

**Preliminary assessment of the relevance and impact of the standards :****MOD-001-1a – Available Transmission System Capability****MOD-028-1 – Area Interchange Methodology****MOD-029-1a – Rated System Path Methodology****MOD-030-2 – Flowgate Methodology****A. Relevance of the standards to be filed**

This assessment applies to the standards MOD-001-1a, MOD-028-1, MOD-029-1a, and MOD-030-2. The purpose of these standards is to ensure that the Transmission Service Providers and the Transmission Operators calculate and maintain the available transfer capability (ATC), the total transfer capability (TTC) and the available flowgate capacity (AFC) of their own systems over all required time horizons. These calculations shall be based on one of the methodologies listed below :

- The Area Interchange Methodology, as described in the standard MOD-028-1;
- The Rated System Path Methodology, as described in the standard MOD-029-1a;
- The Flowgate Methodology, as described in the standard MOD-030-2.

To demonstrate these purposes, the requirements shall address:

- Specific information and documentation exchanges between transmission service provider and transmissions operators responsible for the calculation of ATCs, TTCs and AFCs;
- Specific reliability practices to be incorporated into the ATC /TTC/AFC calculation and coordination methodologies.
- Documentation of the methodologies used to coordinate and calculate the ATC//TTC/ATC.

**B. Applicability**

The standards apply to the transmission operator that uses the methodologies listed above to calculate the (TTC) for ATC Paths and to the transmission service provider that uses the methodologies listed above to calculate ATCs for ATC Paths.

**C. Relevance for special provisions for Quebec (Appendix QC-MOD-001-1a, Appendix QC-MOD-028-1, Appendix QC-MOD-029-1a, Appendix QC-MOD-030-2)**

These standards apply to the main transmission system since this system includes interconnection paths and elements that affect the transfer capabilities.

#### **D. Preliminary assessment of the impact of the adoption of the standards in Quebec**

The impact of these standards is moderate since the implementation of the calculation methodology of the ATC, TTC and AFC is in progress. The transmission operator and the transmission service provider at Hydro-Québec TransÉnergie apply the rated system path methodology (MOD-029-1a) to the transmission network for the calculation of the system capabilities. Other methodologies from the standards MOD-028-1 and MOD-030-2 are not used at Hydro-Québec TransÉnergie.

##### **Summary of impacts**

This summary establishes in a condensed and preliminary manner, the impacts on materiel, human or financial resources of the proposed standard compared to the latest revision studied or adopted by the Régie de l'énergie. The impact may vary depending on the actual applicability of the standard with certain entities whose impact is lower on the reliability on the bulk electric system in Quebec.

##### **MOD-001-1a**

	Low	Moderate	Important
Implementation of the standard		●	
Maintenance of the standard	●		
Compliance Monitoring		●	

##### **MOD-028-1**

	Low	Moderate	Important
Implementation of the standard		●	
Maintenance of the standard	●		
Compliance Monitoring		●	

##### **MOD-029-1a**

	Low	Moderate	Important
Implementation of the standard		●	
Maintenance of the standard	●		
Compliance Monitoring		●	

##### **MOD-030-2**

	Low	Moderate	Important
Implementation of the standard		●	
Maintenance of the standard	●		
Compliance Monitoring		●	

**Legend:**

<b>Low:</b>	Normal industry practice or standard involving minor adjustments to processes or practices in place.
<b>Moderate:</b>	Changes that require an allocation of certain material, human or financial resources to implement, maintain and monitor compliance of the proposed standard.
<b>Important:</b>	Changes that require significant provision and allocation of material, human or financial resources to implement, maintain and monitor compliance of the proposed standard.

A more accurate assessment will be developed from forms "Evaluation of the impacts of proposed standards" to be received from the registered entities during the comment period. This assessment will be submitted with the standard to the Régie de l'énergie.

**A. Introduction**

- 1. Title:** Rated System Path Methodology
- 2. Number:** MOD-029-1a
- 3. Purpose:** To increase consistency and reliability in the development and documentation of transfer capability calculations for short-term use performed by entities using the Rated System Path Methodology to support analysis and system operations.
- 4. Applicability:**
  - 4.1.** Each Transmission Operator that uses the Rated System Path Methodology to calculate Total Transfer Capabilities (TTCs) for ATC Paths.
  - 4.2.** Each Transmission Service Provider that uses the Rated System Path Methodology to calculate Available Transfer Capabilities (ATCs) for ATC Paths.
- 5. Proposed Effective Date:** Immediately after approval of applicable regulatory authorities.

