

A. Introduction

1. **Title:** Transmission Reliability Margin Calculation Methodology
2. **Number:** MOD-008-1
3. **Purpose:** To promote the consistent and reliable calculation, verification, preservation, and use of Transmission Reliability Margin (TRM) to support analysis and system operations.
4. **Applicability:**
 - 4.1. Transmission Operators that maintain TRM.
5. **Proposed Effective Date:** First day of the first calendar quarter that is twelve months beyond the date this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter that is twelve months beyond the date this standard is approved by the NERC Board of Trustees.

B. Requirements

- R1. Each Transmission Operator shall prepare and keep current a TRM Implementation Document (TRMID) that includes, as a minimum, the following information:
[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]
 - R1.1. Identification of (on each of its respective ATC Paths or Flowgates) each of the following components of uncertainty if used in establishing TRM, and a description of how that component is used to establish a TRM value:
 - Aggregate Load forecast.
 - Load distribution uncertainty.
 - Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages).
 - Allowances for parallel path (loop flow) impacts.
 - Allowances for simultaneous path interactions.
 - Variations in generation dispatch (including, but not limited to, forced or unplanned outages, maintenance outages and location of future generation).
 - Short-term System Operator response (Operating Reserve actions).
 - Reserve sharing requirements.
 - Inertial response and frequency bias.
 - R1.2. The description of the method used to allocate TRM across ATC Paths or Flowgates.
 - R1.3. The identification of the TRM calculation used for the following time periods:
 - R1.3.1. Same day and real-time.
 - R1.3.2. Day-ahead and pre-schedule.
 - R1.3.3. Beyond day-ahead and pre-schedule, up to thirteen months ahead.

- R2.** Each Transmission Operator shall only use the components of uncertainty from R1.1 to establish TRM, and shall not include any of the components of Capacity Benefit Margin (CBM). Transmission capacity set aside for reserve sharing agreements can be included in TRM. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R3.** Each Transmission Operator shall make available its TRMID, and if requested, underlying documentation (if any) used to determine TRM, in the format used by the Transmission Operator, to any of the following who make a written request no more than 30 calendar days after receiving the request. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- Transmission Service Providers
 - Reliability Coordinators
 - Planning Coordinators
 - Transmission Planner
 - Transmission Operators
- R4.** Each Transmission Operator that maintains TRM shall establish TRM values in accordance with the TRMID at least once every 13 months. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R5.** The Transmission Operator that maintains TRM shall provide the TRM values to its Transmission Service Provider(s) and Transmission Planner(s) no more than seven calendar days after a TRM value is initially established or subsequently changed. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

C. Measures

- M1.** Each Transmission Operator shall produce its TRMID evidencing inclusion of all specified information in R1. (R1)
- M2.** Each Transmission Operator shall provide evidence including its TRMID, TRM values, CBM values, or other evidence, (such as written documentation, study reports, documentation of its CBM process, and supporting information) to demonstrate that its TRM values did not include any elements of uncertainty beyond those defined in R1.1 and to show that it did not include any of the components of CBM. (R2)
- M3.** Each Transmission Operator shall provide a dated copy of any request from an entity described in R3. The Transmission Operator shall also provide evidence (such as copies of emails or postal receipts that show the recipient, date and contents) that the requested documentation (such as work papers and load flow cases) was made available within the specified timeframe to the requestor. (R3)
- M4.** Each Transmission Operator shall provide evidence (such as logs, study report, review notes, or data) that it established TRM values at least once every thirteen months for each of the TRM time periods. (R4)
- M5.** Each Transmission Operator shall provide evidence (such as logs, email, website postings) that it provided their Transmission Service Provider(s) and Transmission Planner(s) with the updated TRM value as described in R5. (R5)

