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## Project QC-2022-03

### Cold Weather Reliability Standards

### Reliability Standards EOP-011-2, IRO-010-4, TOP-003-5

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#### 1. OVERVIEW OF THE STANDARDS

##### 1.1. Applicability of the Standards

The table below lists the functional entities to which the proposed Reliability Standards (the “Standards”) EOP-011-2, IRO-010-4, and TOP-003-5, applies.

Standards	Functions covered
EOP-011-2	Reliability Coordinator (RC) Balancing Authority (BA) Generator Owner (GO) Generator Operator (GOP) Transmission Operator (TOP)
IRO-010-4	Reliability Coordinator (RC) Balancing Authority (BA) Generator Owner (GO) Generator Operator (GOP) Transmission Operator (TOP) Transmission Owner (TO) Distribution Provider (DP)
TOP-003-5	Balancing Authority (BA) Generator Owner (GO) Generator Operator (GOP) Transmission Operator (TOP) Transmission Owner (TO) Distribution Provider (DP)

##### 1.2. Purpose of the Reliability Standards

This section presents the purpose of each Reliability Standard covered by this request. The title and purpose of each standard are as follows:

- **EOP-011-2 – Emergency Preparedness and Operations:** To address the effects of operating emergencies by ensuring each Transmission Operator, Balancing Authority, and Generator Owner has developed plan(s) to mitigate operating Emergencies and that those plans are implemented and coordinated within the Reliability Coordinator Area as specified within the requirements.
- **IRO-010-4 – Reliability Coordinator Data Specification and Collection:** To prevent instability, uncontrolled separation, or Cascading outages that adversely impact reliability, by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.

- **TOP-003-5 – Operational Reliability Data:** To ensure that the Transmission Operator and Balancing Authority have data needed to fulfill their operational and planning responsibilities.

### 1.3. Regulatory Context

The EOP-011-2 Reliability Standard replaces standard EOP-011-1, adopted by the Régie de l'énergie (Régie) in decision D-2017-015<sup>1</sup> and currently in effect since April 2nd, 2017. The Reliability Standards IRO-010-4 and TOP-003-5 replace the IRO-010-2 and TOP-003-3 standards respectively, adopted by the Régie in decisions D-2017-061<sup>2</sup> and D-2021-047<sup>3</sup>. The Reliability Standards IRO-010-3 and TOP-003-4 filed with the Régie as part of docket R-4184-2022<sup>4</sup> – Standards Alignment with Registration (SAR) are currently under review by Régie.

Adopted by the North American Electric Reliability Corporation (NERC) Board of Trustees on June 11, 2021<sup>5</sup> and approved by the Federal Energy Regulatory Commission (FERC) in a letter dated August 24, 2021<sup>6</sup>, the EOP-011-2, IRO-010-4 and TOP-003-5 Standards will come into effect in the United States on April 1<sup>st</sup>, 2023<sup>7</sup>.

Several notable events in the South-Central United States over the last decade have demonstrated the substantial impacts that extreme cold weather conditions can have on the reliability of the transmission system. Extreme cold weather was a major factor in events impacting transmission system reliability in 2011, 2014, 2018<sup>8</sup> and most recently in February 2021<sup>9</sup>.

The joint FERC and NERC report<sup>10</sup> "The South-Central United States Cold Weather Bulk Electric System Event of January 17, 2018" recommends the development of standards to improve transmission system reliability during cold weather events and extreme weather conditions. In response to the joint NERC and

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<sup>1</sup> Régie decision D-2017-015, consulted online on March 8, 2022: [http://publicsde.regie-energie.qc.ca/projets/400/DocPri/R-3997-2016-A-0008-Dec-Dec-2017\\_02\\_14.pdf](http://publicsde.regie-energie.qc.ca/projets/400/DocPri/R-3997-2016-A-0008-Dec-Dec-2017_02_14.pdf)

<sup>2</sup> Régie decision D-2017-061, consulted online on March 8, 2022: [http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-A-0005-Dec-Dec-2017\\_06\\_16.pdf](http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-A-0005-Dec-Dec-2017_06_16.pdf)

<sup>3</sup> Régie decision D-2021-047, consulted online on February 7, 2022: [http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-A-0034-Dec-Dec-2021\\_04\\_15.pdf](http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-A-0034-Dec-Dec-2021_04_15.pdf)

<sup>4</sup> Request for Adoption of Reliability Standards SAR, consulted online on March 01, 2022: <http://publicsde.regie-energie.qc.ca/layouts/publicsite/ProjectPhaseDetail.aspx?ProjectID=613&phase=1&Provenance=A&generate=true> [in French only].

