



WECC-0141 FAC-501-WECC-3
Transmission Maintenance

Posting 1

DRAFT 8

Support for Retirement

WECC-0141 Drafting Team

DATE PENDING

Executive Summary

Posting 1 explores full retirement of WECC Regional Reliability Standard FAC-501-WECC-2, Transmission Maintenance.¹ The drafting team is recommending full retirement of the standard for the following reasons:

1. The standard is premised on maintenance of 40 specific paths. Contrary to Order 672, P324, there is neither technical support nor supporting record indicating why these 40 paths were chosen in 2000 or why they continue to be used without support 20 years later.
2. The standard is no longer more stringent than its NERC counterpart.
3. Contrary to Order 672, P325, the standard is ambiguous and allows for adoption of the lowest common denominator, P329.
4. The NERC Standards Efficiency Review (SER) did not evaluate regional standards. In keeping with the NERC SER evaluation, the drafting team identified all three requirements as non-essential for reliability and therefore candidates for retirement.

¹ If retirement is approved, references to FAC-501-WECC-2, Attachment B in other NERC Standards will need to be addressed outside of this project. Attachment B is incorporated by reference in FAC-003-4, Transmission Vegetation Management, Section 4.2.3. The attachment is colloquially referred to in PRC-023-4, Transmission Relay Loadability, Attachment B, Criteria B1. Finally, PRC-004-WECC-2—Protection System and Remedial Action Scheme Misoperation incorporates the table by reference; however, that standard is approved for retirement in January 1, 2021.

Table of Contents

Introduction.....	4
Background and Procedural Development.....	6
Intent and Purpose	8
Standard Overview	9
Applicability.....	9
Requirement R1 – Have a Plan.....	10
Requirement R2 – Update the Plan	10
Requirement R3 – Stick to the Plan	11
Attachment A – TMIP Criteria	12
Attachment B – The 40 Paths	14
Recommendations	16
Posting 1 Review.....	18

Introduction

Posting 1 explores full retirement of WECC Regional Reliability Standard FAC-501-WECC-2, Transmission Maintenance.² The scope of the Standard Authorization Request (SAR) allows for consideration of retirement. The SAR is located [here](#).³ The drafting team will use the industry's answers to the questions following this narrative to determine its next steps.

The standard is applicable to the 40 "Major Paths" specified in its Attachment B. The list was created around 2000; however, the technical justification for its creation is no longer known, nor are records available to illuminate that decision. Presumably in 2000, the paths and their components were identified for enhanced maintenance and oversight because they were critical to operations. However, as the following sections illustrate, this may not be true in 2020 and beyond. Rather than using the static list as the sole identifier for enhanced maintenance, the team suggests that by using more contemporaneous tools a more accurate listing of enhanced maintenance facilities could be identified.⁴

For example, Paths 22, 50, 51, and the SCIT nomogram are listed among the 40 paths in Attachment B, but have been reviewed in-depth for criticality and dropped from the WECC Path Rating Catalog.⁵ Inversely, paths such as Path 81 have been added to the WECC Path Rating Catalog and may need to be considered for inclusion in a list such as Attachment B, if a static list concept is retained.⁶ Finally, there are at least three WECC Path Rating Phase 3 projects that created new Paths with Accepted Ratings of over 1,000 MW, which will create new WECC Rated Paths once complete. Although these projects will create new Accepted Rating paths per the catalog, there has been no consideration as to

² If retirement is approved, references to FAC-501-WECC-2, Attachment B in other NERC Standards will need to be addressed outside of this project. Attachment B is incorporated by reference in FAC-003-4, Transmission Vegetation Management, Section 4.2.3. The attachment is colloquially referred to in PRC-023-4, Transmission Relay Loadability, Attachment B, Criteria B1. Finally, PRC-004-WECC-2—Protection System and Remedial Action Scheme Misoperation incorporates the table by reference; however, that standard is approved for retirement in January 1, 2021.

