

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N



**Transmission Reliability Margin
Implementation Document
Version 8
(MOD-008-1)**

**Bonneville Power Administration
Transmission Services**

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1 I. Purpose

2 This Transmission Reliability Margin Implementation Document (TRMID) addresses the
3 requirements of North American Electric Reliability Corporation (NERC) Reliability Standard
4 MOD-008-1 (Transmission Reliability Margin Calculation Methodology). This TRMID applies to
5 TRM calculations through month 13.

6 II. Definitions

7 All capitalized terms used in this TRMID are contained in NERC's Glossary of Terms used in
8 NERC Reliability Standards.

9 III. Transmission Reliability Margin Calculation Methodology

10 This section describes how BPA implements the requirements of MOD-008-1.

11 Components of Uncertainty

12 BPA uses the following components of uncertainty to establish TRM on its **Northern Intertie**
13 **N>S and S>N** paths (MOD-008-1 R1.1):

- 14 ○ Variations in generation dispatch (including, but not limited to, forced or
15 unplanned outages, maintenance outages and location of future generation).
- 16 ○ Inertial response and frequency bias.

17 BPA uses the following component of uncertainty to establish additional TRM on its **Northern**
18 **Intertie S>N** path (MOD-008-1 R1.1):

- 19 ○ Allowances for simultaneous path interactions.

20 BPA uses the following component of uncertainty to establish TRM on its **West of Garrison**
21 **E>W** path (MOD-008-1 R1.1):

- 22 ○ Variations in generation dispatch (including, but not limited to, forced or
23 unplanned outages, maintenance outages and location of future generation).

24 BPA uses the following component of uncertainty to establish TRM on its **Satsop Injection**
25 path (MOD-008-1 R1.1):

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

28 BPA does not maintain TRM on any other of its paths.

29 BPA does not maintain Capacity Benefit Margin (CBM) on any of its ATC paths, and therefore
30 does not include any of the components of CBM in its TRM calculations. (MOD-008-1 R2)

31 **Allocating TRM values across the Northern Intertie path**

32 To calculate TRM for the Northern Intertie path due to variations in generation dispatch and
33 inertial response and frequency bias, BPA's Transmission System Operations organization
34 conducted a post event analysis in 2013. The results of this analysis are validated every 13
35 months based on operating experience and the capacity amount that has proven sufficient
36 and effective to mitigate such uncertainty in the past. (MOD-008-1 R1.2)

37 BPA's Transmission System Operations studies have shown that there is an interaction
38 between flows on the Northern Intertie S>N path and flows on the AC Intertie (NWACI) N>S
39 and North of Hanford N>S paths. In order to mitigate the uncertainty that results from this
40 path interaction, BPA has established an additional TRM on Northern Intertie S>N when the
41 Total Transfer Capability on this path is above 2000MW. (MOD-008-1 R1.2)

42 The amount of TRM BPA incorporates is based upon the results of the technical analyses
43 provided by Transmission System Operations. The final decision as to whether or not to
44 market any of the TRM as non-firm, up to its maximum value, is made by Transmission
45 Operations.

46 Currently, BPA applies the TRM due to variations in generation dispatch and inertial response
47 and frequency bias to its firm and non-firm ATC calculation across the Northern Intertie N>S
48 and S>N paths. BPA applies the TRM that is the result of allowances for simultaneous path
49 interactions to the firm ATC calculation only across the Northern Intertie S>N path. (MOD-
50 008-1 R1.2)

51 **Allocating TRM values across West of Garrison E>W**

52 BPA's Transmission System Operations studies have identified uncertainty across the West of
53 Garrison E>W path due to variations in generation dispatch. In order to mitigate the
54 uncertainty that results from this, BPA has established a TRM when the Total Transfer
55 Capability on this path is above 2000MW. (MOD-008-1 R1.2)

56 The amount of TRM BPA incorporates is based upon the results of the technical analyses
57 provided by Transmission System Operations. The final decision as to whether or not to
58 market any of the TRM as non-firm, up to its maximum value, is made by Transmission
59 Operations.

60 Currently, BPA applies the TRM due to variations in generation dispatch to the firm ATC
61 calculation across the West of Garrison E>W path. (MOD-008-1 R1.2)

62 **Allocating TRM values across Satsop Injection**

63 BPA has identified uncertainty across the Satsop Injection path due to forecast uncertainty in
64 Transmission system topology. In order to mitigate the uncertainty that results from this, BPA
65 has established a TRM when the Total Transfer Capability on this path is above 200MW.
66 (MOD-008-1 R1.2)

67 The amount of TRM BPA incorporates is based upon the results of the technical analyses
68 provided by Transmission System Operations. The final decision as to whether or not to
69 market any of the TRM as non-firm, up to its maximum value, is made by Transmission
70 Operations.

71 Currently, BPA applies the TRM for Satsop Injection to the firm ATC calculation across this
72 path. (MOD-008-1 R1.2)

73 **TRM for Each Time Period**

74 BPA uses the same TRM calculation described above for the same day and real-time, day-
75 ahead and pre-schedule, and beyond day-ahead and pre-schedule, up to thirteen months
76 ahead time periods. (MOD-008-1 R1.3, MOD-008-1 R1.3.1, MOD-008-1 R1.3.2 and MOD-008-1
77 R1.3.3)

78 BPA establishes TRM values in accordance with its TRMID at least once every 13 months.
79 (MOD-008-1 R4)

80 **Sharing TRM**

81 The results of BPA's Transmission System Operations' TRM studies are shared electronically
82 with BPA's Transmission Planner and Transmission Service Provider no more than seven
83 calendar days after they are completed. (MOD-008 R5)

84 **IV. TRMID Requests**

85 BPA makes its TRMID available on its website for all interested parties. If requested, BPA will
86 make available the underlying documentation used to determine its TRM, in the format used
87 by BPA, to Transmission Service Providers, Reliability Coordinators, Planning Coordinators,
88 Transmission Planners and Transmission Operators who make a written request. BPA will
89 supply this information no more than 30 calendar days after receiving the request (MOD-008-1
90 R3). Requests for this documentation should be sent to nercatcstandards@bpa.gov.

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V. Version History

TRMID Revision History			
Version	Date Revised	Description of Changes	Prepared by
1.0	02/13/2012	BPA TRMID FINAL	L. Trolese
2.0	2/12/2013	P. 3 lines 20-22: Updated the components used to establish TRM to Variations in Generation Dispatch and Inertial Frequency. P. 3 lines 27-34: Updated BPA's practice for Establishing TRM values across the Northern Intertie Path.	L. Wickizer
3.0	1/3/2016	P.3 lines 23-25: Updated BPA's practice for Establishing TRM values across the Northern Intertie Path S>N P.4 lines 39-48: Added establishing TRM values across the Northern Intertie Path S>N. P. 4 lines 62-69: Updated BPA's practice for System Operations analyzing and providing TRM value.	L. Proctor
4.0	9/6/2016	P4. Lines 37-45: Clarified section describing the TRM across Northern Intertie S>N due to simultaneous path interactions; added line numbers and page numbers, among other minor formatting adjustments.	M. Olczak
5.0	10/12/2018	Clarification and simplification of BPA's TRMID document. BPA's TRM methodology and calculations have not changed.	M. Olczak
6.0	08/14/2019	P3. Lines 20-23 and P4. Lines 47 - 57: TRM information for the West of Garrison E>W path has been incorporated into the document	M. Olczak
7.0	09/16/2020	P3. Lines 24-27, P4. Lines 62-72: TRM information for the Satsop Injection Path has been incorporated into the document P4. Lines 45 and 59: Clarified that Transmission Operations is responsible for making decisions about how much of the TRM is offered to the market as non-firm	M. Olczak

TRMID Revision History			
8.0	10/21/2022	Throughout document: changed "California-Oregon AC Intertie" to "AC Intertie (NWACI)" and "Northern Intertie Total" to "Northern Intertie" to properly reflect these path names; removed capitalization from "path" as this is not an officially defined term in the NERC glossary	M. Olczak