
 California ISO Shaping a Renewed Future	System Operations	Reliability Standard	MOD-008-1
		Version No.	2.0
		Effective Date	6/10/12
MOD-008-1 Transmission Reliability Margin Implementation Document			



California ISO
 Shaping a Renewed Future

Transmission Reliability Margin
 Implementation Document
 For NERC Standard MOD-008-1

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1.0 Purpose

The California Independent System Operator Corporation (ISO), as a registered Transmission Operator (TOP)¹ with the North American Electric Reliability Corporation (NERC), must comply with NERC reliability standards applicable to that function. MOD-008-1 requires each TOP that maintains Transmission Reliability Margin (TRM) to prepare and keep current a TRM Implementation Document (TRMID) that identifies each component of uncertainty the TOP considers in establishing TRM and describes how TRM is calculated and allocated for each component for each applicable time period. This TRM ID was developed to comply with NERC standard MOD-008-1.

This TRMID shall be available on the ISO OASIS at <http://www.caiso.com/235f/235fcbd556310.html>. (MOD-008-1 R2)

2.0 Identification of Components of Uncertainty in TRM (MOD-008-1 R1.1)


The ISO considers the following components of uncertainty in establishing TRM values for ATC Paths located at intertie points:

- 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.

3.0 Description of Method Used to Calculate and Allocate TRM for Each Component of Uncertainty (MOD-008-1 R1.2)

The ISO uses the following methods to calculate and allocate TRM values for each of the components of uncertainty identified in Section 2.0 of this TRMID:

¹ Unless otherwise noted, capitalized terms have the meaning set forth in the current NERC Glossary of Terms. This Glossary is located on NERC's website.

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3.1 Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages).

In the event that there is uncertainty about the availability in Real Time² of certain Transmission system resources due to potential Forced Outages, the ISO would utilize TRM to manage risk and reliability, using a TRM value up to the amount of the expected path limit reduction (the potential additional ATC Path derate) for the impacted intertie ATC Paths.

Example: If an intertie ATC Path is rated at 1000 MW during system intact, and, as a result of approaching fires, there is an uncertainty of full availability due to a potential Forced Outage that may derate the ATC path by 200 MW to a new rating of 800 MW, then the ISO would utilize a TRM value of up to 200 MW for the time period during which that uncertainty exists.

3.2 Allowances for parallel path (loop flow) impacts.

In the event that the ISO forecasts, based on currently observed parallel path (loop flow) conditions and projected scheduled flow for an upcoming Operating Hour³, that parallel path (loop flow) impacts will be realized in Real Time over a qualified intertie ATC Path in amounts sufficient to trigger Step 2 or higher of the WECC Unscheduled Flow Mitigation Procedure (WECC USF Procedure)⁴ for that Path, the ISO may establish for that Path a TRM value up to the amount that would be required to be curtailed in Real Time under the applicable Step of the WECC USF Procedure.


Example: An intertie ATC Path has a TTC value of 1000 MW, the path is a qualified path for the WECC USF Procedure, and the following conditions exist:

- Unscheduled flow + Real Time flow is forecasted to be above 95% of Path TTC, **And**

² "Real Time" is defined in Appendix A of the ISO Tariff.

³ "Operating Hour" is defined in Appendix A of the ISO Tariff.

⁴ The WECC USF Procedure followed by the ISO is set forth in ISO Operating Procedure 3510, which is available on the ISO's public website. The ISO's WECC USF Procedure implements the WECC Unscheduled Flow Reduction Guideline, which is set forth as Appendix 3510A to Operating Procedure 3510.

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- It is expected based on the forecast that WECC USF Procedure Step 2 will need **ed to** be invoked in Real Time absent application of a TRM.
- **Then**
 - The ISO may utilize up to 5% of Path TTC as the TRM value for the impacted Path for the next available run of the ISO’s Hour-Ahead Scheduling Process (HASP).⁵

When it is expected based on the forecast that WECC USF Procedure Step 6 or 7 will need to be invoked in Real Time absent application of a TRM, the ISO will utilize up to 6% of Path TTC as the TRM value for the impacted Path for the next available HASP run.


When it is expected based on the forecast that WECC USF Procedure Step 8 or 9 will need to be invoked in Real Time absent application of a TRM, the ISO will utilize up to 7% of Path TTC as the TRM value for the impacted Path for the next available HASP run.

