	ICCP	N/A	N/A

As each SPS/RAS has unique features, states and signal elements, it is essential to review their SOR file to identify any additional information to be provided.

3 Acronyms: *Remedial Action Scheme (RAS); Special Protection System (SPS)*

3.4 Measurement reporting requirements

Unless instructed otherwise by DPCMEER, data reporting requirements are set out in detail below.

3.4.1 Measurements of electrical quantities

3.4.1.1. Measurement chain uncertainty

The table below shows the tolerated uncertainty for each parameter measured.

Reading uncertainty characteristics			
Parameters	**Range p.u.**	**Analog chain ±% reading (RSS[4])**	**IED chain [5] ±% reading (RSS)**
Voltage	1.1	≤1.25	≤0.85
	1	≤1.3	≤0.85
	0.9	≤1.35	≤0.85
Current	1	≤1.15	≤0.75
	0.6	≤1.55	≤0.75
	0.2	≤3.3	≤0.92
Active power ±	1	≤1.4	≤1
	0.5	≤1.95	≤1
	0.1	≤6.25	≤1
Reactive power ±	1	≤1.4	≤1.75
	0.5	≤1.95	≤1.75
	0.1	≤6.25	≤1.75
Frequency (generator)	1.08	≤0.3	≤0.02
	1	≤0.35	≤0.02
	0.92	≤0.35	≤0.02
Frequency (system)	1.08	≤0.3	≤0.02
	1	≤0.35	≤0.02
	0.92	≤0.35	≤0.02
Energy		Per business commitments, hydrologic needs and Measurement Canada requirements	

Note 1: These requirements do not take into consideration uncertainty caused by dead band, as the displayed value may differ from the actual value if it is within the dead band defined in subsection 3.4.1.3.

Note 2: A minimum threshold display value of 0.5% of the nominal (rated) value is allowed; below this, zero may be displayed.

4 Root Sum Square

5 Intelligent Electronic Device. IEDs receive data from sensors and equipment (electrical and mechanical), and can issue control commands, such as tripping circuit breakers if they sense voltage or current anomalies, or raising/lowering voltage levels to maintain the desired level. There are various IED types, including protective relay devices, tap-changer controllers, recloser controllers, voltage regulators, temperature monitoring units.

Measurement chain uncertainty for interconnection lines must be defined at the design stage.

3.4.1.2. Units of measurement and resolution

The table below shows the unit prefix and symbol, and desired resolution for each parameter.

Parameters	Unit prefix and symbol	Resolution (display)
Voltage $_{>44\ kV}$	kV	Unit
Voltage $_{\leq 44\ kV}$	kV	Tenths
Voltage $_{600\text{-V auxiliary service}}$	V	Unit
Current	A	Unit
Active and reactive power	MW, MX	Tenths
Active and reactive power 600-V auxiliary service	kW, kX	Tenths
Energy	MWh	Unit
Frequency (target range: 55 - 65 Hz)	Hz	Hundredths

3.4.1.3. Dead band

The dead band for all measurement parameters must not exceed 0.4% of full scale. It is usually set at 4 counts out of 1,600 or 0.25%.

3.4.1.4. Availability

In the event of a total or partial auxiliary AC power supply outage, all measurements must remain functional. A backup measurement is required at the panel control.[6] It can be provided by a dedicated measuring device, a protective relay or an intelligent electronic device (IED). When the measurement is provided by a protective relay and there are redundant protection systems (A and B), the default measurement at the central control unit must be provided by protection A and the backup by protection B, with switchover assured by an automatic device. For medium-voltage line feeders[7] with two metal-clad circuit breakers, the current for each circuit breaker must be measured at the panel control, and the currents must then be added together at the central control unit.[8]

6 Control from a panel, a console in the facility or a station service cabinet

7 Part of the system having a nominal phase-to-phase voltage of between 750 V and 34.5 kV, inclusive

8 Main control level of the facility. Includes all the elements required for operation and is located at the control room of the main building.