<sup>5</sup> Petition of the north American electric reliability corporation, consulted online on January 15, 2022: [https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards\\_2019-06.pdf](https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards_2019-06.pdf)

<sup>6</sup> Order approving Cold Weather Reliability Standards (Issued August 24, 2021) consulted online on January 15, 2022: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_num=20210824-3085](https://elibrary.ferc.gov/eLibrary/filelist?accession_num=20210824-3085)

<sup>7</sup> United States - Standards Subject to Future Enforcement, consulted on February 17, 2022: <https://www.nerc.com/pa/Stand/AlignRep/Standards%20Subject%20to%20Future%20Enforcement.xlsx>

<sup>8</sup> Petition of the north American electric reliability corporation, consulted online on January 15, 2022: [https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards\\_2019-06.pdf](https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards_2019-06.pdf)

<sup>9</sup> FERC – NERC Regional Staff Report: *The February 2021 Cold Weather Outages in Texas and South Central United States*, consulted online on March 9, 2022: <https://www.nerc.com/news/Pages/Final-Report-on-February-2021-Freeze-Underscores-Winterization-Recommendations.aspx>

<sup>10</sup> *Staff Report 2019 FERC and NERC: The South Central United States Cold Weather Bulk Electric System Event of January 17, 2018* de la FERC, consulted online on February 25, 2022: <https://www.ferc.gov/sites/default/files/2020-04/07-18-19-ferc-nerc-report.pdf>

FERC report EOP-011-2, IRO-010-4, and TOP-003-5 standards were developed by NERC as part of Project 2019-06 (Cold Weather)<sup>11</sup>.

The Reliability Coordinator submits for adoption by the Régie standards EOP-011-2, IRO-010-4, and TOP-003-5 of the NERC project 2019-06 as well as their respective Appendices.

#### 1.4. Specific Provisions for Québec

The Coordinator propose the following specific provisions for standard EOP-011-2:

- For the purpose of this standard, the term “generating unit” means all Main Transmission System (RTP) generators.
- The Violation Risk Factor for Requirement R8 is “medium” and the Time Horizon is set to “Long-term Planning and Operations Planning”. However, Requirement R8 in the Violation Severity Level (VSL) table, the time horizon does not reflect the requirement of the standard. The Coordinator proposes to replace “Operations Planning and Real-time Operations” by “Long-term Planning and Operations Planning”.

In regard to the IRO-010-4, and TOP-003-5 standards, the Coordinator proposes the renewal of the Québec specific provisions from the previous versions of these standards. Furthermore, the coordinator adds the following specific provision for Requirement R1.3 of the IRO-010-4 standard and the Requirements R1.3 and R2.3 of the TOP-003-5 standard:

- The expression “BES” is replaced by “RTP”.

#### i. Relation with the filings R-4001-2017<sup>12</sup>, R-4164-2021<sup>13</sup> et R-4184-2022<sup>14</sup>

The final agreement related to the transmission of confidential operating data from Rio Tinto Alcan (RTA) and the processing of this data by Hydro-Québec<sup>15</sup> (the Agreement), submitted as part of file R-4001-2017, concerns the standards IRO-010-2 and TOP-003-3 as well as any new revision to these two standards.

The Coordinator is of the opinion that the new versions of the IRO-010 and TOP-003 standards requested for adoption within this filing, namely IRO-010-4 and TOP-003-5 standards, have no impact on the Agreement, nor on the processing of dockets R-4001-2017, R-4164-2021 and R-4184-2022.

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<sup>11</sup> Project 2019-06 (Cold Weather), consulted on February 17, 2022: <https://www.nerc.com/pa/Stand/Pages/Project%202019-06%20Cold%20Weather.aspx>

<sup>12</sup> Request for Reliability Standard adoption, file R-4001-2017, consulted online on March 1, 2022: [http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-B-0099-DemAmend-DemandeAmend-2021\\_01\\_29.pdf](http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-B-0099-DemAmend-DemandeAmend-2021_01_29.pdf) [in French only].

<sup>13</sup> Request for Reliability Standard adoption IRO-002-7 et TOP-001-5, consulted online on March 1, 2022: [http://publicsde.regie-energie.qc.ca/projets/592/DocPri/R-4164-2021-B-0002-Demande-Dem-2021\\_07\\_09.pdf](http://publicsde.regie-energie.qc.ca/projets/592/DocPri/R-4164-2021-B-0002-Demande-Dem-2021_07_09.pdf) [in French only].

