

**Compliance Questionnaire and**

**Reliability Standard Audit Worksheet**

**MOD-008-1 — Transmission Reliability Margin Calculation Methodology**

**Registered Entity:**  *(Must be completed by the Compliance Enforcement Authority)*

**NCR Number:**  *(Must be completed by the Compliance Enforcement Authority)*

**Applicable Function(s): TOPs that maintain TRM**

**Auditors:**

**Disclaimer**

NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website at <http://www.nerc.com/page.php?cid=2|20>. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

The NERC RSAW language contained within this document provides a non‑exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserves the right to request additional evidence from the registered entity that is not included in this RSAW. Additionally, this RSAW includes excerpts from FERC Orders and other regulatory references. The FERC Order cites are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail.

# Subject Matter Experts

Identify your company’s subject matter expert(s) responsible for this Reliability Standard. Include the person's title, organization, and the requirement(s) for which they are responsible. Include additional sheets if necessary.

**Response: *(Registered Entity Response Required)***

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| **SME Name** | **Title** | **Organization** | **Requirement** |
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# Reliability Standard Language

**MOD-008-1 — Transmission Reliability Margin Calculation Methodology**

**Purpose:**

To promote the consistent and reliable calculations, verification, preservation, and use of Transmission Reliability Margin (TRM) to support analysis and system operations.

**Applicability:**

Transmission Operators that maintain TRM

**NERC BOT Approval Date: 8/26/2008**

**FERC Approval Date: 11/24/2009**

**Reliability Standard Enforcement Date in the United States: 04/01/2011**

**Question:** As a TOP, do you maintain TRM?

***(Registered Entity Response Required)***

**Requirements:**

1. 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*]
   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.
  1. The description of the method used to allocate TRM across ATC Paths or Flowgates.
  2. The identification of the TRM calculation used for the following time periods:
     1. Same day and real-time.
     2. Day-ahead and pre-schedule.
     3. Beyond day-ahead and pre-schedule, up to thirteen months ahead.

**Describe, in narrative form, how you meet compliance with this requirement:**

***(Registered Entity Response Required)***

# R1 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** | | |
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| *Audit Team: Additional Evidence Reviewed:* | |  |  | |
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***This section must be completed by the Compliance Enforcement Authority.***

**Compliance Assessment Approach Specific to MOD-008-1 R1**

\_\_\_ Verify the TOP prepared and kept current a TRM Implementation Document (TRMID) that includes, as a minimum, the following information:

\_\_\_ 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.

\_\_\_ The description of the method used to allocate TRM across ATC Paths or Flowgates.

\_\_\_ The identification of the TRM calculation used for the following time periods:

\_\_\_ Same day and real-time

\_\_\_ Day-ahead and pre-schedule.

\_\_\_ Beyond day-ahead and pre-schedule, up to thirteen months ahead.

**Detailed notes:**

**Additional Evidence Reviewed:**

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| **Title** | **Date** | **Version** |
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1. 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*]

**Describe, in narrative form, how you meet compliance with this requirement:**

***(Registered Entity Response Required)***

# R2 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** | | |
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| *Audit Team: Additional Evidence Reviewed:* | |  |  | |
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***This section must be completed by the Compliance Enforcement Authority.***

**Compliance Assessment Approach Specific to MOD-008-1 R2**

\_\_\_ Verify each TOP only used the components of uncertainty from R1.1 to establish TRM, and did not include any of the components of Capacity Benefit Margin (CBM). Transmission capacity set aside for reserve sharing agreements can be included in TRM.

**Detailed notes:**

**Additional Evidence Reviewed:**

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1. 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

**Describe, in narrative form, how you meet compliance with this requirement:**

***(Registered Entity Response Required)***

**Question:** Have you received a request to provide your TRMID to any other applicable entities? If yes, provide evidence you responded to the request.

***(Registered Entity Response Required)***

# R3 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** | | |
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| *Audit Team: Additional Evidence Reviewed:* | |  |  | |
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***This section must be completed by the Compliance Enforcement Authority.***

**Compliance Assessment Approach Specific to MOD-008-1 R3**

\_\_\_ Verify each TOP made available its TRMID, and if requested, underlying documentation (if any) used to determine TRM, in the format used by the TOP, to any of the following who make a written request no more than 30 calendar days after receiving the request.

\_\_\_ TSPs

\_\_\_ RCs

\_\_\_ Planning Coordinators

\_\_\_ TPs

\_\_\_ TOPs

**Detailed notes:**

**Additional Evidence Reviewed:**

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| **Title** | **Date** | **Version** |
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1. 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*]

**Describe, in narrative form, how you meet compliance with this requirement:**

***(Registered Entity Response Required)***

# R4 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** | | |
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| *Audit Team: Additional Evidence Reviewed:* | |  |  | |
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***This section must be completed by the Compliance Enforcement Authority.***

**Compliance Assessment Approach Specific to MOD-008-1 R4**

\_\_\_ Verify the TOP established TRM values in accordance with the TRMID at least once every 13 months

**Detailed notes:**

**Additional Evidence Reviewed:**

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1. 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*]

**Describe, in narrative form, how you meet compliance with this requirement:**

***(Registered Entity Response Required)***

# R5 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** | | |
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| *Audit Team: Additional Evidence Reviewed:* | |  |  | |
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***This section must be completed by the Compliance Enforcement Authority.***

**Compliance Assessment Approach Specific to MOD-008-1 R5**

\_\_\_ Verify the TOP provided the TRM values to its TSP(s) and TP(s) no more than seven calendar days after a TRM value was initially established or subsequently changed.