**B. Requirements**

- R1.** When calculating TTCs for ATC Paths, the Transmission Operator shall use a Transmission model which satisfies the following requirements: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
  - R1.1.** The model utilizes data and assumptions consistent with the time period being studied and that meets the following criteria:
    - R1.1.1.** Includes at least:
      - R1.1.1.1.** The Transmission Operator area. Equivalent representation of radial lines and facilities 161kV or below is allowed.
      - R1.1.1.2.** All Transmission Operator areas contiguous with its own Transmission Operator area. (Equivalent representation is allowed.)
      - R1.1.1.3.** Any other Transmission Operator area linked to the Transmission Operator's area by joint operating agreement. (Equivalent representation is allowed.)
    - R1.1.2.** Models all system Elements as in-service for the assumed initial conditions.
    - R1.1.3.** Models all generation (may be either a single generator or multiple generators) that is greater than 20 MVA at the point of interconnection in the studied area.
    - R1.1.4.** Models phase shifters in non-regulating mode, unless otherwise specified in the Available Transfer Capability Implementation Document (ATCID).

- R1.1.5.** Uses Load forecast by Balancing Authority.
  - R1.1.6.** Uses Transmission Facility additions and retirements.
  - R1.1.7.** Uses Generation Facility additions and retirements.
  - R1.1.8.** Uses Special Protection System (SPS) models where currently existing or projected for implementation within the studied time horizon.
  - R1.1.9.** Models series compensation for each line at the expected operating level unless specified otherwise in the ATCID.
  - R1.1.10.** Includes any other modeling requirements or criteria specified in the ATCID.
- R1.2.** Uses Facility Ratings as provided by the Transmission Owner and Generator Owner
- R2.** The Transmission Operator shall use the following process to determine TTC:  
[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]
  - R2.1.** Except where otherwise specified within MOD-029-1, adjust base case generation and Load levels within the updated power flow model to determine the TTC (maximum flow or reliability limit) that can be simulated on the ATC Path while at the same time satisfying all planning criteria contingencies as follows:
    - R2.1.1.** When modeling normal conditions, all Transmission Elements will be modeled at or below 100% of their continuous rating.
    - R2.1.2.** When modeling contingencies the system shall demonstrate transient, dynamic and voltage stability, with no Transmission Element modeled above its Emergency Rating.
    - R2.1.3.** Uncontrolled separation shall not occur.
  - R2.2.** Where it is impossible to actually simulate a reliability-limited flow in a direction counter to prevailing flows (on an alternating current Transmission line), set the TTC for the non-prevailing direction equal to the TTC in the prevailing direction. If the TTC in the prevailing flow direction is dependant on a Special Protection System (SPS), set the TTC for the non-prevailing flow direction equal to the greater of the maximum flow that can be simulated in the non-prevailing flow direction or the maximum TTC that can be achieved in the prevailing flow direction without use of a SPS.
  - R2.3.** For an ATC Path whose capacity is limited by contract, set TTC on the ATC Path at the lesser of the maximum allowable contract capacity or the reliability limit as determined by R2.1.
  - R2.4.** For an ATC Path whose TTC varies due to simultaneous interaction with one or more other paths, develop a nomogram describing the interaction of the paths and the resulting TTC under specified conditions.
  - R2.5.** The Transmission Operator shall identify when the TTC for the ATC Path being studied has an adverse impact on the TTC value of any existing path.

Do this by modeling the flow on the path being studied at its proposed new TTC level simultaneous with the flow on the existing path at its TTC level while at the same time honoring the reliability criteria outlined in R2.1. The Transmission Operator shall include the resolution of this adverse impact in its study report for the ATC Path.