³ <https://www.wecc.org/Reliability/WECC-0141%20FAC-501-WECC-3%20Transmission%20Maintenance%20-%20Attachment%20B%20-%20Standard%20Authorization%20Request%20-%20Final.pdf>.

⁴ Possible tools could include the Real-Time Contingency Analysis used by Transmission Operators or the Interconnection-wide models used by Reliability Coordinators.

⁵ Retirement of the table or any portion of FAC-501-WECC-2 has no self-executing impact on the WECC Path Rating Catalog or the studies performed therein. The standard and the catalog are connected only in that the 20-year old list of 40 paths can also be found in the catalog.

⁶ Path 81, the Southern Nevada Transmission Interface (SNTI) as revised February 2017, has an Accepted Rating with facilities ranging from 69 kV to 500 kV.

Posting 1 / Support for Retirement and/or Modification

their potential to fall under the auspice of Attachment B or its successor criteria.⁷ These projects suggest that a more relevant means of identifying critical assets for higher maintenance scrutiny would be a more relevant approach than relying on a 20-year-old static list.⁸

⁷ SunZia Southwest Transmission Project, Southline (Afton-Apache), TransWest Express Project (TWE)-Phase 1

⁸ Operating with advanced online network analysis tools such as RTCA is a more conservative way to ensure system reliability is maintained.

Background and Procedural Development

Before 1996, members of the Western Systems Coordinating Council (WSCC)⁹ voluntarily operated the Western Interconnection per the WSCC Reliability Criteria, Minimum Operating Reliability Criteria (MORC).¹⁰ Although the MORC contained provisions for coordinated transmission maintenance, the MORC did not specify maintenance for particular paths, nor did it specify the types of maintenance required.

In July and August of 1996, the Western Interconnection experienced two widespread outages resulting from improper vegetation management. The associated blackout reports made several recommendations, among them was a requirement to address vegetation management.

In March 1997, noting that federal remedial legislation could take years to implement, the WSCC trustees created the WSCC RMS Policy Group,¹¹ establishing a contract-based operational system known as the Reliability Management System (RMS).^{12 13}

⁹ WSCC is one of the three predecessor entities to WECC. The WECC was formed on April 18, 2002, by the merger of WSCC, Southwest Regional Transmission Association (SWRTA), and Western Regional Transmission Association (WRTA).

¹⁰ MORC, Maintenance Coordination: 1. Sharing information. The security and reliability of the interconnected power system depends upon periodic inspection and adequate maintenance of generators, transmission lines and associated equipment, control equipment, communication equipment, relaying equipment, and other system facilities. Entities and coordinated groups of entities shall establish procedures and responsibility for disseminating information on scheduled outages and for coordinating scheduled outages of major facilities that affect the security and reliability of the interconnected power system.

¹¹ Following the enactment of EPAct 2005 and the establishment of mandatory Reliability Standards applicable to all owners, operators, and users of the BPS, WECC sought to translate certain of its existing practices under its RMS reliability criteria into regional Reliability Standards to supplement the continent-wide Reliability Standards the Commission approved in Order No. 693. To that end, WECC established a task force to identify criteria in the RMS that should be binding on all BPS users, owners, and operators in the Western Interconnection, not just the Transmission Operators subject to the RMS. The task force chose eight of the identified criteria, which had the highest priority and could be implemented in the near term for translation into regional Reliability Standards. United States of America Before the Federal Energy Regulatory Commission, North American Electric Reliability Corporation (NERC), Docket No. RM16-10-000, Supplemental Information for Petition of the NERC and WECC for Approval of retirement of Regional reliability Standard TOP-007-WECC-1a, page 5.

¹² Hearing.

¹³ Electric Reliability Corporation, Helping Owners, Operators, and Users of the Bulk Power System Assure Reliability and Security for More Than 50 Years, By David Nevius, Senior Vice President 1979–2012, Page 40-41.