**Detailed notes:**

**Additional Evidence Reviewed:**

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# Supplemental Information

**Other ‑** The list of questions above is not all inclusive of evidence required to show compliance with the Reliability Standard. Provide additional information here**, as necessary that** demonstrates compliance with this Reliability Standard.

**Entity** **Response: *(Registered Entity Response)***

# Compliance Findings Summary (to be filled out by auditor)

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| **Req.** | **C** | **PV** | **NA** | **Statement** |
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**Excerpts from FERC Orders -- For Reference Purposes Only**

**Updated Through August 2010**

**MOD-008-1**

**Order 693**

**Revision History**

1121. The Commission does not approve or remand MOD-008-0 until the ERO submits additional information. Consistent with Order No. 890 and comments received in response to the NOPR, the Commission directs the ERO to modify MOD-008-0 through the Reliability Standards development process, as discussed below.

1122. Consistent with the NOPR proposal and Order No. 890, the Commission directs the ERO to modify standard MOD-008-0 to clarify how TRM should be calculated and allocated across paths or flowgates. We understand that the standards drafting process is underway as a joint project with NAESB. We agree with International Transmission, MidAmerican and MISO about the need for more uniformity and transparency in TRM calculation methodology and use, in order to eliminate potential reliability and discrimination concerns. Consistent with Order No. 890, the Commission directs the ERO to specify the parameters for entities to use in determining uncertainties for which TRM can be set aside and used, such as: (1) load forecast and load distribution error; (2) variations in facility loadings; (3) uncertainty in transmission system topology; (4) loop flow impact; (5) variations in generation dispatch; (6) automatic reserve sharing and (7) other uncertainties as identified through the NERC Reliability Standards development process. We find that clear specification in this Final Rule of the permitted purposes for which entities may reserve CBM and TRM will also virtually eliminate double-counting of TRM and CBM. Therefore, we direct the ERO to determine clear requirements regarding permitted uses for TRM through its Reliability Standards development process.

1126. The Commission neither accepts nor remands MOD-008-0 until the ERO submits additional information. In the interim, compliance with MOD-008-0 should continue on a voluntary basis, and the Commission considers compliance with the Reliability Standard to be a matter of good utility practice. Although the Commission did not propose any action with regard to MOD-008-0, it addressed above a number of concerns regarding the Reliability Standard, consistent with those proposed in Order No. 890. Accordingly, we direct the ERO to develop modifications to the Reliability Standard through the Reliability Standards development process including: (1) clear requirements on how TRM should be calculated, including a methodology for determining the maximum TRM value, and allocated across paths; (2) clear requirements for permitted purposes for which TRM can be set aside and used; (3) clear requirements for availability of documentation that supports TRM determination and (4) expanding the applicability to add planning authorities and reliability coordinators and any other appropriate entity identified in the Reliability Standards development process.

**Order 729- Order on ATC**

**(November 24, 2009)**

225. The Commission will not direct that a maximum transmission reserve margin be established here. Although the Commission previously stated that the “percentage of ratings reduction” method is reasonable, the Commission does not believe that it is necessary to fix a maximum value or percentage of transfer capability set aside as transmission reserve margin. As stated above, the Commission believes that it is appropriate for transmission service providers to retain some level of discretion. We believe that transmission service providers should retain the discretion to manage risks associated with their particular system configurations and physical limitations. Nonetheless, we believe that it would be inappropriate for a transmission service provider to set transmission reserve margin excessively and unjustifiably high. The transparency set by these MOD Reliability Standards will allow the Commission, NERC and other to monitor transmission reserve margin values to determine if they are reasonable and internally consistent. The Commission will evaluate evidence of excessive transmission reserve margins on a case-by-case basis as reports of any such occurrences arise. The Commission, therefore, declines to direct the proposed modification to MOD-008-1.

288. The Commission hereby adopts the NOPR proposal and approves NERC’s request to retire MOD-006-0 and MOD-007-0 and to withdraw its request for approval of MOD-001-0, MOD-002-0, MOD-003-0, MOD-004-0, MOD-005-0, MOD-008-0, and MOD-009-0. The Commission also finds that MOD-001-0, MOD-002-0, MOD-003-0,MOD-004-0, MOD-005-0, MOD-008-0, and MOD-009-0 are all superseded by the available transfer capability calculations required by the proposed MOD Reliability Standards in this proceeding are, upon the effectiveness of the proposed MOD Reliability Standards, no longer necessary.

**Order 729-A**

**(May 5, 2010)**

12. …Reliability Standards MOD-004-1 and MOD-008-1 establish the methodologies for calculating capacity benefit margin and transmission reliability margin, respectively. The NERC Glossary of Terms Used in Reliability Standards (NERC Glossary) defines available transfer capability as “Total Transfer Capability less Exiting Transmission Commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, plus counterflows.”Thus, both capacity benefit margin and transmission reliability margin are integral components of any available transfer or flowgate calculation.

13… Thus, the Commission clarifies that the calculations of capacity benefit margin and transfer reliability margin, performed under MOD-004-1 and MOD-008-1 respectively, are properly audited under Requirement R3.1 of MOD-001-1.

**Version History**

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| --- | --- | --- | --- |
| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | July 1, 2010 | RSAW Working Group | New Document |
| 1 | September 2010 | NERC Legal & NERC Compliance | Added regulatory language & reviewed for formatting consistency. |
| 1.1 | September 2011 | Craig Struck | Format update for 2012. |
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