- R2.6.** Where multiple ownership of Transmission rights exists on an ATC Path, allocate TTC of that ATC Path in accordance with the contractual agreement made by the multiple owners of that ATC Path.
- R2.7.** For ATC Paths whose path rating, adjusted for seasonal variance, was established, known and used in operation since January 1, 1994, and no action has been taken to have the path rated using a different method, set the TTC at that previously established amount.
- R2.8.** Create a study report that describes the steps above that were undertaken (R2.1 – R2.7), including the contingencies and assumptions used, when determining the TTC and the results of the study. Where three phase fault damping is used to determine stability limits, that report shall also identify the percent used and include justification for use unless specified otherwise in the ATCID.
- R3.** Each Transmission Operator shall establish the TTC at the lesser of the value calculated in R2 or any System Operating Limit (SOL) for that ATC Path. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R4.** Within seven calendar days of the finalization of the study report, the Transmission Operator shall make available to the Transmission Service Provider of the ATC Path, the most current value for TTC and the TTC study report documenting the assumptions used and steps taken in determining the current value for TTC for that ATC Path. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R5.** When calculating ETC for firm Existing Transmission Commitments (ETC<sub>F</sub>) for a specified period for an ATC Path, the Transmission Service Provider shall use the algorithm below: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ETC_F = NL_F + NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

**Where:**

**NL<sub>F</sub>** is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

**NITS<sub>F</sub>** is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

**GF<sub>F</sub>** is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the

effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

**PTP<sub>F</sub>** is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

**ROR<sub>F</sub>** is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal.

**OS<sub>F</sub>** is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

- R6.** When calculating ETC for non-firm Existing Transmission Commitments (ETC<sub>NF</sub>) for all time horizons for an ATC Path the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

**Where:**

**NITS<sub>NF</sub>** is the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

**GF<sub>NF</sub>** is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

**PTP<sub>NF</sub>** is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

**OS<sub>NF</sub>** is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.

- R7.** When calculating firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + counterflows_F$$

**Where**

**ATC<sub>F</sub>** is the firm Available Transfer Capability for the ATC Path for that period.

**TTC** is the Total Transfer Capability of the ATC Path for that period.

**ETC<sub>F</sub>** is the sum of existing firm commitments for the ATC Path during that period.

**CBM** is the Capacity Benefit Margin for the ATC Path during that period.

**TRM** is the Transmission Reliability Margin for the ATC Path during that period.

**Postbacks<sub>F</sub>** are changes to firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

**counterflows<sub>F</sub>** are adjustments to firm Available Transfer Capability as determined by the Transmission Service Provider and specified in their ATCID.

- R8.** When calculating non-firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ATC_{NF} = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + Postbacks_{NF} + counterflows_{NF}$$

**Where:**

**ATC<sub>NF</sub>** is the non-firm Available Transfer Capability for the ATC Path for that period.

**TTC** is the Total Transfer Capability of the ATC Path for that period.

**ETC<sub>F</sub>** is the sum of existing firm commitments for the ATC Path during that period.

**ETC<sub>NF</sub>** is the sum of existing non-firm commitments for the ATC Path during that period.

**CBM<sub>S</sub>** is the Capacity Benefit Margin for the ATC Path that has been scheduled during that period.

**TRM<sub>U</sub>** is the Transmission Reliability Margin for the ATC Path that has not been released for sale (unreleased) as non-firm capacity by the Transmission Service Provider during that period.

**Postbacks<sub>NF</sub>** are changes to non-firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

**counterflows<sub>NF</sub>** are adjustments to non-firm Available Transfer Capability as determined by the Transmission Service Provider and specified in its ATCID.



**C. Measures**

- M1.** Each Transmission Operator that uses the Rated System Path Methodology shall produce any Transmission model it used to calculate TTC for purposes of calculating ATC for each ATC Path, as required in R1, for the time horizon(s) to be examined. (R1)
- M1.1.** Production shall be in the same form and format used by the Transmission Operator to calculate the TTC, as required in R1. (R1)
- M1.2.** The Transmission model produced must include the areas listed in R1.1.1 (or an equivalent representation, as described in the requirement) (R1.1)
- M1.3.** The Transmission model produced must show the use of the modeling parameters stated in R1.1.2 through R1.1.10; except that, no evidence shall be required to prove: 1) utilization of a Special Protection System where none was included in the model or 2) that no additions or retirements to the generation or Transmission system occurred. (R1.1.2 through R1.1.10)
- M1.4.** The Transmission Operator must provide evidence that the models used to determine TTC included Facility Ratings as provided by the Transmission Owner and Generator Owner. (R1.2)
- M2.** Each Transmission Operator that uses the Rated System Path Methodology shall produce the ATCID it uses to show where it has described and used additional modeling criteria in its ACTID that are not otherwise included in MOD-29 (R1.1.4, R1.1.9, and R1.1.10).
- M3.** Each Transmission Operator that uses the Rated System Path Methodology with paths with ratings established prior to January 1, 1994 shall provide evidence the path and its rating were established prior to January 1, 1994. (R2.7)
- M4.** Each Transmission Operator that uses the Rated System Path Methodology shall produce as evidence the study reports, as required in R.2.8, for each path for which it determined TTC for the period examined. (R2)
- M5.** Each Transmission Operator shall provide evidence that it used the lesser of the calculated TTC or the SOL as the TTC, by producing: 1) all values calculated pursuant to R2 for each ATC Path, 2) Any corresponding SOLs for those ATC Paths, and 3) the TTC set by the Transmission Operator and given to the Transmission Service Provider for use in R7 and R8 for each ATC Path. (R3)
- M6.** Each Transmission Operator shall provide evidence (such as logs or data) that it provided the TTC and its study report to the Transmission Service Provider within seven calendar days of the finalization of the study report. (R4)
- M7.** The Transmission Service Provider shall demonstrate compliance with R5 by recalculating firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R5 and with data used to calculate the specified value for the designated time period. The data used must meet the requirements specified in MOD-029-1 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the

originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R5 to calculate its firm ETC. (R5)

- M8.** The Transmission Service Provider shall demonstrate compliance with R5 by recalculating non-firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R6 and with data used to calculate this specified value for the designated time period. The data used must meet the requirements specified in the MOD-029 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R6 to calculate its non-firm ETC. (R6)
- M9.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates firm ATCs, as required in R7. Such documentation must show that only the variables allowed in R7 were used to calculate firm ATCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R7)
- M10.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates non-firm ATCs, as required in R8. Such documentation must show that only the variables allowed in R8 were used to calculate non-firm ATCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R8)

## **D. Compliance**

### **1. Compliance Monitoring Process**

#### **1.1. Compliance Enforcement Authority**

Regional Entity.

#### **1.2. Compliance Monitoring Period and Reset Time Frame**

Not applicable.

#### **1.3. Data Retention**

- The Transmission Operator and Transmission Service Provider shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:
- The Transmission Operator shall have its latest models used to determine TTC for R1. (M1)

- The Transmission Operator shall have the current, in force ATCID(s) provided by its Transmission Service Provider(s) and any prior versions of the ATCID that were in force since the last compliance audit to show compliance with R1. (M2)
- The Transmission Operator shall retain evidence of any path and its rating that was established prior to January 1, 1994. (M3)
- The Transmission Operator shall retain the latest version and prior version of the TTC study reports to show compliance with R2. (M4)
- The Transmission Operator shall retain evidence for the most recent three calendar years plus the current year to show compliance with R3 and R4. (M5 and M6)
- The Transmission Service Provider shall retain evidence to show compliance in calculating hourly values required in R5 and R6 for the most recent 14 days; evidence to show compliance in calculating daily values required in R5 and R6 for the most recent 30 days; and evidence to show compliance in calculating daily values required in R5 and R6 for the most recent sixty days. (M7 and M8)
- The Transmission Service Provider shall retain evidence for the most recent three calendar years plus the current year to show compliance with R7 and R8. (M9 and M10)
- If a Transmission Service Provider or Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

#### **1.4. Compliance Monitoring and Enforcement Processes:**

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

#### **1.5. Additional Compliance Information**

None.

## 2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	<p>The Transmission Operator used a model that met all but one of the modeling requirements specified in R1.1.</p> <p><b>OR</b></p> <p>The Transmission Operator utilized one to ten Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>	<p>The Transmission Operator used a model that met all but two of the modeling requirements specified in R1.1.</p> <p><b>OR</b></p> <p>The Transmission Operator utilized eleven to twenty Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>	<p>The Transmission Operator used a model that met all but three of the modeling requirements specified in R1.1.</p> <p><b>OR</b></p> <p>The Transmission Operator utilized twenty-one to thirty Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>	<p>The Transmission Operator used a model that did not meet four or more of the modeling requirements specified in R1.1.</p> <p><b>OR</b></p> <p>The Transmission Operator utilized more than thirty Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>
R2	<p>One or both of the following:</p> <ul style="list-style-type: none"> <li>The Transmission Operator did not calculate TTC using one of the items in sub-requirements R2.1-R2.6.</li> <li>The Transmission Operator does not include one required item in the study report required in R2.8.</li> </ul>	<p>One or both of the following:</p> <ul style="list-style-type: none"> <li>The Transmission Operator did not calculate TTC using two of the items in sub-requirements R2.1-R2.6.</li> <li>The Transmission Operator does not include two required items in the study report required in R2.8.</li> </ul>	<p>One or both of the following:</p> <ul style="list-style-type: none"> <li>The Transmission Operator did not calculate TTC using three of the items in sub-requirements R2.1-R2.6.</li> <li>The Transmission Operator does not include three required items in the study report required in R2.8.</li> </ul>	<p>One or more of the following:</p> <ul style="list-style-type: none"> <li>The Transmission Operator did not calculate TTC using four or more of the items in sub-requirements R2.1-R2.6.</li> <li>The Transmission Operator did not apply R2.7.</li> <li>The Transmission Operator does not include four or more required items in the study report required in R2.8</li> </ul>

