

WECC Standard TOP-007-WECC-1 – System Operating Limits

Standard Development Roadmap

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

Development Steps Completed:

Completed Actions	Completion Date
1. Post Draft Standard for initial industry comments	September 21, 2007
2. Drafting Team to review and respond to initial industry comments	November 16, 2007
3. Post second Draft Standard for industry comments	November 16, 2007
4. Drafting Team to review and respond to industry comments	January 25, 2008
5. Post Draft Standard for Operating Committee approval	January 25, 2008
6. Operating Committee ballots proposed standard	March 6, 2008
7. Post Draft Standard for WECC Board approval	March 12, 2008

Description of Current Draft:

The purpose of this standard is to create a permanent replacement standard for TOP-STD-007-0. TOP-007-WECC-1 is designed to implement the directives of FERC and recommendations of NERC when TOP-STD-007-0 was approved as a NERC reliability standard.

This draft standard incorporates the following refinements to the first draft of TOP-007-WECC-1 in response to comments received during the first comment period that ended November 5, 2007 and the second comment period that ended January 2, 2008.

1. Refine R1 to remove the requirement to return a path to within its limit in 20 minute for SOLs based upon Transient Stability and Voltage Stability.
2. Refine R2 to limit the compliance period for the Net Scheduled Interchange to the real-time schedules for the next hour.
3. Refine R2 to permit 30 minutes to adjust Net Scheduled Interchange when SOLs reduce within 20 minutes of the start of the hour.
4. Change M2 based upon the refinements to R2.
5. Base the violation severity levels for R2 upon magnitude.

The WECC Operating Committee approved the TOP-007-WECC-1 standard as a permanent replacement standard for TOP-STD-007-0 on March 6, 2008. This posting of the standard is for ballot by the WECC Board of Directors. The Operating Committee recommends that the WECC Board of Directors approve the TOP-007-WECC-1 as a permanent replacement standard for TOP-STD-007-0. In addition, the Operating Committee recommends that the WECC Board of Directors submit the standard to the NERC and FERC for approval.

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Justification for a Regional Standard

The NERC standard (TOP-STD-007-0) has requirements for reducing actual flows to within System Operating Limits (SOL) on Major WECC Transfer Paths in the Bulk Electric System. The major paths listed in the Table titled “Major WECC Transfer Paths in the Bulk Electric System” are significant components for reliable delivery of power in the Western Interconnection. System Operating Limits for these paths are critical because they transfer energy from remotely located generation to population/load centers. The entities of the Western Interconnection through studies and operation see the need for optimizing the capacity of these paths. The lack of redundant transmission in these corridors raises the level of scrutiny for these paths; therefore, this standard is designed to add emphasis to reducing flows to within SOL to maintain reliable Western Interconnection operation.

NERC TOP-007-0 (R2) requires the Transmission Operator to return its transmission path flows to within Interconnection Reliability Operating Limits (IROL) as soon as possible, but no longer than 30 minutes following a contingency or event. This requirement applies only to those limits that are defined as IROL. Depending on the current system conditions, the limits for the paths identified in this TOP-007-WECC-1 standard are SOL that would not result in cascading outages. There is no NERC requirement to return the transmission system to within SOL limits, only a requirement to report to the Reliability Coordinator. TOP-007-WECC-1 specifically applies to the major paths in the Western Interconnection regardless of whether the limit is defined as an IROL or the less severe SOL.

In Order No. 693 and Docket No. RR07-11-000, the FERC expressed concern that TOP-007-0 could be interpreted as allowing a system operator to respect IROLs in one of two ways: (1) allowing IROL to be exceeded during normal operations, *i.e.*, prior to a contingency, provided that corrective actions are taken within 30 minutes; or (2) allowing IROL to be exceeded only after a contingency and subsequently returning the system to a secure condition as soon as possible, but no longer than 30 minutes. FERC explained that the system could be one contingency away from potential cascading failure if operated under the first interpretation and two contingencies away from cascading failure under the second interpretation. FERC directed NERC to conduct a survey on IROL practices and actual operating experiences of managing within IROL. The survey results will provide guidance on the frequency, duration, and magnitude of IROL violations and whether these IROL violations occur during normal or contingency conditions.