<sup>14</sup> Request for Reliability Standard adoption SAR project, consulted online on March 1, 2022: [http://publicsde.regie-energie.qc.ca/projets/613/DocPri/R-4184-2022-B-0002-Demande-Autre-2022\\_02\\_14.pdf](http://publicsde.regie-energie.qc.ca/projets/613/DocPri/R-4184-2022-B-0002-Demande-Autre-2022_02_14.pdf) [in French only].

<sup>15</sup> Final agreement related to the transmission of confidential operating data from Rio Tinto Alcan (RTA) and the processing of this data by Hydro-Québec, consulted on March 14, 2022: [http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-B-0090-Demande-Dem-2020\\_11\\_20.pdf](http://publicsde.regie-energie.qc.ca/projets/404/DocPri/R-4001-2017-B-0090-Demande-Dem-2020_11_20.pdf) [in French only].

### 1.5. Proposed Effective Dates

The implementation plan<sup>16</sup> for NERC Project 2019-06 proposes that the EOP-011-2, IRO-010-4, and TOP-003-5 standards become effective on the first day of the first calendar quarter that is 18 months beyond the date of their regulatory approval.

The Coordinator considers the Régie's requirement that standards come into force on the first day of a calendar quarter<sup>17</sup> with at least 60 days<sup>18</sup> between the date of the standard's adoption and its effective date is compliant with NERC's implementation plan.

Given the importance of having standardized practices, with effective mandatory standards harmonized with the United States, the Coordinator proposes that the three Reliability Standards come into effect on the first day of the first calendar quarter that is 18 months beyond their adoption by the Régie.

### 1.6. Standards to retire

The Reliability Standards EOP-011-1, IRO-010-2, and TOP-003-3 currently in effect, or standards IRO-010-3 and TOP-003-4, depending on the status of docket R-4184-2022<sup>19</sup>, at the time of the approval of the standards of this file, must be retired on the date the Reliability Standards EOP-011-2, IRO-010-4, and TOP-003-5 come into effect.

### 1.7. Modifications to the Glossary

No modifications to the Glossary.

### 1.8. Modifications to the Register

No modifications to the Register.

## 2. ASSESSMENT OF RELEVANCE

The 2019 FERC and NERC Staff Report on The South-Central United States Cold Weather Bulk Electric System Event of January 17, 2018,<sup>20</sup> (the Report) recommends modifications, that were the source of project 2019-06<sup>21</sup>. These recommendations include, mainly the modifications of Reliability Standards in order to require GOs to implement winterization activities on generating units to prepare for cold weather

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<sup>16</sup> NERC Project 2019-06 Implementation Plan, consulted online on February 18, 2022: <https://www.nerc.com/pa/Stand/Pages/Project%202019-06%20Cold%20Weather.aspx>

<sup>17</sup> In decision [D-2015-168](#), the Régie set the effective date of standards as the first day of the calendar quarter following the date of adoption of the standard.

<sup>18</sup> In decision [D-2016-011](#), the Régie set a minimum of 60 days between adoption of a standard and its effective date.

<sup>19</sup> Request for Reliability Standard adoption SAR project, consulted online on March 1, 2022: [http://publicsde.regie-energie.qc.ca/projets/613/DocPri/R-4184-2022-B-0002-Demande-Autre-2022\\_02\\_14.pdf](http://publicsde.regie-energie.qc.ca/projets/613/DocPri/R-4184-2022-B-0002-Demande-Autre-2022_02_14.pdf) [in French only].

<sup>20</sup> 2019 FERC and NERC Staff Report : *The South Central United States Cold Weather Bulk Electric System Event of January 17, 2018*, de la FERC, consulted online on February 25, 2022: <https://www.ferc.gov/sites/default/files/2020-04/07-18-19-ferc-nerc-report.pdf>

<sup>21</sup> Project 2019-06 (Cold Weather), consulted online on February 17, 2022: <https://www.nerc.com/pa/Stand/Pages/Project%202019-06%20Cold%20Weather.aspx>

and to provide new data on generating units operation in cold weather conditions to RC, TOP and BA for use in their analyzes and planning.<sup>22</sup>

The revisions of NERC Cold Weather Reliability Standards focus on freeze protection measures on generating units as well as winter-specific and plant-specific operator awareness training. In addition, the proposed modifications ensure that processes govern effective communications to RCs, TOPs, and BAs of information on design temperatures, capacities, and limitations applicable to generating units in cold weather conditions for use in their cold weather operational analyses.<sup>23</sup>