3.3 Allowances for simultaneous path interactions.

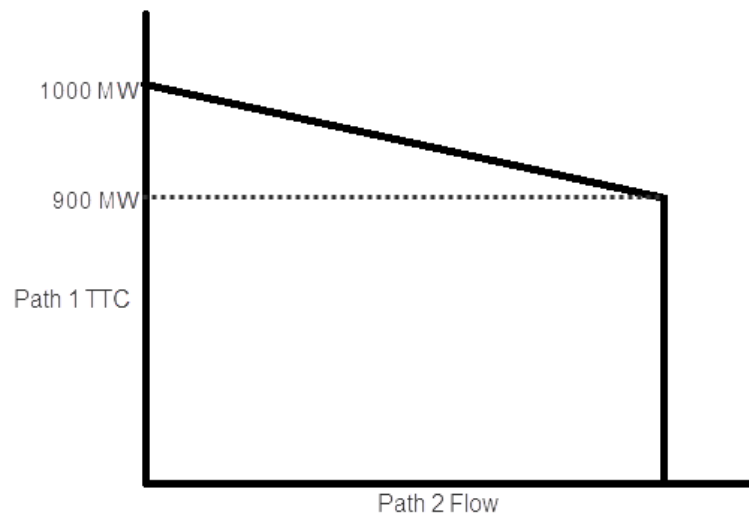
The ISO generally does not limit the TTC of an intertie ATC Path due to the simultaneous interaction with another path in the form of a nomogram that is enforced prior to Real Time. Rather, the impact of the interaction between multiple ATC Paths is accounted for with nomograms enforced in Real-Time, either in an automated manner through market systems or manually through monitoring by operations staff, to ensure there are no violations of the System Operating Limit.

There are, however, a number of ISO intertie ATC Paths that have simultaneous interactions with non-ISO ATC Paths. In the event that one or more ISO ATC Paths become constrained due to interactions with another non-ISO ATC Path, TRM may be utilized to ensure there are no violations of the System Operating Limit in the ISO ATC Path. The amount of TRM value assigned will be set to be no greater than the impact of its interaction with the non-ISO ATC Path.

⁵ The “Hour Ahead Scheduling Process (HASP)” is defined in Appendix A of the ISO Tariff.

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Example: If an ATC Path within the ISO is found to be dependent with other ATC Paths as seen in the figure immediately below:




In the example above, the ISO may utilize up to 100 MW of TRM value in Path 1 if the ISO forecasts that Path 2 flow would be at its maximum.

4.0 Identification of TRM Calculation for Different Time Periods and its calculation frequency (MOD-008-1 R1.3 and R4)

For the day-ahead and pre-schedule time period (as referenced in R.1.3.2 of NERC's MOD-008-1), the ISO sets its TRM values for intertie ATC Paths at 0 MW at all times.

For the beyond day-ahead and pre-schedule, up to thirteen months ahead, time period (as referenced in R.1.3.3 of NERC's MOD-008-1), the ISO also sets its TRM values for intertie ATC Paths at 0 MW at all times.

The hourly TRM values for Real Time and same day (as referenced in R.1.3.1 of NERC's MOD-008-1) are established on the day of dispatch, no earlier than 2 hours in advance of dispatch. Whenever a TRM value greater than zero is established due to the existence of one or more of the components of uncertainty identified in Section 2.0 above, the hourly TRM values will be set for the duration

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of the periods during which the applicable component of uncertainty is expected to occur, in accordance with the methodology set forth in Section 3.1-3.3 above.

5.0 Using Components of Uncertainty (MOD-008-1 R2)

The ISO does not maintain Capacity Benefit Margin (CBM). Therefore, the ISO does not include any of the components of CBM in establishing its TRM values.

The only components of uncertainty included in TRM are those listed in Section 2.0 of this document.

6.0 TRM Reference Materials

- Additional ISO documentation associated with TRM can be found in the ISO Tariff, Appendix L. The ISO Tariff is available on the ISO's public website.


7.0 Posting TRM Values (MOD-008 R5)

The TRM values established by the ISO will be made public and posted in OASIS. During an interim period until the ISO is able to complete and implement software programming changes related to its OASIS system, the ISO will convey TRM values through market messages that will be posted on OASIS. A message will be posted whenever a TRM value is established for a given path for a given hour and will identify the affected path, the TRM value established for the affected hour, and which of the three permitted TRM conditions is at issue.

During this interim period, the corresponding ATC value posted on the ISO's OASIS tables for the impacted path will not be automatically updated to reflect the TRM value. Upon completion and implementation of the necessary software programming changes to OASIS, the TRM values will be shown in a separate field within the ISO's automated OASIS tables and the ATC values in those tables will be automatically updated to reflect the impact of the TRM value. The ISO expects this enhanced functionality to be implemented during the Fall of 2012.

8.0 Revisions to TRMID

This document reflects the ISO's current TRMID. In the event that the ISO determines that it is necessary to revise any aspect of the process or

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methodology covered by this document, the ISO will issue a revised TRMID, which will be made publicly available and posted on OASIS.