WECC and NERC responded to FERC’s June 8, 2007 Order (Docket No. RR007-11-000) in its compliance filing of July 9, 2007. The compliance filing document is posted with this standard for reference. On November 2, 2007, FERC accepted NERC’s and WECC’s filing and indicated that the filing satisfactorily responds to the Commission’s directive, *Order Approving Regional Reliability Standards for the Western Interconnection and Directing Modifications*, 119 FERC ¶ 61,260 (2007) at P 108.

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Future Development Plan:

Anticipated Actions	Anticipated Date
1. Post Draft Standard for NERC comment period	March 28, 2008
2. WECC Board ballots proposed standard	April 16-18, 2008
3. Drafting Team to review and respond to NERC industry comments	May 2008
4. NERC Board approval request	May 2008
5. Request FERC approval	June 2008

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these definitions will be removed from the standard and added to the Glossary.

WECC Standard TOP-007-WECC-1 – System Operating Limits

A. Introduction

- 1. Title:** System Operating Limits
- 2. Number:** TOP-007-WECC-1
- 3. Purpose:** When actual flows on Major WECC Transfer Paths exceed System Operating Limits (SOL), their associated schedules and actual flows are not exceeded for longer than a specified time.
- 4. Applicability**
 - 4.1.** Transmission Operators for the transmission paths in the most current Table titled “Major WECC Transfer Paths in the Bulk Electric System” provided at:
(<http://www.wecc.biz/documents/library...> The Table titled “Major WECC Transfer Paths in the Bulk Electric System” is Attachment 2 – TOP-007-WECC-1 in this document. The Table will be posted on the WECC website.)
- 5. Effective Date:** On the first day of the first quarter, after applicable regulatory approval.

B. Requirements

- R.1.** When the actual power flow exceeds an SOL for a Transmission path, the Transmission Operators shall take immediate action to reduce the actual power flow across the path such that at no time shall the power flow for the Transmission path exceed the SOL for more than 30 minutes. [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- R.2.** The Transmission Operator shall not have the Net Scheduled Interchange for power flow over an interconnection or Transmission path above the path’s SOL when the Transmission Operator implements its real-time schedules for the next hour. For paths internal to a Transmission Operator Area that are not scheduled, this requirement does not apply. [*Violation Risk Factor: Low*] [*Time Horizon: Real-time Operations*]
 - R2.1.** If the path SOL decreases within 20 minutes before the start of the hour, the Transmission Operator shall adjust the Net Scheduled Interchange within 30 minutes to the new SOL value. Net Scheduled Interchange exceeding the new SOL during this 30-minute period will not be a violation of R2.

C. Measures

- M1.** Evidence that actual power flow has not exceeded the SOL for the specified time limit in R1.
- M2.** Evidence that Net Scheduled Interchange has not exceeded the SOL when the Transmission Operator implements real-time schedules as required by R2.
 - M2.1** Evidence that Net Scheduled Interchange was at or below the new SOL within 30-minutes of when the SOL decreased.

D. Compliance

1. Compliance Monitoring Process

1.1 Compliance Monitoring Responsibility

Compliance Enforcement Authority

1.2 Compliance Monitoring Period

Compliance Enforcement Authority may use one or more of the following methods to assess compliance:

- Self-report for each incident within three-business day
- Self-report quarterly
- Spot check audits conducted anytime with 30 days notice given to prepare
- Periodic audit as scheduled by the Compliance Enforcement Authority
- Investigations
- Other methods as provided for in the Compliance Monitoring Enforcement Program

Reset Period: One calendar month.

1.3 Data Retention

The Transmission Operators shall keep evidence for Measure M.1 through M2 for three years plus current, or since the last audit, whichever is longer.

