

### A. Introduction

**1. Title:** Transmission Maintenance

**2. Number:** PRC-STD-005-1

**3. Purpose:** Regional Reliability Standard to ensure the Transmission Operator or Owner of a transmission path identified in Attachment A perform maintenance and inspection on identified paths as described by its transmission maintenance plan.

**4. Applicability**

4.1. This Standard is applicable to Transmission Owners or Operators that maintain the transmission paths in Attachment A – WECC Table 2 and is applicable only to those facilities associated with each of the paths identified. (Source: Participants Subject to Criterion)

**5. Effective Date:** This Western Electricity Coordinating Council Regional Reliability Standard will be effective when approved by the Federal Energy Regulatory Commission under Section 215 of the Federal Power Act. This Regional Reliability Standard shall be in effect for one year from the date of Commission approval or until a North American Standard or a revised Western Electricity Coordinating Council Regional Reliability Standard goes into place, whichever occurs first. At no time shall this regional Standard be enforced in addition to a similar North American Standard.

### B. Requirements

WR1.

All bulk power transmission elements (i.e. lines, stations and rights of way) included as part of the transmission facilities (or required to maintain transfer capability) impacting each of the transmission paths listed in Attachment A – WECC Table 2 shall be inspected and maintained in accordance with this criterion, taking into consideration diverse environmental and climatic conditions, terrain, equipment, maintenance philosophies, and design practices.

**a. General**

This Transmission Maintenance Standard requires each Responsible Entity identified in Section A.4.1 to develop and implement a Transmission Maintenance and Inspection Plan (TMIP) detailing the Responsible Entity's inspection and maintenance activities applicable to the transmission facilities comprising each of the transmission paths identified in Attachment A – Table 2.

**b. Standard Requirements**

**(i) TMIP**

To comply with this Standard, each Responsible Entity identified in Section A4.1 must develop and implement a TMIP.

- Because maintenance and inspection practices vary, it is the intent of this Transmission Maintenance Standard to allow flexibility in inspection and maintenance practices while still requiring a description of certain specific inspection and maintenance practices.

**(a) TMIP Contents**

The TMIP may be performance-based, time-based, conditional-based, or a combination of all three as may be appropriate. The TMIP shall:

- Identify the facilities for which it is covering by listing the names of each transmission path and the quantities of each equipment component, such as; circuit breaker, relay scheme, transmission line;
- Include the scheduled interval (e.g., every two years) for any time-based maintenance activities and a description of conditions that will initiate any condition or performance-based activities;
- Describe the maintenance, testing and inspection methods for each activity or component listed under Transmission Line Maintenance and Station Maintenance;
- Provide any checklists or forms, or reports used for maintenance activities;
- Provide criteria to be used to assess the condition of a transmission facility or component;
- Specify condition assessment criteria and the requisite response to each condition as may be appropriate for each specific type of component or feature of the transmission facilities;
- Include specific details regarding Transmission Line and Station Maintenance practices as per subsections (1) and (2) below.

**(1) Transmission Line Maintenance Details**

The TMIP shall, at a minimum, describe the Responsible Entity's practices for the following transmission line maintenance activities:

- Patrol/Inspection;
- Contamination Control (Insulator Washing)

**(2) Station Maintenance Details**

The TMIP shall describe the Responsible Entity's maintenance practices for the following station equipment:

- Circuit Breakers
- Power Transformers (including phase-shifting transformers)
- Regulators
- Protective Relay Systems and associated Communication Equipment

- RAS Systems and associated Communication Equipment
- Reactive Devices (including, but not limited to, Shunt Capacitors, Series Capacitors, Synchronous Condensers, Shunt Reactors, and Tertiary Reactors)

### **Maintenance Record Keeping M1.**

Each Responsible Entity identified in Section A.4.1 must retain all pertinent maintenance and inspection records that support the TMIP according to the following guidelines:

- The Responsible Entity shall maintain records of all maintenance and inspection activities for at least five years.
- Each Responsible Entity's maintenance and inspection records shall identify, at a minimum:
  - o The person(s) responsible for performing the work or inspection;
  - o The date(s) the work or inspection was performed;
  - o The transmission facility on which the work was performed, and
  - o A description of the inspection or maintenance performed.

The Transmission Owner or Operator shall maintain (and make available on request) records for maintenance or inspection pertaining to the items listed in subsections (a) and (b) below.

#### **(a) Transmission Line Maintenance Records**

- Patrol/Inspection
- Contamination Control (Insulator Washing)

#### **(b) Station Maintenance Records**

- Circuit Breakers
- Power Transformers
- Regulators
- Protective Relay Systems and associated Communication Equipment
- RAS Systems and associated Communication Equipment
- Reactive Devices

### **c. Compliance Measures**

This section defines the items that will be reviewed by WECC Staff to monitor and measure each Responsible Entity's compliance with this Standard, and the compliance levels that will be assessed in the review process.

**(i) TMIP Certification**

Each Responsible Entity identified in Section A.4.1 shall annually certify to WECC Staff that it has developed, documented, and implemented a TMIP.