4. Modeling data and test results

4.1 Modeling data

Quebec Interconnection Generation Owners (GO) and Transmission Owners (TO) must make validated modeling data for Main Transmission System (RTP) elements available to DPCMEER. Among other things, this data serves as input to the SCC computer tools used for real-time assessments and forecasting. These tools are primarily used for pre- and post-contingency analysis. Their uses include calculating stability limits.

Table 4.1: Transmission System Modeling Data

Element to be modeled	Requesting entity	Entity covered	Parameters to be provided and format	Data reporting method	Update frequency and deadline (when applicable)
Generation (e.g., generators and step-up transformers)	RC, TOP	GO, TO	See Section 3 of document referenced below*	See Section 7 of document referenced below*	See Section 7.2 of document referenced below*
Transmission (e.g., lines, transformers, busbars, reactors and compensation equipment)	RC, TOP	TO	See Section 4 of document referenced below*	See Section 7 of document referenced below*	See Section 7.2 of document referenced below*
Generation and transmission (e.g., nameplate of any equipment on request)	RC, TOP	GO, TO	Photo in JPEG (.jpg) format of facilities covered by Sections 3 and 4	See Section 7 of document referenced below*	On request

** Document: Transmission System Modeling Data Requirements and Reporting Procedures*

4.2 Test results

Data regarding the tests described in Procedure IQ-P-001 (Verification of Maximum Active and Reactive Power Capabilities of MTS Generating Facilities and Synchronous Compensators) must be reported to DPCMEER, as indicated in the table below.

Table 4.2: Data on Verification of Maximum Active and Reactive Power Capabilities

Data/information	Unit of measurement	Requesting entity	Entity covered	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
~~Data on station testing of maximum active and reactive power~~ [9]	~~MW, Mvar~~	~~BA, TOP~~	~~GO~~	See IQ-P-001			
Data on unit testing of maximum active and reactive power	MW, Mvar	BA, TOP	GO TO				

Generation Operators (GOP) who have entered into an agreement with the Transmission Operator (TOP) regarding System restoration Blackstart Resources must send the test results to the email address specified in Section 9.1.

Reference: EOP-005-3, Requirement 14.2

Table 4.3: Data on Blackstart Testing

Data/information	Requesting entity	Entity covered	Update frequency	Exchange method	Format	Reporting deadline
Testing records. See GEN-N-070 [10]	RC, TOP	GOP (HQP)	During testing	Email	See GEN-N-070	30 calendar days after test

9 This requirement is temporarily rescinded until further notice.
10 This document is only available to HQP, which is the only GOP that entered into an agreement with the TOP regarding system restoration Blackstart Resources.

5. Data and information related to outage management

Outage management data and information are provided in accordance with the documents applicable to the different entities. The table below gives the applicable document(s) for each entity.

Outages may be requested for maintenance (scheduled or unscheduled), long-term operability or expansion purposes, but must be coordinated to ensure safe and reliable Main Transmission System (RTP) operation. Emergency outage requests must also be sent to DPCMEER.

Entity	Applicable outage management documents
Hydro-Québec TransÉnergie & Équipements (HQTÉ)	TEC-GES-N-02 Outage Request Management GEN-D-007 Outages Requiring System Operations and Control (DPCMEER) Approval
Hydro-Québec Production (HQP)	PP-01-00-00 Generation Outage Request Management
Other	Common Instructions established by the entity and HQTÉ

Table 5.1: Data and information related to outage management

Data/information	Unit of measurement	Requesting entity	Entity covered	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
RTP elements and Non-RTP designated elements	N/A	RC, BA, TOP	GO or associated, GOP, TO, TOP-adj	Annual planning or scheduled, unscheduled or emergency outage request	Telephone, email or web interface (HQ internal)	See above-referenced documents	
Equipment[11] associated with a telecommunication system, special protection system (RAS/SPS) or other protection system	N/A	RC, BA, TOP	GO or associated, GOP, TO, TOP-adj	Annual planning or scheduled, unscheduled or emergency outage request	Telephone, email or web interface (HQ internal)	See above-referenced documents	

11 Outages of this type of equipment can affect special protection systems (RAS/SPS) or other protection systems used to ensure the stability and safety of the Main Transmission System (RTP), interconnections and related facilities. Whenever any of these system components is unable to perform its function, its status must be reported to DPCMEER immediately, without intentional delay.

