Transmission Reliability Margins

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Purpose

Provides guidelines for the use of Transmission Reliability Margins (TRM).

1. Responsibilities

<table>
<thead>
<tr>
<th>ISO Transmission Dispatcher</th>
<th>ISO Generation Dispatcher</th>
<th>ISO Shift Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Transmission Dispatcher</td>
<td>Determine TRM value</td>
<td></td>
</tr>
<tr>
<td>ISO Generation Dispatcher</td>
<td>Determine TRM value</td>
<td></td>
</tr>
<tr>
<td>ISO Shift Manager</td>
<td>Determine TRM value</td>
<td></td>
</tr>
<tr>
<td>ISO Transmission Dispatcher</td>
<td>Enter TRM into ETCC and SLIC log</td>
<td></td>
</tr>
</tbody>
</table>
2. **Scope/Applicability**

2.1 **Background**

At times, the ISO must cut the Hour-Ahead Scheduling Process (HASP) market procured transmission schedules on its Interties to alleviate Real-Time (RT) transmission grid issues, such as:

- Uncertainty in Real-Time transmission topology
- Unscheduled Flow, also known as Loop Flow or Parallel Path Flow
- Simultaneous path interactions

To minimize the impact to the market and to reduce hourly schedule cuts from unanticipated system events, the ISO will implement a Transmission Reliability Margin (TRM) for use on ISO Interties for the ISO portion only as outlined below. The use of a TRM allows the market to optimize the interties, rather than face continuous hourly curtailments while providing transparency to market participants via the ISO’s Open Access Same-Time Information System (OASIS) posting. Curtailing awarded schedules negatively affects market participants because they have little recourse in finding alternative sources or sinks of energy. ISO Operators are also negatively impacted since curtailing schedules increases manual procedures including procurement of imbalance energy to replace curtailed energy schedules. In addition, because Available Transmission Capacity (ATC) calculations are established before the beginning of the operating hour, the ISO’s OASIS data continues to report positive ATC values even when occasional curtailments in real-time have affected market schedules. Market Participants are left unaware that ATC values are actually less than what is reported.

*Note:* When RT curtailments are required, the above-mentioned conditions still apply.

2.2 **Scope / Applicability**

This procedure explains when and how to use TRM.

3. **Procedure Detail**

3.1 **TRM Value Determination**

A TRM value will be determined by the Shift Manager based on input from Transmission, Generation Dispatchers, and the process described in the Transmission Reliability Margin Implementation Document (TRMID).
TRM can be used for the following conditions:

- Uncertainty in Real-Time transmission topology - potential de-rate upon loss of elements).
- Unscheduled Flow – accommodation level for anticipated Western Interconnection Unscheduled Flow Mitigation Plan (WIUFMP).
- Simultaneous path interaction – potential de-rate amount from Non-ISO path.

3.2 TRM Instructions

**For Unscheduled Flow purposes** TRM can be implemented in one (1) hour increments only for the next applicable HASP. If conditions require immediate action in the current hour, curtail schedules using the Curtailment Tool in the Interchange transaction scheduler.

**For uncertainty in Real-Time transmission topology and Simultaneous path interaction TRM can be implemented for the hours the condition is expected.**

The use of TRM is communicated in OASIS in the Current Transmission Usage display. A Reliability messaging system message is not required for the use of TRM as it is just a tool used for mitigating an actual or possible constraint.

3.2.1 Uncertainty in Real-Time Transmission Topology

Take the following actions when uncertainty in transmission system topology is forecasted due to uncontrollable threats to the system. These threats and uncertainties may include, but are not limited, to fires, storms, actual and/or potential structural damage to transmission facilities.

**ISO Transmission Desk**

1. If there is uncertainty about the availability of certain transmission system resources, prior to HASP,
   - **Enter** the determined TRM value in the ETCC.

   *Example: If an 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 up to 200 MW of TRM values for the time period during which that uncertainty exists.*

2. **Enter** TRM into SLIC log.
3.2.2 Unscheduled Flow

Allowances for parallel path (loop flow) impacts. This TRM is only applicable to the PACI.