**(ii) WECC Staff Review**

WECC Staff will assess performance in the three broad areas described in Paragraph 8 of the Certification Form. These areas are:

- (1) Development and documentation of the TMIP;
- (2) Performing maintenance in accordance with the TMIP;
- (3) Maintaining maintenance records as required by this Standard.

**(iii) Review Triggers**

The WECC Staff will conduct a review of the Responsible Entity's TMIP, maintenance and inspection practices and maintenance records when triggered as described below.

- (a) Disturbance Report. If a WECC Disturbance Report identifies that transmission maintenance and inspection activities were a substantial contributing factor in the disturbance, WECC Staff may request a review of the Responsible Entity.
- (b) Recommendation by CMWG team. If in its tri-annual review, the CMWG review team notes areas in transmission availability or maintenance that warrant further review, they may recommend a review by the WECC Staff.
- (c) Incomplete Annual Certification. If the Responsible Entity identified in Section A.4.1 fails to certify one or more categories of paragraph 8 of the Certification Plan, WECC Staff may request a review of the Responsible Entity.
- (d) Random Audit. The WECC Staff shall randomly select two or three Responsible Entities each year for review. When a review is requested, the Responsible Entity shall make its TMIP and all maintenance records for the facilities that are part of RMS available to the WECC Staff for review within 30 calendar days from the request date.

### **C. Measures**

#### **WM1.**

Each Responsible Entity identified in Section A.4.1 shall develop, document and implement a TMIP, perform maintenance in accordance with that TMIP, and maintain maintenance records as required by this Transmission Maintenance Standard. (Source: Compliance Standard)

Full compliance:

1. The Responsible Entity identified in Section A.4.1 has developed and documented a transmission maintenance, testing and inspection plan that meets the requirements of the Transmission Maintenance Standard.
2. The Responsible Entity identified in Section A.4.1 is performing maintenance, testing and inspections in accordance with its TMIP.
3. The Responsible Entity identified in Section A.4.1 is maintaining maintenance and inspection records as required by the Transmission Maintenance Standard.

### **D. Compliance**

#### **1. Compliance Monitoring Process**

##### **1.1 Compliance Monitoring Responsibility**

Compliance Monitor – British Columbia Utilities Commission  
Compliance Monitor's Administrator – Western Electricity Coordinating Council

##### **1.2 Compliance Monitoring Period**

At Occurrence and Yearly

Each Responsible Entity identified in Section A.4.1 shall certify to WECC on or before January 15 of each year, that it has implemented a TMIP in compliance with this Transmission Maintenance Standard by submitting a completed Transmission Maintenance Certification Form (Form A.12).

If a review is triggered according to Section B.c (iii), a Responsible Entity identified in Section A.4.1 shall make its TMIP and maintenance records for those facilities available to the WECC Staff within 30 calendar days from the date requested. The WECC Staff may have to visit several maintenance headquarters or offices to review the maintenance records.

Each Responsible Entity identified in Section A.4.1 shall submit the completed form(s) by e-mail to the WECC Staff at the address specified in the form. Electronic data submittal forms for use in preparing a customized form specifically for your organization are available from the WECC web site or by e-mail from WECC Staff at the e-mail address specified on the WECC web site.

##### **1.3 Data Retention**

Data will be retained in electronic form for at least four years. The retention period will be evaluated before expiration of four years to determine if a longer retention period is necessary. If the data are being reviewed to address a question of compliance, the data will be saved beyond the normal retention period until the question is formally resolved. (Source: NERC Language)

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### 2. Levels of Non-Compliance

**2.1. Level 1:** There shall be a Level 1 non-compliance if any of the following conditions exist:

2.1.1 The Responsible Entity certifies that it has developed and documented a TMIP (8a from Certification Form) and certifies that it is fulfilling only one of the following two requirements:

- Performing maintenance, testing and inspections in accordance with its TMIP (8b from Certification Form), or
- Maintaining maintenance and inspection records as required by the Transmission Maintenance Standard (8c from Certification Form).

**2.2. Level 2:** There shall be a Level 2 non-compliance if any of the following conditions exist:

2.2.1 The Responsible Entity certifies that it has developed and documented a TMIP (8a from Certification Form) and has not certified that it is fulfilling the following two requirements:

- Performing maintenance, testing and inspections in accordance with its TMIP (8b from Certification Form), and
- Maintaining maintenance and inspection records as required by the Transmission Maintenance Standard (8c from Certification Form).

**2.3. Level 3:** There shall be a Level 3 non-compliance if any of the following conditions exist:

2.3.1 The Responsible Entity does not have a TMIP but has submitted a mitigation plan to achieve full compliance.

**2.4. Level 4:** There shall be a Level 4 non-compliance if any of the following conditions exist:

2.4.1 The Responsible Entity does not have a TMIP and has not submitted a mitigation plan to achieve full compliance.

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

Version	Date	Action	Change Tracking
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**ATTACHMENT A**  
**Table 2**  
**Existing WECC Transfer Paths (BTP)**  
**(Revised February 1, 2006)**

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

\* 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.

## **DEFINITIONS**

Unless the context requires otherwise, all capitalized terms shall have the meanings assigned in this Standard and as set out below:

**Disturbance** means (i) any perturbation to the electric system, or (ii) the unexpected change in ACE that is caused by the sudden loss of generation or interruption of load.

**Extraordinary Contingency** shall have the meaning set out in Excuse of Performance, section B.4.c.

**Normal Path Rating** is the maximum path rating in MW that has been demonstrated to WECC through study results or actual operation, whichever is greater. For a path with transfer capability limits that vary seasonally, it is the maximum of all the seasonal values.

**WECC Table 2** means the table maintained by the WECC identifying those transfer paths monitored by the WECC regional Reliability coordinators. As of the date set out therein, the transmission paths identified in Table 2 are as listed in Attachment A to this Standard.

## **EXCUSE OF PERFORMANCE**

### **A. Excused Non-Compliance**

Non-compliance with any of the reliability criteria contained in this Standard shall be excused and no sanction applied if such non-compliance results directly from one or more of the actions or events listed below.

### **B. Specific Excuses**

#### **1. Governmental Order**

The Reliability Entity's compliance with or action under any applicable law or regulation or other legal obligation related thereto or any curtailment, order, regulation or restriction imposed by any governmental authority (other than the Reliability Entity, if the Reliability Entity is a municipal corporation or a federal, state, or provincial governmental entity or subdivision thereof).

#### **2. Order of Reliability Coordinator**

The Reliability Entity's compliance or reasonable effort to comply with any instruction, directive, order or suggested action ("Security

Order”) by the WECC Reliability Coordinator for the WECC sub-region within which the Reliability Entity is operating, provided that the need for such Security Order was not due to the Reliability Entity’s non-compliance with (a) the WECC Reliability Criteria for Transmission System Planning, (b) the WECC Power Supply Design Criteria, (c) the WECC Minimum Operating Reliability Criteria, or (d) any other WECC reliability criterion, policy or procedure then in effect (collectively, “WECC Reliability Standards”), and provided further that the Reliability Entity in complying or attempting to comply with such Security Order has taken all reasonable measures to minimize Reliability Entity’s noncompliance with the reliability criteria.

**3. Protection of Facilities**

Any action taken or not taken by the Reliability Entity which, in the reasonable judgment of the Reliability Entity, was necessary to protect the operation, performance, integrity, reliability or stability of the Reliability Entity’s computer system, electric system (including transmission and generating facilities), or any electric system with which the Reliability Entity’s electric system is interconnected, whether such action occurs automatically or manually; provided that the need for such action or inaction was not due to Reliability Entity’s non-compliance with any WECC Reliability Standard and provided further that Reliability Entity could not have avoided the need for such action or inaction through reasonable efforts taken in a timely manner. Reasonable efforts shall include shedding load, disconnecting facilities, altering generation patterns or schedules on the transmission system, or purchasing energy or capacity, except to the extent that the Reliability Entity demonstrates to the WECC Staff and/or the RCC that in the particular circumstances such action would have been unreasonable.

**4. Extraordinary Contingency**

- a. Any Extraordinary Contingency (as defined in subsection c); provided that this provision shall apply only to the extent and for the duration that the Extraordinary Contingency actually and reasonably prevented the Reliability Entity from complying with any applicable reliability criteria; and provided further that Reliability Entity took all reasonable efforts in a timely manner to mitigate the effects of the Extraordinary Contingency and to resume full compliance with all applicable reliability criteria contained in this Standard. Reasonable efforts shall

include shedding load, disconnecting facilities, altering generation patterns or schedules on the transmission system, or purchasing energy or capacity, except to the extent that the Reliability Entity demonstrates to the WECC Staff and/or the RCC that in the particular circumstances such action would have been unreasonable. Reasonable efforts shall not include the settlement of any strike, lockout or labor dispute.

- b. Any Reliability Entity whose compliance is prevented by an Extraordinary Contingency shall immediately notify the WECC of such contingency and shall report daily or at such other interval prescribed by the WECC the efforts being undertaken to mitigate the effects of such contingency and to bring the Reliability Entity back into full compliance.
- c. An Extraordinary Contingency means any act of God, actions by a non-affiliated third party, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, earthquake, explosion, accident to or breakage, failure or malfunction of machinery or equipment, or any other cause beyond the Reliability Entity's reasonable control; provided that prudent industry standards (e.g., maintenance, design, operation) have been employed; and provided further that no act or cause shall be considered an Extraordinary Contingency if such act or cause results in any contingency contemplated in any WECC Reliability Standard (e.g., the "Most Severe Single Contingency" as defined in the WECC Reliability Criteria or any lesser contingency).

## **5. Participation in Field Testing**

Any action taken or not taken by the Reliability Entity in conjunction with the Reliability Entity's involvement in the field testing (as approved by either the WECC Operating Committee or the WECC Planning Coordination Committee) of a new reliability criterion or a revision to an existing reliability criterion where such action or non-action causes the Reliability Entity's non-compliance with the reliability criterion to be replaced or revised by the criterion being field tested; provided that Reliability Entity's noncompliance is the result of Reliability Entity's reasonable efforts to participate in the field testing.