

# PacifiCorp NERC Reliability Compliance

## Transmission Reliability Margin Implementation Document

### Document Security Category

<input type="checkbox"/>	Confidential
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<input checked="" type="checkbox"/>	External (Public)
<input type="checkbox"/>	Critical Infrastructure Information (CII)

### Version History

Rev	Status	Date	Author	Change Tracking
0	FINAL	3/31/11	Nita O'Hara	
1	FINAL	8/10/11	Nita O'Hara	Clarify the components of TRM
2	FINAL	8/31/12	Nita O'Hara	Update list of paths with TRM
3	FINAL	3/15/13	Nathan Ortega	Updated list of paths with TRM
3.1	FINAL	3/27/13	Nathan Ortega	Minor wording changes to R1.2
4	FINAL	7/25/2014	Veronica Stofiel	Updated list of paths with TRM
5	FINAL	8/12/2015	Brian McClelland	Replaced WYONORTH with TOT4B
6	FINAL	7/26/2016	Brian McClelland	<ol style="list-style-type: none"> <li>Added TOT4B-WYONORTH to be consistent with line 5.</li> <li>Removed SMLKHMY-HMWY and SUMMERLAKENT-SMLKHMY</li> <li>Removed PINTO-FOURCORNE345</li> </ol>

Approved:

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7/26/2016

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## 1. Scope / Procedure Objectives

The Transmission Reliability Margin Implementation Document (TRMID) provides for the documentation of required information as specified in the NERC Standard MOD Standards if TRM is utilized or for the documentation of non-use as specified in the NAESB OASIS Standards. PacifiCorp is providing documentation of the use of TRM.

## 2. Definitions

See Glossary of Terms Used in NERC Reliability Standards at:

[http://www.nerc.com/docs/standards/rs/Glossary\\_of\\_Terms\\_2010April20.pdf](http://www.nerc.com/docs/standards/rs/Glossary_of_Terms_2010April20.pdf)

## 3. 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:

- Same day and real-time
- Day-ahead and pre-schedule.
- 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]

## 4. Implementation

**R1.** PacifiCorp has listed each ATC path where a TRM value has been identified and provided the list of components of uncertainty that were used along with a description of how that component contributed to the established TRM value.

### **R1.1.**

#### ANTELOPE-WYOEAST

- Allowances for parallel path (loop flow) impacts.

**GLENCANYON2-PACE**

- Allowances for simultaneous path interactions.

**NUT-PACE**

- Allowances for parallel path (loop flow) impacts.

**NUT-PATHC**

- Allowances for simultaneous path interactions.

**PACE-NUT**

- Allowances for parallel path (loop flow) impacts.

**PATHC-NUT**

- Allowances for parallel path (loop flow) impacts.

**PATHC-POP**

- Allowances for simultaneous path interactions.

**POP- PATHC**

- Allowances for parallel path (loop flow) impacts.

**WYOEAST-WYOCENTRAL**

- Allowances for simultaneous path interactions.

**WYOEAST-TOT4B**

- Allowances for simultaneous path interactions.

**TOT4B-WYNORTH**

- See WYOEAST-TOT4B.

Below is a general description for how the above identified components of uncertainty contributed to the established TRM value on the PacifiCorp Transmission system:

- Allowances for parallel path (loop flow) impacts reflects the impact of unscheduled flow across line and paths due to interconnected system operation of a large network. Since the electrical system is a network with many lines, power distributes across these lines in inverse proportion to the impedance of multiple paths between generation and loads. Since generation and load vary considerably by time of day and season, flow on individual lines and paths can vary significantly. Therefore a portion of capacity is reserved to reflect this uncertainty.
- Allowances for simultaneous path interactions reflects the relationship between lines and paths that impact their

simultaneous usage. This is related to the effect of parallel path operation and is implemented through the use of a simultaneous nomogram.

- Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages). TRM in this case has been allocated to taken into account where PacifiCorp has a high likelihood of having to curtail for contingencies.

**R1.2.** PacifiCorp assesses the applicability of the 9 components of uncertainty as requests are received and on an annual basis for compliance with the standard. Predominantly two of the nine criteria are applicable to PacifiCorp, namely allowances for parallel loop flow and allowances for simultaneous path interactions. For loop flow, PacifiCorp allocated 5% of TRM for circulating flow. For simultaneous path interaction, PacifiCorp either assesses 5% of the path or it assesses the TRM values based on the operating point of the nomogram in relationship to the tails of the nomogram. Where new capacity has been identified via an upgrade to the system, PacifiCorp currently reserves 5% of the Total Transfer Capability (TTC) on scheduled paths as one of the components of TRM to account for uncertainty associated with aggregate load forecasts, load distribution, generation patterns, and loop flow. PacifiCorp does not presently use the other allowed components of uncertainty.

**R1.3.** PacifiCorp uses the same TRM calculation for all timing horizons using the components of uncertainty identified in NERC Standard MOD-008-1 R1.1 (above).

**R2.** PacifiCorp uses only the components of uncertainty identified in R1.1 to establish TRM. PacifiCorp does not maintain a Capacity Benefit Margin (CBM) nor does the TRM calculation account for reliability components used to establish TTC or a Transmission capacity set aside for reserve sharing agreements.

**R3.** PacifiCorp posts the TRMID on OASIS in order to make it available to any interested party and will provide any underlying documentation (if any) used to determine TRM, in the format used by the Transmission Operator, upon written request within 30 calendar days after receiving the request.

**R4.** PacifiCorp in accordance with this document performs a review once every 13 months of all TRM values posted on OASIS.

**R5.** All TRM values are provided to the Transmission Service Provider within seven calendar days after the value has been initially established or subsequently changed.