
Project QC-2016-03

Revision of TOP/IRO Standards

1. ASSESSMENT OF RELEVANCE

The objective of the NERC TOP/IRO project and, incidentally, revision of the TOP and IRO standards is to improve understanding of the standards substantially and to improve their wording. Specifically, the new versions of the standards will help clarify the scope of data that the Balancing Authority and Transmission Operator can collect. With the new versions of the TOP/IRO standards, the responsibilities of registered entities will also be clearly specified. For example, the new TOP standards remove certain ambiguities in those now in effect and streamline them by combining the requirements from eight (8) TOP standards in three (3) simplified ones. In the Coordinator's view, revising the reliability standards clarifies their application, minimizes redundancies and, ultimately, is desirable for Québec electric system reliability.

The Coordinator is also filing IRO-009-2, a standard not among those in the NERC TOP/IRO project. For concision, two requirements from IRO-009-1 (R1 and R2) are merged into a single requirement in the new standard (IRO-009-2, R1).

The Coordinator thus proposes the adoption of the following standards:

- **IRO-001-4 – Reliability Coordination – Responsibilities**, which establish the responsibility of Reliability Coordinators to act or direct other entities to act ;
- **IRO-002-4 – Reliability Coordination – Monitoring and Analysis**, which provide System Operators with the capabilities necessary to monitor and analyze data needed to perform their reliability functions ;
- **IRO-008-2 – Reliability Coordinator Operational Analyses and Real-time Assessments**, which ensures that analyses and assessments are performed to prevent instability, uncontrolled separation or Cascading ;
- **IRO-009-2 – Reliability Coordinator Actions to Operate Within IROs**, which prevents instability, uncontrolled separation or cascading outages that adversely impact the reliability of the interconnection by ensuring prompt action to prevent or mitigate instances of exceeding Interconnection Reliability Operating Limits (IROs) ;
- **IRO-010-2 – Reliability Coordinator Data Specification and Collection**, which prevents instability, uncontrolled separation or cascading outages that adversely impact reliability by ensuring that the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area
- **IRO-014-3 – Coordination Among Reliability Coordinators**, which ensures that each Reliability Coordinator's operations are coordinated such that they will not adversely impact other Reliability Coordinator Areas while preserving the reliability benefits of interconnected operations ;
- **IRO-017-1 – Outage Coordination**, which ensures that outages are properly coordinated in the Operations Planning time horizon and Near-Term Transmission Planning Horizon ;
- **TOP-001-3 – Transmission Operations**, which prevents instability, uncontrolled separation or Cascading outages that adversely impact the reliability of the Interconnection by ensuring prompt action to prevent or mitigate such occurrences ;

- **TOP-002-4 – Operations Planning**, which ensures that Transmission Operators and Balancing Authorities have plans for operating within specified limits ;
- **TOP-003-3 – Operational Reliability Data**, which ensures that the Transmission Operator and Balancing Authority have the data needed to fulfill their operational and planning responsibilities.

The Coordinator also asks that two terms in the Glossary of Terms Used in NERC Reliability Standards be redefined: Operational Planning Analysis and Real-time Assessment.

2. PREREQUISITES TO ADOPTION

The term Operating Instruction used in COM-002-4 and COM-001-2.1 – Communications must be defined.

3. MODIFICATIONS TO OTHER STANDARDS OR TO GLOSSARY DEFINITIONS

3.1. Standards or requirements to be retired upon enforcement:

- | | |
|----------------|----------------|
| • IRO-001-1.1 | • PER-001-0.2 |
| • IRO-002-2 | • TOP-001-1a |
| • IRO-003-2 | • TOP-002-2.1b |
| • IRO-004-2 | • TOP-003-1 |
| • IRO-005-3.1a | • TOP-004-2 |
| • IRO-008-1 | • TOP-005-2a |
| • IRO-009-1 | • TOP-006-2 |
| • IRO-010-1a | • TOP-007-0 |
| • IRO-014-1 | • TOP-008-1 |
| • IRO-015-1 | |
| • IRO-016-1 | |

3.2. New definitions to add to glossary: None

3.3. Definitions to be modified in the glossary:

Term	Acronym	Definition
Operational planning analysis		<p>New definition</p> <p>An evaluation of projected system conditions to assess anticipated (pre-contingency) and potential (post-contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to, load forecasts, generation output levels, interchange, known protection system and special protection system status or degradation, transmission outages, generator outages, facility ratings, and identified phase angle and equipment limitations. (Operational planning analysis may be provided through internal systems or through third-party services.)</p> <p>Former definition:</p> <p>An analysis of the expected system conditions for the next day's operation. (That analysis may be performed either a day ahead or as much as 12 months ahead.) Expected system conditions include things such as load forecast(s), generation output levels and known system constraints (transmission facility outages, generator outages, equipment limitations, etc.).</p> <p>(Analyse de planification opérationnelle)</p> <p><small>Source: Glossary of Terms Used in NERC Reliability Standards</small></p>
Real-time assessment		<p>New definition</p> <p>An evaluation of system conditions using real-time data to assess existing (pre-contingency) and potential (post-contingency) operating conditions. The evaluation shall reflect applicable inputs including, but not limited to, load, generation output levels, known protection system and special protection system status or degradation, transmission outages, generator outages, interchange, facility ratings, and identified phase angle and equipment limitations. (Real-time assessment may be provided through internal systems or through third-party services.)</p> <p>Former definition:</p> <p>An examination of existing and expected system conditions, conducted by collecting and reviewing immediately available data.</p> <p>(Évaluation en temps réel)</p> <p><small>Source: Glossary of Terms Used in NERC Reliability Standards</small></p>

3.4. Definitions to remove from the glossary: None
4. APPLICABILITY

- Reliability Coordinator (RC)
- Transmission Operator (TOP)
- Balancing Authority (BA)
- Generator Operator (GOP)

- Generator Owner (GO)
- Transmission Owner (TO)
- Distribution Provider (DP)
- Transmission Planner (TP)
- Load-Serving Entity (LSE)
- Planning Coordinator (PC)

Functions covered for each proposed standard:

Standard	Functions covered									
	RC	BA	TOP	TO	GOP	GO	DP	TP	LSE	PC
IRO-001-4	x	x	x		x		x			
IRO-002-4	x									
IRO-008-2	x									
IRO-009-2	x									
IRO-010-2	x	x	x	x	x	x	x		x	
IRO-014-3	x									
IRO-017-1	x	x	x					x		x
TOP-001-3		x	x		x		x			
TOP-002-4		x	x							
TOP-003-3		x	x	x	x	x	x		x	

5. SPECIFIC PROVISIONS FOR QUÉBEC

The standards apply to the Main Transmission System (RTP) facilities. Two standards, IRO-010-2 and IRO-002-4, also have requirements that apply to non-RTP facilities.

6. PROPOSED EFFECTIVE DATES

All of the proposed reliability standards are effective in the U.S. as of April 1, 2017, except for IRO-010-2 requirements R1 and R2 and TOP-003-3 requirements R1 to R4, which are effective as of January 1, 2017.

Given the importance of having mandatory standards in effect harmonized with the U.S., the Coordinator requests that all reliability standards be adopted on April 1, 2017, except IRO-010-2 requirement R3 and TOP-003-3 requirement R5, for which July 1, 2017 is requested.

The later effective date for IRO-010-2 and TOP-003-3 will enable registered entities to review the data specification document, which must be distributed three months earlier, the same time that U.S. entities have been allowed.

Effective dates for standards to be filed:

Standard to file	Effective date	
	April 1, 2017	July 1, 2017
IRO-001-4	All requirements	–
IRO-002-4	All requirements	–
IRO-008-2	All requirements	–
IRO-009-2	All requirements	–
IRO-010-2	R1 and R2	R3
IRO-014-3	All requirements	–
IRO-017-1	All requirements	–
TOP-001-3	All requirements	–
TOP-002-4	All requirements	–
TOP-003-3	R1 to R4	R5

7. ALTERNATIVE REQUEST REGARDING EFFECTIVE DATES

If the Régie does not grant the Coordinator's requested effective dates, the Coordinator alternatively proposes that the standards come into effect in two phases as set out below.

Phase 1

Expedited adoption so requirements that, in the Coordinator's view, should not raise issues and only cover the RC, BA, TOP, PC and TP functions come into effect on April 1, 2017. In other words, this phase only covers requirements for entities complying on a self-regulation basis. It remains important to make these requirements effective promptly in order that these functions can coordinate with neighboring electric systems.

Phase 2

Subsequently, the remaining requirements would be adopted, i.e., those that replace requirements in existing standards and that, in the Coordinator's view, may raise issues and/or cover all registered entities. Adopting these requirements may require more thorough consultation and more time to implement. For Phase 2, the Coordinator proposes that the effective date be the later of the following:

- 60 days after the Régie adopts the standard ;
- Not before July 1, 2017 for IRO-010-2 requirement R3 and TOP-003-3 requirement R5 to give registered entities time to review the data specification document.

Proposed standards and their requirements with the phase/date each becomes effective

Standard to file	Phase 1 (expedited adoption) Effective April 1, 2017	Phase 2	
		60 days after adoption	July 1, 2017 ¹
IRO-001-4	R1	R2 and R3	–
IRO-002-4	R1, R2 and R4	R3	–
IRO-008-2	All requirements	–	–
IRO-009-2	All requirements	–	–
IRO-010-2	R1 and R2	–	R3
IRO-014-3	All requirements	–	–
IRO-017-1	All requirements	–	–
TOP-001-3	R1, R2 and R7 to R9, R12 to R20	R3 to R6, R10, R11	–
TOP-002-4	All requirements	–	–
TOP-003-3	R1 to R4	–	R5

Two-phase effective dates as presented also requires two-phase retirement of the former standards. The retirement of certain requirements is subject to the adoption of certain standards outside the project (see footnotes).

Standards and requirements for the Régie to retire with the corresponding phase

Standard to retire	Phase 1 (expedited adoption) Retirement on April 1, 2017	Phase 2		
		Retirement 60 days after adoption	Retirement on July 1, 2017 ²	Other (see footnotes)
IRO-001-1.1	R1 to R7 and R9	R8	–	–
IRO-002-2	R1 to R4 and R6 to R8	R5	–	–
IRO-003-2	–	R1 and R2	–	–
IRO-004-2	All requirements	–	–	–
IRO-005-3.1a	R2 to R10 and R12	R1	–	R11 ³
IRO-008-1	All requirements	–	–	–
IRO-009-1	All requirements	–	–	–
IRO-010-1a	R1 and R2	–	R3	–
IRO-014-1	All requirements	–	–	–
IRO-015-1	All requirements	–	–	–
IRO-016-1	All requirements	–	–	–
PER-001-0.2	All requirements	–	–	–
TOP-001-1a	R1, R2, R5 and R8	R3, R4, R6 and R7	–	–
TOP-002-2.1b	R1, R2, R4 to R11, R16, R17 and R19	R3, R13 to R15 and R18	–	R12 ⁴

¹ If Phase 2 adoption is after July 1, the requirement will come into effect 60 days after Régie adoption.

² If Phase 2 adoption is after July 1, the retirement will be 60 days after Régie adoption.

³ R11 retirement is subject to the adoption of MOD-001-1a.

⁴ R12 retirement is subject to the adoption of MOD-029-1a.

Standard to retire	Phase 1 (expedited adoption) Retirement on April 1, 2017	Phase 2		
		Retirement 60 days after adoption	Retirement on July 1, 2017 ²	Other (see footnotes)
TOP-003-1	R4	R1 to R3	–	–
TOP-004-2	All requirements	–	–	–
TOP-005-2a	All requirements	–	–	–
TOP-006-2	R3 to R7	R1 and R2	–	–
TOP-007-0	All requirements	–	–	–
TOP-008-1	All requirements	–	–	–

The tables below contain the same information but with a column added for the functions covered by the requirements.

Proposed standards and their requirements with corresponding phase

Standard	Requirements	Functions covered	Phase 1	Phase 2
IRO-001-4	R1	RC	x	
	R2	TOP, BA, GOP and DP		x
	R3	TOP, BA, GOP and DP		x
IRO-002-4	R1 to R2	RC	x	
	R3	RC		x
	R4	RC	x	
IRO-008-2	R1 to R6	RC	x	
IRO-009-2	R1 to R4	RC	x	
IRO-010-2	R1	RC	x	
	R2	RC	x	
	R3	RC, BA, GO, GOP, LSE, TOP, TO and DP		x
IRO-014-3	R1 to R7	RC	x	
IRO-017-1	R1	RC	x	
	R2	TOP and BA	x	
	R3	PC and TP	x	
	R4	PC and TP	x	
TOP-001-3	R1	TOP	x	
	R2	BA	x	
	R3 to R4	BA, GOP and DP		x
	R5 to R6	TOP, GOP and DP		x
	R7 to R8	TOP	x	
	R9	BA and TOP	x	
	R10	TOP	x	
	R11	BA	x	
	R12 to R16	TOP	x	
	R17	BA	x	
	R18	TOP	x	
	R19	TOP	x	
	R20	BA	x	
TOP-002-4	R1 to R3	TOP	x	

Standard	Requirements	Functions covered	Phase 1	Phase 2
TOP-003-3	R4 to R5	BA	x	
	R6	TOP	x	
	R7	BA	x	
	R1	TOP	x	
	R2	BA	x	
	R3	TOP	x	
	R4	BA	x	
	R5	TOP, BA, GO, GOP, LSE, TO and DP		x

Two-phase effective dates as presented also requires two-phase retirement of the former standards.

Standards and requirements for the Régie to retire with the corresponding phase

Standard	Requirements	Functions covered	Phase 1	Phase 2
IRO-001-1.1	R1	RRO	x	
	R7	RC	x	
	R8	TOP, BA, GOP, TSP, LSE and PSE		x
	Other	RC	x	
IRO-002-2	R1 to R4	RC	x	
	R5	RC		x
	R6 to R8	RC	x	
IRO-003-2	R1 to R2	RC		x
IRO-004-2	R1	BA, TOP and TSP	x	
IRO-005-3.1a	R1	RC		x
	R2 to R9	RC	x	
	R10	RC, TOP, BA, GOP, TSP, LSE and PSE	x ⁵	
	R11	TSP		x ⁶
	R12	RC	x	
IRO-008-1	R1 to R3	RC	x	
IRO-009-1	R1 to R5	RC	x	
IRO-010-1a	R1 to R2	RC	x	
	R3	BA, GO, GOP, IA, LSE, RC, TOP and TO		x
IRO-014-1	R1 to R4	RC	x	
IRO-015-1	R1 to R3	RC	x	
IRO-016-1	R1 to R2	RC	x	
PER-001-0.2	R1	TOP and BA	x	
TOP-001-1a	R1 to R2	TOP	x	
	R3	TOP, BA and GOP		x
	R4	DP and LSE		x
	R5	TOP	x	

⁵ GOP, TSP, LSE and PSE are not covered.

⁶ R11 retirement is subject to the adoption of MOD-001-1a.

Standard	Requirements	Functions covered	Phase 1	Phase 2
TOP-002-2.1b	R6	TOP, BA and GOP		x
	R7	TOP and GOP		x
	R8	BA and TOP	x	
	R1 to R2	BA and TOP	x	
	R3	LSE and GOP		x
	R4 to R6	BA and TOP	x	
	R7 to R9	BA	x	
	R10	BA and TOP	x	
	R11	TOP	x	
	R12	TSP		x ⁷
	R13 to R15	GOP		x
	R16	TOP	x	
	R17	BA and TOP	x	
	R18	BA, TOP, GOP, TSP and LSE		x
	R19	BA and TOP	x	
TOP-003-1	R1	GOP and TOP		x
	R2	TOP, BA and GOP		x
	R3	TOP, BA and GOP		x
	R4	RC	x	
TOP-004-2	R1 to R6	TOP	x	
TOP-005-2a	R1	BA, TOP and PSE	x	
	R2	BA and TOP	x	
	R3	ESP	x	
TOP-006-2	R1.1	GOP		x
	R2	RC, TOP and BA		x
	Other	RC, TOP and BA	x	
TOP-007-0	R1 to R4	RC and TOP	x	
TOP-008-1	R1 to R4	TOP	x	

8. PRELIMINARY ASSESSMENT OF IMPACT

The Coordinator notes that these standards replace ones already in effect. The new standards have fewer requirements. For entities complying with the existing requirements, the new requirements should be simpler to enforce and especially to monitor. For those entities, enforcement should require a non-negligible but nevertheless modest effort for most requirements. The table below presents a preliminary ranking of the impacts on all Québec entities.

⁷ R12 retirement is subject to the adoption of MOD-029-1a.

	Impacts		
Standard	Implementation	Enforcement	Monitoring
IRO-001-4	Low	Low	Low
IRO-002-4	Low	Low	Low
IRO-008-2	Low	Low	Low
IRO-009-2	Low	Low	Low
IRO-010-2	Low	Low	Low
IRO-014-3	Moderate	Moderate	Low
IRO-017-1	Low	Low	Low
TOP-001-3	Low	Low	Low
TOP-002-4	Low	Low	Low
TOP-003-3	Moderate	Low	Low

Definitions

- Low:** Normal industry practice that only requires minor adjustments to existing processes or practices.
- Moderate:** Change that requires allocation of some physical, human or financial resources to implement, enforce and monitor compliance with the proposed standard.
- High:** Change that requires allocation of significant physical, human or financial resources to plan, implement, enforce and monitor compliance with the proposed standard.