6. Forecasts, load management measures and other data needed for generation/load balancing

6.1 Data needed to calculate operating reserves

Hydro-Québec Production (HQP) is the only GOP that is required to report the data needed to calculate operating reserves to provide its Interconnected Operations Services. The information indicated in the table below is used to determine the data needed to calculate such reserves, including the following:

- Normal effective capacity for each generator
- Stable effective capacity for each generator
- Upper regulating margin for a SPS/RAS called “Réglage Fréquence-Puissance” (RFP)

Data/ information	Unit of measurement	Requesting entity	Entity covered	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting
The DPCMEER dynamic calculation module uses the following data: • Water level measurements upstream from generating station • Water level measurements downstream from generating station • Availability of generating station units	Metres (m) and number of generating units	BA	GOP	At least once per hour	Dynamic calculation module	Numerical values	N/A

Data/ information	Unit of measurement	Requesting entity	Entity covered	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting
Update of generating station characteristics		BA	GOP	Twice a year or as needed	Email	.typ and .con	April and November
Capacity that is recallable or load that can be interrupted in less than 10 or 30 minutes	MW	BA	BA-adj	At least once per hour	Interchange schedules with neighboring system or contractual value agreed upon with customer	Hourly schedule in text file or via e-Tag in WebTag	N/A
Capacity that is callable in less than 10 or 30 minutes	MW	BA	BA-adj	At least once per hour	Interchange schedules with neighboring system or contractual value agreed upon with customer	Hourly schedule in text file or via e-Tag in 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 involves active speed governor control, and secondary regulation, which is related to a SPS/RAS called “Réglage Fréquence-Puissance” (RFP) [Frequency-Power Adjustment]. The required data below is related to secondary regulation by RFP.

Data/ information	Unit of measurement	Requesting entity	Applicable functions/ entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Frequency	Hz	BA	HQTÉ (TO)	<1 s	CME–HQTÉ (TO) interdepartmental exchange	N/A	N/A
RFP control status of units	ON/OFF	BA	GOP with RFP participation	On change of status	ICCP	N/A	N/A

The actual output of units is also needed by the RFP system, but that data is already required under the SOR files listed in Section 3.

The accuracy of measurement data must stay within the ranges specified in Section 3.4.

6.3 Load forecasting

Please note that the data and information required under this section is used to forecast the Quebec Interconnection energy demand (Québec requirements).

For the purpose of consolidating DPCMEER requested information, this section constitutes a recurring request for information from the DP under reliability standard MOD-031-2 — Demand and Energy Data.

Any additional data and information required by the BA can be provided on request, as stipulated in MOD-031-2.

6.3.1 Short-term data

6.3.1.1 Québec requirements (BQ) forecasting

Please note that the required data and information listed in the table below do not include weather data that are obtained through public/government services (e.g., Environment Canada).

This section includes the data and information required by DPCMEER to forecast the next 42- day variations in the hourly consumption of major customers[12] and determine the validated actual last 7-day hourly consumption variations, by region (Québec requirements) and subsystem. Consumption data calculations also take into account actual hourly data from the DPCMEER data acquisition system.

The required data or information may be reported to DPCMEER through Hydro-Québec Distribution (HQD) when an agreement is in place between the DP and HQD.

12 A major customer is any customer whose consumption is 5 MW or more.

Data/ information[13]	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Actual last 7-days hourly consumption of major customers	MW	BA	DP	Twice daily and on request	IT transfer Email or phone (on request)	Oracle File (on request)	8:00 a.m. and 2:00 p.m.
One-off and calendar month forecasts of consumption variations (drops and interruptions) for major customers	MW	BA	DP	Weekly and on request	Email	File	

13 Quebec energy needs (BQ) forecast calculations also take into account the following items provided by DPCMEER every five minutes: gross actual last 1-day consumption per minute by region (Québec requirements) and subsystem, and calculations, configurations, adjustments and hourly corrections.