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3.	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL for more than zero ATC Paths, BUT, not more than 1% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL for more than 1% of all ATC Paths or 1 ATC Path (whichever is greater), BUT not more than 2% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL for more than 2% of all ATC Paths or 2 ATC Paths (whichever is greater), BUT not more than 5% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL, for more than 5% of all ATC Paths or 3 ATC Paths (whichever is greater).
R4.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than seven, but not more than 14 calendar days after the report was finalized.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than 14, but not more than 21 calendar days after the report was finalized.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than 21, but not more than 28 calendar days after the report was finalized.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than 28 calendar days after the report was finalized.
R5.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.
R6.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the absolute	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the absolute	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the absolute	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the

## Standard MOD-029-1a — Rated System Path Methodology

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25MW, whichever is greater.	value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35MW, whichever is greater.	value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45MW, whichever is greater.	absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.
R7.	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than zero ATC Paths, but not more than 5% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than 5% of all ATC Paths or 1 ATC Path (whichever is greater), but not more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater), but not more than 15% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than 15% of all ATC Paths or more than 3 ATC Paths (whichever is greater).
R8.	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than zero ATC Paths, but not more than 5% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than 5% of all ATC Paths or 1 ATC Path (whichever is greater), but not more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater), but not more than 15% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than 15% of all ATC Paths or more than 3 ATC Paths (whichever is greater).

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
1	8/26/2008	Adopted by NERC Board of Trustees	
1a	Board approved 11/05/2009	Interpretation of R5 and R6	Interpretation (Project 2009-15)

## Appendix 1

Requirement Number and Text of Requirement
<p><b>MOD-001-01 Requirement R2:</b></p> <p><b>R2.</b> Each Transmission Service Provider shall calculate ATC or AFC values as listed below using the methodology or methodologies selected by its Transmission Operator(s):</p> <ul style="list-style-type: none"> <li><b>R2.1.</b> Hourly values for at least the next 48 hours.</li> <li><b>R2.2.</b> Daily values for at least the next 31 calendar days.</li> <li><b>R2.3.</b> Monthly values for at least the next 12 months (months 2-13).</li> </ul> <p><b>MOD-001-01 Requirement R8:</b></p> <p><b>R8.</b> Each Transmission Service Provider that calculates ATC shall recalculate ATC at a minimum on the following frequency, unless none of the calculated values identified in the ATC equation have changed:</p> <ul style="list-style-type: none"> <li><b>R8.1.</b> Hourly values, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the ATC equation.</li> <li><b>R8.2.</b> Daily values, once per day.</li> <li><b>R8.3.</b> Monthly values, once per week.</li> </ul>
Question #1
<p>Is the “advisory ATC” used under the NYISO tariff subject to the ATC calculation and recalculation requirements in MOD-001-1 Requirements R2 and R8? If not, is it necessary to document the frequency of “advisory” calculations in the responsible entity’s Available Transfer Capability Implementation Document?</p>
Response to Question #1
<p>Requirements R2 and R8 of MOD-001-1 are both related to Requirement R1, which defines that ATC methodologies are to be applied to specific “ATC Paths.” The NERC definition of ATC Path is “Any combination of Point of Receipt and Point of Delivery for which ATC is calculated; and any Posted Path.” Based on a review of the language included in this request, the NYISO Open Access Transmission Tariff, and other information posted on the NYISO Web site, it appears that the NYISO does indeed have multiple ATC Paths, which are subject to the calculation and recalculation requirements in Requirements R2 and R8. It appears from reviewing this information that ATC is defined in the NYISO tariff in the same manner in which NERC defines it, making it difficult to conclude that NYISO’s “advisory ATC” is not the same as ATC. In addition, it appears that pre-scheduling is permitted on certain external paths, making the calculation of ATC prior to day ahead necessary on those paths.</p> <p>The second part of NYISO’s question is only applicable if the first part was answered in the</p>



negative and therefore will not be addressed.