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 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 current, in-force TRMID and any TRMIDs in force since last compliance audit period for R1.
- The Transmission Operator shall retain evidence to show compliance with R2, R3, and R5 for the most recent three calendar years plus the current year.
- The Transmission Operator shall retain evidence to show compliance with R4 for the most recent three calendar years plus the current year.
- If a responsible entity 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

Any of the following 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.	The Transmission Operator has a TRMID that does not incorporate changes made up to three months ago.	<p>The Transmission Operator has a TRMID that does not incorporate changes that have been made three or more months ago but less than six months ago.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator's TRMID does not address one of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ Any one or more of the following: <ul style="list-style-type: none"> ○ R1.3.1, R1.3.2 or R1.3.3 	<p>The Transmission Operator has a TRMID that does not incorporate changes that have been made six or more months ago but less than one year ago.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator's TRMID does not address two of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ Any one or more of the following: <ul style="list-style-type: none"> ○ R1.3.1, R1.3.2 or R1.3.3 	<p>The Transmission Operator has a TRMID that does not incorporate changes that have been made one year ago or more.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator does not have a TRMID.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator's TRMID does not address three of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ Any one or more of the following: <ul style="list-style-type: none"> ○ R1.3.1, R1.3.2 or R1.3.3
R2.	N/A	N/A	N/A	<p>One or both of the following:</p> <ul style="list-style-type: none"> ▪ The Transmission Operator included elements of uncertainty not defined in R1 in their establishment of TRM. ▪ The Transmission Operator included components of CBM in TRM.
R3.	The Transmission Operator made the TRMID available to a requesting entity specified in R3 but provided TRMID in more than 30 days but less than 45 days.	The Transmission Operator made the TRMID available to a requesting entity specified in R3 but provided TRMID in 45 days or more but less than 60 days.	The Transmission Operator made the TRMID available to a requesting entity specified in R3 but provided TRMID in 60 days or more but less than 90 days.	The Transmission Operator did not make the TRMID available for 90 days or more.

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<p>R4</p>	<p>The Transmission Operator established TRM values on schedule BUT the values were incomplete or incorrect. Not more than 5% or 1 value (whichever is greater) were incorrect or missing.</p>	<p>The Transmission Operator did not establish TRM within thirteen months of the previous determination, and the last determination was not more than 15 months ago</p> <p>OR</p> <p>The Transmission Operator established TRM values on schedule BUT the values were incomplete. More than 5%, or 1 value (which ever is greater) were incorrect or missing, but not more than 10% or 2 values (whichever is greater).</p>	<p>The Transmission Operator did not establish TRM within 15 months of the previous determination, and the last determination was not more than 18 months ago.</p> <p>OR</p> <p>The Transmission Operator established TRM values on schedule BUT the values were incomplete or incorrect. More than 10% or 2 values (which ever is greater) were incorrect or missing, but not more than 15% or 3 values.</p>	<p>The Transmission Operator did not establish TRM</p> <p>OR</p> <p>The last determination of TRM was more than 18 months ago.</p> <p>OR</p> <p>The Transmission Operator established TRM values on schedule BUT the values were incomplete or incorrect. More than 15% or 3 values (which ever is greater) were incorrect or missing.</p>
<p>R5</p>	<p>The Transmission Operator did provide the TRM values to all entities specified in more than 7 days but less than 14 days.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. Not more than 5% or 1 value (which ever is greater) were incorrect or missing.</p>	<p>The Transmission Operator did provide the TRM values to all entities specified in 14 days or more, but less than 30 days.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. More than 5% or 1 value (which ever is greater) were incorrect or missing, but not more than 10% or 2 values (whichever is greater).</p>	<p>The Transmission Operator did provide the TRM values to all entities specified in 30 days or more, but less than 60 days.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. More than 10% or 2 values (which ever is greater) were incorrect or missing, but not more than 15% or 3 values.</p>	<p>The Transmission Operator did not provide the TRM values to all entities specified within 60 days of the change.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. More than 15% or 3 values (which ever is greater) were incorrect or missing.</p>