Posting 1 / Support for Retirement and/or Modification

In establishing the RMS, the WSCC RMS Policy Group reviewed all NERC and WECC reliability criteria, identified specific criteria deemed critical for reliability management, then migrated that peripheral criteria into the RMS through a three-phase implementation plan.¹⁴

On April 14, 1999, the Federal Energy Regulatory Commission (FERC) asserted jurisdiction over the RMS.

Between September 1998 and February 2000 (phase two of the three-phase RMS implementation), the WSCC translated the content of the RMS into the first mandatory reliability standards (Version Zero, 2007). As a result, all paths represented in the RMS (Table 4 as executed in 2000) are operationally present in FAC-501-WECC-2, Attachment B—20 years later.

The list of 40 paths in Attachment B has not substantively changed in 20 years.^{15 16 17} However, “[d]ue to timing concerns, WECC submitted the first set of Regional Reliability Standards to NERC with very little modification from the RMS Agreements’ format. NERC filed the WECC Regional Reliability Standards with FERC on March 26, 2007.”¹⁸ As a result, FERC approved the Version Zero standards but ordered remedial drafting.

In March of 2007, FERC approved PRC-STD-005-1 with instructions to address specified shortfalls.¹⁹ In 2011, WECC submitted FAC-501-WECC-1 to serve as a permanent replacement for PRC-STD-005-1. In

¹⁴ Hearing.

¹⁵ The drafting team speculates that since there are many lines to take the power from the Path 40 PDCI, the function of Path 41 may be largely administrative metering how much of the power flowing on Path 40 would flow to or come from SCE.

¹⁶ Within the RMS, the FAC Attachment B is referred to as Table 1, Existing WSCC Transfer Paths (BPTP) (Revised Table 1—June 7, 2000), later updated as Table 4 in the 2000 RMS. Whereas the 2000 RMS Table 4 has 41 paths, the current FAC Attachment lists 40 paths. Path 53, “Billings-Yellowtail” (which consisted of the lines between Billings and Yellowtail) was replaced in 2006 or 2007 by Path 80, “Montana Southeast” (which consists of the lines between Billings-Yellowtail and between Huntly Tap-Hardin). Thus, there has been no substantive change to the Attachment B since June 7, 2000.

¹⁷ Final changes to the Attachment B/Table list were made as part of the RMS Phase Two review. “Additions to Table 1 are Path 41—Sylmar LDWP to Sylmar SCE, Path 55—Brownlee East, Path 61 Lugo—Victorville 500 kV, and Path 76—Alturas. Reference to TOT 2 was removed from Table 1 since TOT 2A, TOT 2B, and TOT 2C are included and cover the entire path. CPTF reviewed Table 3 to ensure that all RAS were included that could potentially affect one of the major transmission paths or the RAS failure has the potential to result in cascading. Additions to Table 3 are Path 30—TOTIA, Path 31—TOT2A, Path 34 TOT2B, Path 39—TOTS, Path 16—Idaho—Sierra, Path 45—SDGE—CFE, Meridian 500/230 kV transformers, and SDGE RAS. A revised list of transmission paths and RAS are included in Tables 4 and 5 (see pages 35 and 36).” WSCC Analysis of RMS Phase 2 Evaluation Period, September 1998 through February 2000, page 6.

¹⁸ WECC Statement of Activities and Accomplishments in Carrying Out Its Delegated Responsibilities for the Period January 1, 2007 through October 31, 2008. Page 4.

¹⁹ Docket No. RR07-11-000.

Posting 1 / Support for Retirement and/or Modification

July 2017, WECC: 1) conformed FAC-501-WECC-1 to the newest NERC template and drafting conventions, 2) eliminated URLs, and 3) clarified Attachment A, and Measure M3, resulting in FAC-501-WECC-2.

On April 21, 2011, FERC issued Order 751 approving FAC-501-WECC-2; however, the Commission raised concerns that, without published due process, any changes to the content of the table (Attachment B) could create undue surprise for applicable entities. Further, if the content of the attachment changes, the Commission required that WECC provide the criteria upon which addition or subtraction was based. As the substantive content of the attachment has not changed in 20 years, the Commission's first concern has not been an issue. As to FERC's other concern, if any portion of Attachment B is changed (added or subtracted), due process will be essential as will an accompanying explanation for those changes.