## Requirement Number and Text of Requirement

### MOD-029-01 Requirements R5 and R6:

**R5.** When calculating ETC for firm Existing Transmission Commitments ( $ETC_F$ ) for a specified period for an ATC Path, the Transmission Service Provider shall use the algorithm below:

$$ETC_F = NL_F + NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

$NL_F$  is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

$NITS_F$  is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

$GF_F$  is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

$PTP_F$  is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

$ROR_F$  is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal.

$OS_F$  is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

**R6.** When calculating ETC for non-firm Existing Transmission Commitments ( $ETC_{NF}$ ) for all time horizons for an ATC Path the Transmission Service Provider shall use the following algorithm:

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

$NITS_{NF}$  is the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

$GF_{NF}$  is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the

effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP<sub>NF</sub> is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS<sub>NF</sub> is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.

#### **Question #2**

Could OS<sub>F</sub> in MOD-029-1 Requirement R5 and OS<sub>NF</sub> in MOD-029-1 Requirement R6 be calculated using Transmission Flow Utilization in the determination of ATC?

#### **Response to Question #2**

This request for interpretation and the NYISO Open Access Transmission Tariff describe the NYISO's concept of "Transmission Flow Utilization;" however, it is unclear whether or not Native Load, Point-to-Point Transmission Service, Network Integration Transmission Service, or any of the other components explicitly defined in Requirements R5 and R6 are incorporated into "Transmission Flow Utilization." Provided that "Transmission Flow Utilization" does not include Native Load, Point-to-Point Transmission Service, Network Integration Transmission Service, or any of the other components explicitly defined in Requirements R5 and R6, it is appropriate to be included within the "Other Services" term. However, if "Transmission Flow Utilization" does incorporate those components, then simply including "Transmission Flow Utilization" in "Other Service" would be inappropriate.

This appendix establishes specific provisions for the application of the standard in Québec. Provisions of the standard and of its appendix must be read together for the purposes of understanding and interpretation. Where the standard and appendix differ, the appendix shall prevail.

**A. Introduction**

- 1. Title:** Rated System Path Methodology
- 2. Number:** MOD-029-1a
- 3. Purpose:** No specific provision
- 4. Applicability:** No specific provision
- 5. Effective Date:**
  - 5.1.** Adoption of the standard by the Régie de l'énergie: Month xx 201x
  - 5.2.** Adoption of the appendix by the Régie de l'énergie: Month xx 201x
  - 5.3.** Effective date of the standard and its appendix in Québec: Month xx 201x
- 6. Scope:** No specific provision

**B. Requirements**

No specific provision

**C. Measures**

- M1.** No specific provision
- M2.** No specific provision
- M3.** No specific provision
- M4.** No specific provision
- M5.** No specific provision
- M6.** No specific provision
- M7.** No specific provision
- M8.** The Transmission Service Provider shall demonstrate compliance with R6 by recalculating non-firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R6 and with data used to calculate this specified value for the designated time period. The data used must meet the requirements specified in the MOD-029 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R6 to calculate its non-firm ETC. (R6)
- M9.** No specific provision
- M10.** No specific provision

## D. Compliance

### 1. Compliance Monitoring Process

#### 1.1. Compliance Enforcement Authority

The Régie de l'énergie is responsible, in Québec, for compliance enforcement with respect to the reliability standard and its appendix that it adopts

#### 1.2. Compliance Monitoring Period and Reset Time Frame

No specific provision

#### 1.3. Data Retention

In the seventh dash, read; the Transmission Service Provider shall retain evidence to show compliance in calculating hourly values required in R5 and R6 for the most recent 14 days; evidence to show compliance in calculating daily values required in R5 and R6 for the most recent 30 days; and evidence to show compliance in calculating monthly values required in R5 and R6 for the most recent sixty days. (M7 and M8)

#### 1.4. Compliance Monitoring and Enforcement Processes

No specific provision

#### 1.5. Additional Compliance Information

No specific provision

### 2. Violation Severity Levels

No specific provision

#### Version History of the Appendix

Version	Date	Action	Change Tracking
0	Month xx, 201x	Effective date	New