1.4 Additional Compliance Information

2. Violation Severity Levels

For Requirement R1:

- 2.1. **Lower:** There shall be a Lower Level of non-compliance for Transmission Operators as set forth in the table in Attachment 1– TOP-007-WECC-1.
- 2.2. **Moderate:** There shall be a Moderate Level of non-compliance for Transmission Operators as set forth in the table in Attachment 1– TOP-007-WECC-1.
- 2.3. **High:** There shall be a High Level of non-compliance for Transmission Operators as set forth in the table in Attachment 1– TOP-007-WECC-1.
- 2.4. **Severe:** There shall be a Severe Level of non-compliance for Transmission Operators as set forth in the table in Attachment 1– TOP-007-WECC-1.

For Requirement R2:

- 2.1. **Lower:** There shall be a Lower Level of non-compliance for Transmission Operators when the net schedule for power flow over an interconnection or Transmission path is above the path's SOL but is less than or equal to 105% of the path's SOL.
- 2.2. **Moderate:** There shall be a Moderate Level of non-compliance for Transmission Operators when the net schedule for power flow over an interconnection or Transmission path is above 105% of the path's SOL but less than or equal to 110% of the path's SOL.

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- 2.3. **High:** There shall be a High Level of non-compliance for Transmission Operators when the net schedule for power flow over an interconnection or Transmission path is above 110% of the path's SOL.
- 2.4 **Severe:** None

Version History – Shows Approval History and Summary of Changes in the Action Field

Version	Date	Action	Change Tracking
1	January 1, 2008	Permanent Replacement Standard for TOP-STD-007-0	

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Attachment 1 – TOP-007-WECC-1

Violation Severity Level Table

Percentage by which SOL is exceeded*	Limit exceeded for more than 30 minutes, up to 35 minutes	Limit exceeded for more than 35 minutes, up to 40 minutes	Limit exceeded for more than 40 minutes, up to 45 minutes	Limit exceeded for more than 45 minutes
greater than 0%, up to and including 5%	Lower	Moderate	Moderate	High
greater than 5%, up to and including 10%	Moderate	Moderate	High	High
greater than 10%, up to and including 15%	Moderate	High	High	Severe
greater than 15%, up to and including 20%	High	High	Severe	Severe
greater than 20%, up to and including 25%	High	Severe	Severe	Severe
greater than 25%	Severe	Severe	Severe	Severe

* Measured after 30 continuous minutes of actual flows in excess of SOL.

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(This document will be posted on the WECC Website)
Attachment 2 – TOP-007-WECC-1

Table
Major WECC Transfer Paths in the Bulk Electric System
(Revised September 1, 2007)

	PATH NAME*	Path Number
1.	Alberta – British Columbia	1
2.	Northwest – British Columbia	3
3.	West of Cascades – North	4
4.	West of Cascades – South	5
5.	West of Hatwai	6
6.	Montana to Northwest	8
7.	Idaho to Northwest	14
8.	South of Los Banos or Midway- Los Banos	15
9.	Idaho – Sierra	16
10.	Borah West	17
11.	Idaho – Montana	18
12.	Bridger West	19
13.	Path C	20
14.	Southwest of Four Corners	22
15.	PG&E – SPP	24
16.	Northern – Southern California	26
17.	Intmntn. Power Project DC Line	27
18.	TOT 1A	30
19.	TOT 2A	31
20.	Pavant – Gonder 230 kV Intermountain – Gonder 230 kV	32
21.	TOT 2B	34
22.	TOT 2C	35
23.	TOT 3	36
24.	TOT 5	39
25.	SDGE – CFE	45
26.	West of Colorado River (WOR)	46
27.	Southern New Mexico (NM1)	47
28.	Northern New Mexico (NM2)	48
29.	East of the Colorado River (EOR)	49
30.	Cholla – Pinnacle Peak	50
31.	Southern Navajo	51
32.	Brownlee East	55
33.	Lugo – Victorville 500 kV	61
34.	Pacific DC Intertie	65
35.	COI	66
36.	North of John Day cutplane	73
37.	Alturas	76
38.	Montana Southeast	80
39.	SCIT**	
40.	COI/PDCI – North of John Day cutplane**	

* For an explanation of terms, path numbers, and definition for the paths refer to WECC's Path Rating Catalog.

** The SCIT and COI/PDCI-North of John Day Cutplane are paths that are operated in accordance with nomograms identified in WECC's Path Rating Catalog.