Highlight

Although the list of 40 paths has been used virtually unchanged for the last 20 years (2000-2020), nowhere does the record state *why* the 40 paths were selected nor does it state any *criteria* by which the 40 paths were selected. The only certain criteria for selecting the 40 paths in 2000 comes from the Definition section of the RMS in which the paths were defined as those paths "monitored by the Security Coordinator."²⁰

The drafting team does not contend that the list of 40 paths has no basis in reliability. Rather, the drafting team contends even though the list may have met a reliability need in 1999-2000, in the absence of a record or technical evidence, there is no documented support for retaining the list in 2020.²¹ By contrast, as illustrated in the catalog proceedings, there may be new paths that should be added or older paths that should be deleted from Attachment B.

Intent and Purpose

The stated *intent* of the standard was to serve as a vegetation management standard, now supplanted by FAC-003-4 Transmission Vegetation Management.

²⁰ Later versions update the phrase to "Reliability Coordinator."

²¹ During the course of developing the RMS criteria, the identified transfer paths and RAS were organized into the Tables by the WSCC task force. The Tables were posted for, and revised through, public comment. The Tables were also evaluated and revised through field tests during the RMS reliability criteria development process. The resulting tables were later named the "Major WECC Transfer Paths in the Bulk Electric System Table" and the "Major WECC Remedial Action Schemes (RAS) Table."

Posting 1 / Support for Retirement and/or Modification

The historical record indicates FAC-501-WECC-2 was drafted as a vegetation management standard in response to the July and August 1996 Western Interconnection blackouts. The United States Senate record states WECC's "vegetation management program [is] in its Transmission Maintenance and Inspection Plan (TMIP) [FAC-501, Attachment A, wherein the applicable entity] performs vegetation management in accordance with its TMIP; and [keeps] records of its vegetation maintenance activities."²² This position is buttressed by FAC-501-WECC-2's predecessor, PRC-STD-005-1, Transmission Maintenance, WR1, which states the TMIP is specifically to consider "diverse environmental and climatic conditions, terrain, equipment, maintenance philosophies, and design practices."

The stated *purpose* of the standard is to "ensure the Transmission Owner of a transmission path identified in Attachment B, Major WECC Transfer Paths in the Bulk Electric System, including associated facilities has a Transmission Maintenance and Inspection Plan (TMIP); and performs and documents maintenance and inspection activities in accordance with the TMIP."

Standard Overview

FAC-501-WECC-2 Transmission Maintenance applies to Transmission Owners (TO) that maintain one or more of 40 specified transmission paths listed in Attachment B of the standard. Those owner(s) must: 1) *have* a TMIP containing minimum specified information from Attachment A, 2) *update* the TMIP annually, if needed, and 3) *adhere* to the TMIP.

Applicability

FAC-501-WECC-2 applies to the "Transmission Owners that maintain the transmission paths in Attachment B." Attachment B, Major WECC Transfer Paths in the Bulk Electric System, contains a list of 40 specified paths requiring enhanced maintenance. The list of 40 paths comes virtually unchanged from the RMS executed in 2000.

Although the list has been virtually unchanged for 20 years, an in-depth review of the available records shows that at no time has the industry provided any empirical support for why the 40 paths were originally included on the list, what the criteria was for selecting them, or how to get them removed

²² Statement of Louise McCarren, CEO, WECC, Hearing on the Committee of Energy and Natural Resources, United States Senate, One Hundred Eighth Congress, Second Session on the Reliability of the Nation's Electricity Grid, February 24, 2004, page 17-20. (Hearing)Hearing. Q and A, Domenic and McCarren, page 57, question 4. See also FAC-003-4, Transmission Vegetation Management, Section 4, Applicability, 4.2. Transmission Facilities, 4.2.3 referring to the Major WECC Transfer Path in the Bulk Electric System.