NERC also proposes to replace the term “Special Protection System” with “Remedial Action Scheme”<sup>24</sup> throughout proposed Reliability Standards IRO-010-4 and TOP-003-5 to align the Reliability Standard language with the approved revised NERC Glossary definition<sup>25</sup>. As a reminder, in Quebec the term “Special Protection System” has been replaced by the term “Remedial Action Scheme” on 10 September 2022 as per decision D-2020-118 in docket 4117-2020.<sup>26</sup>

## **2.1. Modifications to the standard EOP-011-2**

NERC revised the title of the EOP-011-1 Reliability Standard from "Emergency Operations" to "Emergency Preparedness and Operation" and added the GO and GOP as functional entity of the Reliability Standard.

### **2.1.1 Elements to determine the impact on reliability**

The new Requirements R1.2.6 and R2.2.9 of the Reliability Standard EOP-011-2, address the TOP and BA respectively and require the inclusion of provisions to determine the reliability impacts of cold weather conditions and extreme weather conditions in their Operation Plans.

### **2.1.2 Generating unit(s) cold weather preparedness plan -freeze protection measures**

The addition of Requirement R7, requires each GO to implement and maintain cold weather preparedness plan(s) for its generating units. The GO's plans should include, but are not limited to, necessary and appropriate freeze protection measures for generating units, periodic maintenance and inspection of such measures, accurate ambient design temperatures and generating unit operation limitations and expected performance in cold weather.<sup>27</sup>

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<sup>22</sup> Petition of the North American electric reliability corporation, consulted online on January 15, 2022

[https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards\\_2019-06.pdf](https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards_2019-06.pdf)

<sup>23</sup> Petition of the north American electric reliability corporation, consulted online on January 15, 2022

[https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards\\_2019-06.pdf](https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards_2019-06.pdf)

<sup>24</sup> Régie's Glossary of terms, consulted online on February 19, 2022 <http://www.regie-energie.qc.ca/audiences/NormesFiabiliteTransportElectricite/GlossaireTermesEtAcronymes-FR-20210804.pdf>

<sup>25</sup> Petition of the north American electric reliability corporation, consulted online on January 15, 2022

[https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards\\_2019-06.pdf](https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Petition%20for%20Approval%20of%20Cold%20Weather%20Standards_2019-06.pdf)

<sup>26</sup> Régie's decision D-2020-118, consulted online on February 11, 2022 [http://publicsde.regie-energie.qc.ca/projets/536/DocPri/R-4117-2020-A-0011-Dec-Dec-2020\\_09\\_10.pdf](http://publicsde.regie-energie.qc.ca/projets/536/DocPri/R-4117-2020-A-0011-Dec-Dec-2020_09_10.pdf) [in French only].

<sup>27</sup> NERC EOP-011-02 Technical Rational, consulted online on January 29, 2022

[https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06\\_EOP-011-2\\_Technical\\_Ratioanle\\_04022021.pdf](https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06_EOP-011-2_Technical_Ratioanle_04022021.pdf)

Furthermore, Requirement R7 of the EOP-011-2 standard requires the cold weather preparedness plan to contain a generating-units operating limitations during cold weather and other availability and capability information and include an annual requirement to inspect with associated maintenance of the generating unit(s). In addition, requirement R7 requires the GO to develop accurate data to include the generating unit(s)' minimum design temperature (i.e., faceplate capability). If such information is not available, minimum historical operating temperature or engineering analysis to determine current minimum performance temperature during cold weather, can be used.<sup>28</sup>

### **2.1.3 Generating unit(s) cold weather preparedness plan - maintenance and operations personnel training**

A new Requirement R8 of the EOP-011-2 standard addresses the recommendation of the Report to conduct generating unit-specific training to maintenance and operations personnel responsible for implementing the cold-weather preparedness plan in accordance with Requirement R7 of this same standard.