6.3.2 Long-term data

Data/ information[14]	Unit of measurement	Requesting entity	Applicable functions/ entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Two-year monthly forecast of the native load of the electric power carrier[15] in terms of energy and capacity	MW and GWh	BA	DP	Annual planning	Email	Excel file	End of July
Ten-year forecast of the native load of the electric power carrier in terms of energy and capacity	MW and GWh	BA	DP	Annual planning	Email	Email	End of July
Most recent update of the normalized peak power of a feeder connected to a load-shedding device	MW	BA	DP	Yearly	Email	Excel file	October 1st every year
Most recent update of feeder priority	Rank	BA	DP	Yearly	Email	Excel file	October 1st every year

14 Long-term data also includes the calculations, configuration, and hourly and weekly adjustments that DPCMEER provides on a yearly basis at the end of September.

15 i.e., Hydro-Québec when conducting electric power transmission activities as defined in the Act respecting the ‹‹Régie de l'énergie›› (R-6.01)

6.4 Generation forecasting

The data in this section is requested from the entities whose generating stations supply the native load in Québec.

The required data or information may be transmitted to DPCMEER through HQD or HQP when an agreement is in place between the GOP and HQD or the GOP and HQP.

Data/ information[16]	Unit of measurement	Requesting entity	Applicable functions/ entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting
7-days wind generation forecast (by farm or point of connection)	MW	BA	GOP	Hourly	Web service, IT transfer	File containing hourly schedules	N/A
2-years wind generation forecast (by farm or point of connection)	MW	BA	GOP	Every 6 months or on request	Web service, IT transfer SFTP	File containing hourly schedules	N/A
Forecast of daily average flows of non-adjustable generating stations	m^3/s	BA	GOP	When changed or on request	Web service, IT transfer	File containing hourly schedules	By 10:00a.m.
Forecast of generation station downtime	N/A	BA	GOP	When changed or on request	Web service, IT transfer	SOAP XML	N/A
Restriction forecast (hydraulic and seasonal, for generating stations)	N/A	BA	GOP	When changed or on request	Web service, IT transfer	SOAP XML	N/A
Stress transfer forecast	N/A	BA	GOP	When changed or on request	Web service, IT transfer	SOAP XML	N/A
Forecast maximum capacity of non- adjustable hydropower stations and thermal stations	MW	BA	GOP	When changed or on request	Web service, IT transfer	SOAP XML	N/A

16 In case of loss of real-time data acquisition, the forecast maximum capacity of RTP generating stations is used as the default value. DPCMEER provides this information for the next 240 hours by 10:00 a.m. each day.

Data/ information[16]	Unit of measurement	Requesting entity	Applicable functions/ entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting
Forecast preselected generation of non-adjustable hydropower and thermal stations	MW	BA	GOP	When changed or on request	Web service, IT transfer	SOAP XML	N/A
Generating strategies for hydropower stations	N/A	BA	GOP	When changed	Email	File	N/A
Hourly generation schedule for last 1-day (validated actual) and +28 days (forecast) for independent power producers, by region (Quebec requirements) and subsystem	MW	BA	GOP	Twice daily	FTP or SFTP	ASCII	9:00 a.m. and 2:00 p.m.
Daily and monthly energy values from meters	MWh	BA	TO for inter-TO lines	Twice daily	Integration bus (HQTÉ interdepartmental exchanges)	XML file	8:00 a.m. and 2:00 p.m.
Monthly energy values from meters for each calendar month	MWh	BA	TO for inter-TO lines	Monthly	Email	File	First week of following month

6.5 Interchange forecasts

The data in this section is requested from the entities involved in supplying the native load in Québec.

The required data or information may be transmitted to DPCMEER through HQD or HQP when an agreement is in place between the GOP and HQD or the GOP and HQP.

Data/ information	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Interchange forecast	MW	BA	TSP	Once a day for the next 240 hours	Web service, IT transfer	File containing hourly schedules	N/A
1-year hourly forecast for independent power producers	MW	BA	GOP	6 months	Email	Excel file	End of July and end of January
Current and future official independent power producer list		BA	RP	On request	Email	Excel file	

6.6 Load management measures

6.6.1 Sequence of Hydro-Québec Production load management measures

Data/ information	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
List of management measures[17]	N/A	BA	HQP (GOP)	2 times per hour	SSL	JSON	Every hour, at 40 minutes past the hour

6.6.2 Interruptible loads

For the purpose of consolidating DPCMEER requested information, this section constitutes a recurring request for information from the RP under standard MOD-020-0 — Providing Interruptible Demands and DCLM Data.

Hydro-Québec Production (HQP) is the only GOP that reports interruptible load data to provide its Interconnected Operations Services (operating reserves).

Please note that interruptible load schedule changes should only be allowed between March 31 and December 1 to ensure the quality of the peak load forecast.

In addition, notice of any schedule change must be emailed to DPCMEER at least one week in advance.

17 This list includes the interruptible loads for which a contract has been signed with HQP. Please note that the data and information required under Section 6.6.2 is required for these interruptible loads as well.

Data/ information	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Amount of interruptible load	MW	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Location of interruptible load	Location code	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Prior notice for weekdays	Hour/Day	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Prior notice for weekends	Hour/Day	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Maximum number of interruptions per day	Integer	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Minimum time between 2 interruptions	Hour	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Maximum number of interruptions per winter period	Integer	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Duration of interruption	Hour	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Maximum duration of interruptions per winter period	Hour	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year
Contract validity period	Day or month	BA	HQD (RP) HQP (GOP)	Yearly or when changed	Email	File	December 1 every calendar year

6.6.3 Direct control load management

For the purpose of consolidating DPCMEER requested information, this section constitutes a recurring request for information from the Resource Planner (RP).

Direct control load management is a form of demand-side management under the direct control of the system operator. It allows for the control of the supply of electricity to individual equipment or devices at customer facilities. It does not include interruptible demands.[18]

Data/ information	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Amount of direct control load	MW	BA	HQD (RP)	Yearly or when changed	Email	File	December 1 every calendar year
Location of direct control load	Location code	BA	HQD (RP)	Yearly or when changed	Email	File	December 1 every calendar year
Application procedure	N/A	BA	HQD (RP)	Yearly or when changed	Email	File	December 1 every calendar year

18 Reference: Glossary of Terms and Acronyms Used in Reliability Standards

7. Additional data and information

7.1 Other data and information for analysis and forecasting purposes

Other data and information are also required for analysis and forecasting purposes. Multiple DPCMEER applications require the data listed below (e.g., climate monitoring). System operators use these applications to support decision-making. DPCMEER will inform TOs and GOs of the list of targeted facilities 24 months before the data is required.

Data/ information	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Phasor or data needed to calculate angular displacement	Real and imaginary voltage value	RC, TOP	TO	1/60 s	Macrodyne or equivalent (e.g., C37.118)	Macrodyne or equivalent data (e.g. synchrophas or or PMU)	N/A
Voltage harmonic distortion OR data needed to calculate it (e.g., even harmonic values)	% (or real and imaginary harmonic values)	TOP	TO	<5 s	Macrodyne or equivalent	Macrodyne or equivalent	N/A
Latitude/longitude of lightning strike	Degrees	TOP	TO	On detection	Modem	Owner	N/A
Time of lightning strike	Month, day, h, min, s and ms	TOP	TO	On detection	Modem	Owner	N/A
Lightning discharge	(kA)	TOP	TO	On detection	Modem	Owner	N/A
Temperature	°C	TOP	TO	<1 min	Modem	Owner	N/A
Humidity	%	TOP	TO	<1 min	Modem	Owner	N/A

Data/ information	Unit of measurement	Requesting entity	Applicable entities	Update frequency	Communication protocol or exchange method	Format	Deadline for reporting (when applicable)
Wind speed	1.0 m/s	TOP	TO	<1 min	Modem	Owner	N/A
Wind direction	degrees	TOP	TO	<1 min	Modem	Owner	N/A
Number of frost sensor resets	Integer	TOP	TO	<1 min	Modem	Owner	N/A
Accumulated weight of ice	Newton (force sensor)	TOP	TO	<1 min	Modem	Owner	N/A
Functional status of sensors	Fault/Alarm/Normal	TOP	TO	<1 min	Modem	Owner	N/A

7.2 Documentation associated with SPS/RAS operation

Entities that own one or more SPS/RAS, covered in Section 3.3 of this document, must also send DPCMEER technical documentation describing the operating logic of those SPS/RAS. Microsoft Office and PDF file formats are accepted.

8. Notification of a modification or change in status

8.1 Real time

For the notifications listed below, the entities contact the system operator of the Hydro-Québec control center designated in their common operating instruction.

Subject of notification	Requesting entity	Entity covered	Notification deadline	Exchange method	Applicable reliability standard
Unplanned outage lasting 30 minutes or more involving telemetering and control equipment or monitoring capabilities	TOP BA	GOP TO	Immediately	Telephone	TOP-003-3 R5
Unplanned outage lasting 30 minutes or more involving telemetering and control equipment or monitoring capabilities	TOP	TOP-adj	Immediately	Telephone	TOP-001-3 R9
In the event of a failure of its interpersonal communication capability, hold discussions to determine mutually agreeable measures	TOP BA	DP GOP	Immediately	Telephone	COM-001-3 R11
In the event of any change in the status of their SPS/RAS and protection systems or any degradation of such systems that affects system reliability	TOP BA	GOP TO	Immediately	Telephone	PRC-001-1.1 (ii) R2, R2.1 TOP-003-3 R5
Any real-time change in the rating of a facility (e.g., limitation of a generating unit)	TOP BA	GOP TO	Immediately	Telephone	FAC-008-5 R8
Vegetation conditions that could cause a fault at any time	TOP BA	GO (or associated GOP) TO	Immediately	Telephone	FAC-003-4 E4

8.2 Operations planning

To report the information listed below, the entities must communicate via email with the address specified in Section 9 of this document.

The TO must provide DPCMEER with normal and emergency ratings for its solely or jointly owned new, modified or re-rated facilities and the modeling data specified in Section 4:

[1] at least three months prior to the commissioning date if the work is planned
[2] at most two weeks after the commissioning date if the work is performed on an emergency basis

If applicable, these entities must also provide the designation of the most limiting facility component at the same time.

The GO must provide the normal ratings of the new facilities it solely or jointly owns to DPCMEER and the modeling data as specified in Section 4 at least 3 months prior to the commissioning date.

The Go must provide annually the ratings of its solely or jointly owned facilities to DPCMEER. The transmission must be done according to the schedule provided in Section 7 of the document "Transmission System Modeling Data Requirements and Reporting Procedures". In case of a modified or reclassified facility, the most up-to-date ratings will be provided in the subsequent annual issue.
Reference: FAC-008-5

The TO and the GO must provide DPCMEER with their documentation for determining facility ratings and any modification to this documentation within 30 calendar days.
Reference: FAC-008-5, Requirements 1, 2 and 3.

The TO, GO, GOP or DP submitting a report to reliability agencies under EOP-004-4 must immediately send a copy of any such report to DPCMEER.
Reference: EOP-004-4 Requirements 1 and 2.

The TO, GOP and neighboring (adjacent) TOP must coordinate all new protection systems and all protection system changes with DPCMEER at least three months prior to the commissioning of such systems.

The GOP must give DPCMEER prior notice of any changes in generation or operating conditions that could require changes to a TO's protection systems.

The neighboring (adjacent) TOP must give DPCMEER prior notice of any changes in generation, transmission, load or operating conditions that could require changes in a TO's protection systems.
Reference: PRC-001-1.1 (ii) Requirements 3, 4 and 5

Any addition, replacement, modification or dismantling of a facility component affecting the Québec Interconnection must be reported to DPCMEER by the neighboring (adjacent) TOP and BA at least three months before the component in question is to be commissioned or dismantled.

Any addition, replacement, modification or dismantling of a SPS/RAS must be reported to DPCMEER by the TO, GO and DP at least six months before the component in question is to be commissioned or dismantled. The neighboring (adjacent) TOP and BA must proceed in the same manner if the automatic SPS/RAS affects the Québec Interconnection.
Reference: PRC-012-2 Requirement 1

9. Other provisions

In this document, DPCMEER has specified available data formats, communication protocols and exchange methods that are acceptable to it. Any entity wishing to propose alternatives must submit a request to the email address shown in the next section.

9.1 Data reporting by email and security protocol

Data and information may be reported in accordance with the provisions already agreed upon with the relevant entities. All communications regarding requirements and procedures for reporting the data and information needed to plan the operation of the Quebec Interconnection Main Transmission System (RTP) must be sent to the following email address via secure FTP (FTPS):

CMEDonneespourlafiabilite@hydroquebec.com

Should a computer or telecommunication problem prevent real-time data reporting to DPCMEER, each entity must contact DPCMEER either directly or through a regional HQTÉ place of business as stipulated in the common operating instructions.

Note:

If the partner does not yet have an active account, the Hydro-Québec employee will receive a message containing a password valid for 24 h only. The Hydro-Québec employee must then forward the password to the partner by telephone. Once the message is closed, the Hydro-Québec employee will no longer be able to see the temporary password. If the password was not written down, see the section on forgotten passwords (external partner).

Procedure to be followed by an external partner to send files to a Hydro-Québec employee:

a) Go to https://ftps.hydroquebec.com using your Internet Explorer browser.

b) Enter your email address and your password in the login window.

c) To send a file to an external partner, click on “Envoyer le paquet” [Send Package].

d) In the field “À” [To], enter the email address CMEDonneespourlafiabilite@hydroquebec.com, then enter the message subject.

e) Click on “Parcourir” [Browse] and select a file to upload. Click on “Ouvrir” [Open]. If necessary, click on “Ajouter autre fichier” [Add file].

f) Click on “Envoyer” [Send] to send the package to the distibution list.

9.2 Inconsistent data

If DPCMEER detects inconsistent data, it will contact the entity concerned and work with it to resolve the inconsistency in a manner that is acceptable to both parties and that ensures Main Transmission System (RTP) reliability.

9.3 Other security protocols

NERCnet must be used for data exchanges by DPCMEER and the RCs, TOPs and BAs adjacent to (neighboring) the Quebec Interconnection. NERC is responsible for NERCnet technical support and maintenance.

Hydro-Québec units may also submit their data through Hydro-Québec's file storage system, HydroDoc (Enterprise Connect).

DPCMEER will ensure that data transfers comply with the security protocol jointly selected with the other entities.

10. References

[1] COM-001-3:*Communications*

[2] EOP-004-4: *Event Reporting*

[3] EOP-005-3: *System Restoration from Blackstart Resources*

[4] FAC-003-4: *Transmission Vegetation Management*

[5] FAC-008-5: *Facility Ratings*

[6] IRO-010-2: *Reliability Coordinator Data Specification and Collection*

[7] IRO-017-1: *Outage Coordination*

[8] MOD-025-2: *Verification and Data Reporting of Generator Real and Reactive Power Capability and Synchronous Condenser Reactive Power Capability*

[9] MOD-031-2: *Demand and Energy Data (for recurring data and information required by BA)*

[10] MOD-032-1: *Data for Power System Modeling and Analysis*

[11] PRC-001-1.1 (ii): *System Protection Coordination*

[12] PRC-012-2: *Remedial Action Schemes*

[13] TOP-001-3: *Transmission Operations*

[14] TOP-003-3: *Operational Reliability Data*

[15] *Transmission System Modeling Data Requirements and Reporting Procedures*

[16] IQ-P-001: *Verification of Maximum Real and Reactive Power Capabilities of MTS Generating Facilities and Synchronous Compensators*