Posting 1 / Support for Retirement and/or Modification

from the list.²³ Restated, the applicable Transmission Owners are providing enhanced maintenance on 40 specified paths for which there is no record specifying a need for that maintenance.

Because the Applicability section has no technical support nor historical evidence explaining why the 40 paths were selected, the drafting team is recommending the list be retired. Because the entire standard is predicated on the list, if the list is retired, the entire standard must either be retired or the standard must be redrafted entirely. The structure for the redraft would exclude a static list of paths, facilities, and elements to which the standard would apply. In its place would be a descriptive narrative identifying the criteria by which the applicable facilities would be identified.

Requirement R1—Have a Plan

Requirement R1 states:

R1. Each Transmission Owner shall have a [Transmission Maintenance Inspect Plan] that includes, at a minimum, each of the items listed in Attachment A, Transmission Maintenance and Inspection Plan Content.

At its core, R1 simply requires that a plan exist with a minimum quality threshold. Although Attachment A specifies minimal content, nowhere in the standard is there a requirement for quality or quantity of information; not even a predetermined structure is required. The associated measure requires that the TO have evidence “that it has a TMIP.”²⁴ Restated, R1 requires that a plan exist and be presented if someone asks for it. Even if the quality of the plan produced were superlative, it would neither add nor subtract from the reliability of the grid. Being solely administrative, the requirement can be retired immediately with no impact on reliability.

Arguably, R1 is more than administrative because it requires a baseline of attributes stemming from Attachment A. Although R1 rests on the foundation of Attachment A, Attachment A fails to meet FERC’s minimum requirements of Order 672, as will be shown below.

Requirement R2—Update the Plan

Requirement R2 states:

²³ Per FERC Order 672, P324, reliability standards should be based on actual data, lessons learned, and should be technically supported.

²⁴ As stated by the WSCC’s former CEO in testimony to the United States Senate, the primary purpose of the TMIP is vegetation management. Statement of Louise McCarren, CEO, WECC, Hearing on the Committee of Energy and Natural Resources, United States Senate, One Hundred Eighth Congress, Second Session on the Reliability of the Nation’s Electricity Grid, February 24, 2004, page 17-20. (Hearing) Hearing. Q and A, Domenic and McCarren, page 57, question 4.



Posting 1 / Support for Retirement and/or Modification

R2. Each Transmission Owner shall annually update its TMIP to reflect all changes to its TMIP.

The drafting team concurs that having a sound plan is preferential to having no plan at all. Further, the drafting team agrees that keeping that plan updated is preferential to administering a plan based on outdated information. However, the requirement simply states the plan should be updated annually to reflect all changes. R2 does not require any changes; it only requires an update “if” changes are made. Since the measure for the requirement allows simple attestation that “nothing happened,” any requirement to update has negligible impact on reliability, if any at all.

What R2 actually requires is a review of the plan with no mandate to make changes. The lack of criticality ascribed to Requirement R2 may be evidenced in its Violation Severity Level (VSL). An entity can fail to update its plan for *a full three years* before the severity of that violation is deemed “severe.”

At the extremes of the argument, if the plan were reviewed and its template, font, and color palette were “updated” but no substantive changes were added, arguably the TO would meet the letter of the requirement. The associated measure further illustrates the null set created by the requirement in that, where no change is made at all, an attestation to that effect serves as compliance. Simply stating “we looked at the plan and made no changes” neither adds nor detracts from the reliability of the grid. The requirement is solely administrative in nature and can therefore be retired immediately without impact to the grid.

Requirement R3—Stick to the Plan

Requirement R3 states:

R3. Each Transmission Owner shall adhere to its TMIP.

Like Requirement R1 and R2, Requirement R3 can be retired immediately without impact to reliability. If the applicable entity makes a plan (R1 - TMIP) setting the lowest common denominator in the industry, then reviews the plan annually making no change or even lowering its entity-specific requirements (R2), the applicable entity arguably met the requirements without adding any reliability to the grid.