**ISO Transmission Desk**

1. If the ISO forecasts that projected loop flow and schedules will be sufficient enough to trigger a step 2 or higher of the Western Interconnection Unscheduled Flow Mitigation Plan (WIUFMP) for that path, Prior to HASP,
   - The ISO may enter the determined TRM value in ETCC.
2. Enter TRM into SLIC log.

3.2.3 Simultaneous Path Interactions

Allowances for simultaneous path interactions.

*Note:* The ISO generally does not limit the TTC of an ATC Path due to the simultaneous interaction with another path. The impact of the interaction between multiple ATC Paths might be 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 ATC Paths that have simultaneous interactions with non-ISO ATC Paths.

**ISO Transmission Desk**

1. If One or more ISO ATC Paths become constrained due to interactions with another non-ISO ATC Path, Prior to HASP,
   - Enter the determined TRM value in ETCC.
   - *Note:* If an ATC Path within ISO is found to be dependent with other ATC Paths, then the amount of TRM value assigned should be no greater than the impact of its interaction with the non-ISO ATC Path:
2. Enter TRM into SLIC log.
4. Supporting Information

Operationally Affected Parties

Shared with the Public.

References

Resources studied in the development of this procedure and that may have an effect upon some steps taken herein include but are not limited to:

<table>
<thead>
<tr>
<th>CAISO Tariff</th>
<th>GOT-014 Transmission Reliability Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Procedure</td>
<td>Transmission Reliability Margin</td>
</tr>
<tr>
<td>NERC Standards</td>
<td>Available Transfer Capability Implementation Document (ACTID)</td>
</tr>
</tbody>
</table>

Definitions

Unless the context otherwise indicates, any word or expression defined in the Master Definitions Supplement to the CAISO Tariff shall have that meaning when capitalized in this Operating Procedure.

The following additional terms are capitalized in this Operating Procedure when used as defined below:

<table>
<thead>
<tr>
<th>ATC</th>
<th>Available Transmission Capacity (=Hourly TTC-TRM Total-CBM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRM</td>
<td>Transmission Reliability Margin</td>
</tr>
<tr>
<td>TTC</td>
<td>Total Transfer Capability</td>
</tr>
</tbody>
</table>
### Version History

<table>
<thead>
<tr>
<th>Version</th>
<th>Change</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>New procedure</td>
<td>9/20/12</td>
</tr>
<tr>
<td>1.1</td>
<td>Revised to reflect new software changes for TRM.</td>
<td>11/28/12</td>
</tr>
<tr>
<td>1.2</td>
<td>Deleted Section 3.3; moved 3.3.1, 3.3.2, and 3.3.3 to Section 3.2. Minor updates and edits.</td>
<td>12/18/12</td>
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<tr>
<td>1.3</td>
<td>Added clarification to section 3.2.1 for managing uncertainty in real-time transmission topology. Changed “Real-Time Scheduler” to “Interchange Scheduler” in Sections 1 and 2.</td>
<td>12/23/13</td>
</tr>
<tr>
<td>2.0</td>
<td>Changed all instances of “Unscheduled Loop Flow” to “Unscheduled Flow.” Changed reference CAS to Interchange transaction scheduler. Updated Operationally Affected Parties to include Peak RC with Public.</td>
<td>10/15/14</td>
</tr>
<tr>
<td>2.1</td>
<td>Replaced WECCNet with Reliability Messaging Tool (RMT).</td>
<td>6/24/16</td>
</tr>
<tr>
<td>2.2</td>
<td>Formatting and grammar corrections. Removed mentions of “Interchange Scheduler” because Interchange Scheduling will be absorbed by the Transmission Desk. Replaced Shift Supervisor with Shift Manager. Replaced Peak RC with the RC. Replaced Reliability Messaging Tool (RMT) with Reliability messaging system. Minor format and grammar updates.</td>
<td>4/22/19</td>
</tr>
<tr>
<td>3.1</td>
<td>Section 2.1: Minor update to OASIS references. Section 3.1 and 3.2.2: Updated WIUFMP references. Section 3.2: Updated TRM Instructions.</td>
<td>5/07/20</td>
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</tbody>
</table>
5. Periodic Review Procedure

Review Criteria & Incorporation of Changes

There are no specific criteria for reviewing or changing this document, follow instructions in Procedure 5510.

Frequency

Every 3 Years.

Appendix

No references at this time.