## **2.2. Modifications to the standard IRO-010-4**

### **2.2.1 Communication protocols for the Reliability Coordinator**

Requirement R1.3 of the IRO-010-4 standard addresses the recommendation of the Report concerning communication protocols for the RC to receive generating unit ambient temperature design temperatures, capabilities, and limitations associated with cold weather conditions for use in operational analysis. In addition, Requirement R1.3 requires new data specifications for RC. The data specifications are consistent with the data information the GO is required to collect regarding its generating unit(s) pursuant to EOP-011-2 Requirement R7.<sup>29</sup>

## **2.3. Modifications to the standard TOP-003-5**

### **2.3.1 Communication protocols for the Transmission Operators and Balancing Authorities**

Requirement R1.3 and Requirement R2.3 of the TOP-003-5 standard addresses the recommendation of the Report requiring communication protocols for the TOP and BA to receive generating unit ambient temperature design temperatures, capabilities, and limitations associated with cold weather conditions for use in operational analysis and determination of contingency reserves. This data specifications are consistent with the data information the GO is required to collect regarding its generating unit(s) pursuant to EOP-011-2 Requirement R7.<sup>30</sup>

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<sup>28</sup> NERC EOP-011-02 Technical Rational, consulted online on January 29, 2022

[https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06\\_EOP-011-2\\_Technical\\_Ratioanle\\_04022021.pdf](https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06_EOP-011-2_Technical_Ratioanle_04022021.pdf)

<sup>29</sup> NERC IRO-010-4 Technical Rational, consulted online on January 29,

2022 [https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06\\_IRO-010-4\\_Technical\\_Ratioanle\\_04022021.pdf](https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06_IRO-010-4_Technical_Ratioanle_04022021.pdf)

<sup>30</sup> NERC TOP-003-5 Technical Rational, consulted online on January 29, 2022

[https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06\\_TOP-003-5\\_Technical\\_Rationale\\_04022021.pdf](https://www.nerc.com/pa/Stand/Project%20201906%20Cold%20Weather%20DL/2019-06_TOP-003-5_Technical_Rationale_04022021.pdf)

## 2.4. Conclusion on Assessment of Relevance

The purpose of the Cold Weather Reliability Standards is to ensure adequate preparedness of generation for cold weather and to ensure situational awareness in both planning and operations by applicable functional entities. The revised cold weather project ensures more efficient communications between GOs, GOPs, RCs, and BAs during cold weather conditions. Additionally, the new data will enable better operational planning and real-time monitoring analysis.

In addition, the Standards have been adopted in the neighboring systems New-Brunswick<sup>31</sup> and are in reviewing process in Ontario<sup>32</sup>.

In accordance with the 2009 agreement between the Régie, NERC and the NPCC and with the authorization of the Québec government,<sup>33</sup> these standard revisions were developed and approved by recognized agencies in North America. The Coordinator is of the opinion that the additional requirements in the EOP-011-2, IRO-010-4 and TOP-003-5 standards are relevant in Québec and will enable better operational planning and real-time monitoring analysis of data during cold weather and extreme weather conditions in Québec. The proposed revisions to the Régie are therefore relevant.

## 3. PRELIMINARY IMPACT ASSESSMENT

This section presents the Reliability Coordinator's preliminary impact assessment.

The revised Reliability Standards have minimal impact on applicable functional entities in Quebec, as cold weather has always been a component of the planning and operation of the Quebec system.

Standard	Impacts		
	Implementation	Maintenance	Monitoring
EOP-011-2	Low	Low	Low
IRO-010-4	Low	Low	Low
TOP-003-5	Low	Low	Low

### Legend:

**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 the proposed standard, maintain it or monitor its compliance.

<sup>31</sup> New Brunswick Energy & Utilities Board Reliability Standards, consulted on February 7, 2022 <https://nbeub.ca/reliability-standards>

<sup>32</sup> Independent Electricity System Operator, Ontario Enforcement Dates for NERC Reliability Standards and NPCC Criteria, consulted on February 7, 2022 <https://www.ieso.ca/-/media/Files/IESO/Document-Library/orcp/Standards-Roadmap-Milestone-Oct-21.ashx>

<sup>33</sup> Agreement entered in accordance with Order-in-Council 443-2009 dated April 8, 2009. [http://www.regie-energie.qc.ca/audiences/normes\\_fiab\\_tranp\\_elec/Entente\\_Regie\\_NERC\\_NPCC\\_5mai09.pdf](http://www.regie-energie.qc.ca/audiences/normes_fiab_tranp_elec/Entente_Regie_NERC_NPCC_5mai09.pdf) [in French only].

**High:** Change that requires allocation of significant physical, human or financial resources to plan and implement the proposed standard, maintain it or monitor its compliance.

#### **4. FINAL IMPACT ASSESSMENT**

This section shall be completed upon receipt of the impact assessment forms and at the conclusion of the consultation process prior to filing of Reliability Standards with the Régie de l'énergie.