To recap, R1 says “have a plan” without specifying a quality threshold, R2 says “review the plan” (but does not add a corrective mandate), then adhere to the plan (R3)—no matter how good or bad the plan is. Because R1 and R2 are administrative, and because R3 requires compliance with ANY TMIP meeting the minimums listed in Attachment A, no matter how high or low the performance threshold, the end result is a standard that is administrative, ambiguous, and allows for adoption of the lowest common denominator in conflict with FERC’s Order 672. As such, the standard can be retired without negative impact to the grid.



Attachment A—TMIP Criteria

FAC-501-WECC-2, Transmission Maintenance, Attachment A, Transmission Maintenance and Inspection Plan Content lists the contents required for the TMIP mandated in Requirement R1.

There are five attributes required for inclusion:

1. A Facilities list
2. Maintenance methodology
3. Periodicity
4. Transmission Line Maintenance
5. Station Maintenance

Vegetation Management

To the extent that any portion of Attachment A addresses vegetation management, FAC-003-4, Vegetation Management more precisely addresses that need rendering those portions less stringent than the NERC counterpart.²⁵

Senate Testimony—The TMIP is for Vegetation Management

In testimony to the United States Senate, Ms. Louise McCarren, then the CEO for WECC's predecessor, specifically states that the TMIP (now resident in FAC-501-WECC-2) *was designed to address vegetation management*.²⁶

The intent of the TMIP is clarified by Ms. Louise McCarren, then WECC's CEO, in the following exchange:

[Senator] Domenici: "Please describe your vegetation management program and do you believe it can serve as a nationwide model?"

²⁵ FAC-003-4 – designated to address vegetation management - Requirement R7 does not just say "stick to the plan," rather, the vegetation management standard requires the applicable entities to "complete 100% of its annual vegetation work plan..." Further, FAC-003-4, Requirement R3's call for documentation is not merely measured by presentation of a document. Rather, the Measure for FAC-003-4, Requirement R3 requires that the documented strategies, procedures, or processes actually "demonstrate" that the strategies work. As such, the documentation called for in FAC-501-WECC-2 is covered in FAC-003-4; the language of FAC-003-4 sets a higher standard. Thus, FAC-501-WECC-2 Requirement R3 could be retired without impact to reliability.

²⁶ Statement of Louise McCarren, CEO, WECC, Hearing on the Committee of Energy and Natural Resources, United States Senate, One Hundred Eighth Congress, Second Session on the Reliability of the Nation's Electricity Grid, February 24, 2004, page 17-20. (Hearing)Hearing. Q and A, Domenic and McCarren, page 57, question 4. See also FAC-003-4, Transmission Vegetation Management, Section 4, Applicability, 4.2. Transmission Facilities, 4.2.3 referring to the Major WECC Transfer Path in the Bulk Electric System.

Posting 1 / Support for Retirement and/or Modification

McCarren: “WECC has three different processes in place to monitor an organization’s vegetation management program. [One of those processes is]:

4.1.1. Annual certification through the RMS that owners of transmission facilities are performing vegetation management for the 40 major transmission paths (transmission paths which are identified [in FAC-501-WECC-2, Attachment B]. Each path owner(s) certifies that:

- It has a vegetation management program in its Transmission Maintenance and Inspection Plan (TMIP);
- It performs vegetation management in accordance with its TMIP; and
- It has records of its vegetation maintenance activities.”

Because the RMS and FAC-501-WECC-2 predates FAC-003-3 and 4 by many years, it is not surprising that vegetation management was subsumed into FAC-003-4 in much greater detail than the WECC regional standards.

Transmission Maintenance

One concern with retirement of Attachment A is that it represents the only standard, regional or otherwise, that addresses transmission maintenance. Though transmission maintenance is, indeed, discussed in Attachment A, the language of R1 combined with Attachment A is so amorphous as to allow creation of a TMIP where nothing is actually mandated. By default, that is the definition of the lowest common denominator prohibited by FERC in Order 672.

For example, R1 says have a TMIP that includes everything in Attachment A.

To illustrate the potential for lowest common denominator, the TMIP would identify those facilities already identified in the WECC Path Rating Catalog, Description section of the path. As such, no new information is created under that section of Attachment A. At the lowest common denominator, the TMIP could be read as follows:

TMIP at the Lowest Common Denominator

Once a year (Periodicity), we drive by (Transmission Line Maintenance—Patrol Requirement) the conductor (Facility) and visually check it (Inspection Requirement), making sure the wooden poles that support it are still upright (Tower and wood pole structure management) and the conductor is still carrying electricity (Performance-based). We do the same for station maintenance plus (Station Maintenance) we write a description of what we *should* do (Station/Equipment Maintenance). It *should* be noted that we draft what *should* be done—not what we will do.

The drafting team does not contend that any responsible entity would create such a TMIP. The drafting team contends that Attachment A is sufficiently wanting, overly broad, and ambiguous, such that a creative entity could easily adopt a substandard TMIP adding nothing to reliability. As such, it violates FERC mandate to avoid such an approach and should therefore be retired.



Section 1 is purely administrative

FAC-501-WECC-2, Attachment A, Section 1 calls for the creation of a “list of Facilities” comprising the paths listed in Attachment B. Regardless of the detail contained in the list, it is nonetheless a requirement to create a list. Because it is a call to create a list, and because the list is purely administrative in nature, creating the list neither adds nor detracts from the reliability of the grid and can be retired immediately from FAC-501-WECC-2 without impact on reliability.

Sections 2, 4, and 5 are purely administrative

Sections 2, 4, and 5 call for the creation of a “description” of maintenance practices. The practice must be either: performance-based, time-based, or condition-based.

These requirements are purely administrative. Regardless of the quality or precision of the description, Sections 2, 4, and 5 are nonetheless a requirement to create a writing, none of which contains a measure of quality. All of which are open to setting the performance bar at the lowest common denominator. Because Sections 2, 4, and 5 are a call to administration and not to operation, creating these descriptions neither adds nor detracts from the reliability of the grid and can be retired immediately without impact on reliability.

Section 3 is purely administrative

Attachment A, Section 3 simply requires a statement as to how often maintenance will be done “or” under what circumstances maintenance will be done. It does not require both. As to periodicity, at the extreme of the argument, Section 3 allows an entity to establish a maintenance schedule of every 10 years for equipment recommended for replacement each five years. Section 3 only calls for a description of the periodicity. As to circumstances, Section 3 allows an entity to describe its maintenance practice as occurring only after an element fails, or only after stake/stockholders approve, or only when the sun rises in the west. By doing so, the entity has “described” the periodicity and/or the circumstance triggering the maintenance—even if that decision is blatantly outside the industry standards. As such, Section 3 adds no direct reliability to the grid; inversely, its loose language could be used to degrade reliability while remaining within the strict letter of the law. As such, Attachment A, Section 3 only calls for a description, adds no reliability to the grid, and should therefore be retired.

Attachment B—The 40 Paths

At the threshold, if Attachment B is retained “as is” it will continue a 20-year-long practice of requiring enhanced maintenance of 40 paths without offering any record or reason as to why that maintenance is required. Restated, requiring additional maintenance on these 40 paths is an arbitrary application of a standard, perpetuated by a 20-year-old practice for which there is no longer any supporting record. As

Posting 1 / Support for Retirement and/or Modification

a result, the industry is subject to a more stringent standard, the justification for which can no longer be discerned.

As part of its due diligence and in the dearth of a 20-year-old record, the drafting team reviewed the 40 paths seeking out a thread of commonality. None was found.

The only certainty discovered is that in 2000 when the list was created, the listed paths:

- Were not all supported by Remedial Actions Schemes;
- Were not all listed as having an impact on the 1996 blackouts;
- Were not all of a specified defined type of path (“Existing/Accepted or Other” derived from the WECC Path Rating Catalog);
- