Transmission Reliability Margin Implementation Document Version 11 (North American Energy Standards Board WEQ-023)

Bonneville Power Administration
Transmission Services

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I. Purpose

This Transmission Reliability Margin Implementation Document (TRMID) addresses the requirements of North American Energy Standards Board (NAESB) Wholesale Electric Quadrant business practice standard 023 (WEQ-023). This TRMID applies to TRM calculations through month 13.

II. Definitions

All capitalized terms used in this TRMID are found in NAESB's Abbreviations, Acronyms, and Definition of Terms, WEQ-000 and North American Electric Reliability Corporation's Glossary of Terms.

III. Transmission Reliability Margin Calculation Methodology

BPA calculates and maintains a Transmission Reliability Margin (TRM) across its Northern Intertie N>S, Northern Intertie S>N and Satsop Injection ATC paths.

BPA does not maintain Capacity Benefit Margin (CBM) on any of its ATC paths and therefore does not include any of the components of CBM in its TRM calculations.

TRM across Northern Intertie N>S and Northern Intertie S>N

BPA uses the following components of uncertainty to establish TRM on its **Northern Intertie N>S and S>N** ATC paths:

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

BPA uses the following component of uncertainty to establish additional TRM on its **Northern Intertie S>N** ATC path:

- Allowances for simultaneous path interactions.

To calculate the TRM for the uncertainty arising from variations in generation dispatch and inertial response and frequency bias, BPA's Transmission System Operations organization conducted a post event analysis in 2013. The results of this analysis are validated every 13 months based on operating experience and the capacity amount that has proven sufficient and effective to mitigate such uncertainty in the past.

BPA's Transmission System Operations studies have shown that there is an interaction between flows on the Northern Intertie S>N path and flows on the AC Intertie (NWACI) N>S and North of Hanford N>S paths. To mitigate the uncertainty that results from this path interaction, BPA has established an additional TRM on Northern Intertie S>N when the Total Transfer Capability on this path is above 2000MW.

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

Currently, BPA applies the TRM due to variations in generation dispatch and inertial response and frequency bias to its firm and non-firm ATC calculations across the Northern Intertie N>S and Northern Intertie S>N ATC paths. BPA applies the TRM that is the result of allowances for simultaneous path interactions to the firm ATC calculation only across the Northern Intertie S>N ATC path.

TRM values across Satsop Injection

BPA uses the following component of uncertainty to establish TRM on its Satsop Injection ATC path:

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

To mitigate this uncertainty, BPA has established a TRM when the Total Transfer Capability on this path is above 200MW.

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

Currently, BPA applies the TRM for Satsop Injection to the firm ATC calculation across this path.

TRM for Each Time Period

BPA uses the same TRM calculation described above for the same day and real-time, day-ahead and pre-schedule, and beyond day-ahead and pre-schedule, up to thirteen months ahead time periods.

BPA establishes TRM values in accordance with its TRMID at least once every 13 months.

Sharing TRM

The results of BPA's Transmission System Operations TRM studies are shared electronically with BPA's Transmission Planner and Transmission Service Provider no more than seven calendar days after they are completed.

IV. TRMID Requests

BPA makes its TRMID available on its ATC Methodology website. If requested, BPA will provide a written response within 45 calendar days of receiving a written request for clarification of its TRMID from any registered entity that demonstrates a reliability need.

Requests relating to BPA's TRM or TRMID should be sent to techforum@bpa.gov.

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

TRMID Revision History			
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
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
9.0	09/27/2023	p.3, lines 4-6: added that this TRMID also addresses the requirements in NAESB's WEQ-023 TRM information for the West of Garrison E>W path has been removed from the document, as technical studies indicate this TRM is no longer needed	M. Olczak
10.0	02/01/2024	Throughout document: removed all references to specific MOD-008 requirements p.3, Purpose section: removed reference to NERC ATC MOD-008 p.3, Definitions section: added reference to NAESB's Abbreviations, Acronyms, and Definition of Terms WEQ-000 p.3-4, Transmission Reliability Margin Calculation Methodology section: incorporated Components of Uncertainty information into sections covering the TRM methodology for each path p.5, TRMID Requests section: revised to align with requirements of WEQ-023	M. Olczak
11.0	12/04/2025	p.5, line 69: changed email address from nercatcstandards@bpa.gov to techforum@bpa.gov. The nercatcstandards@bpa.gov email address is being retired.	M. Olczak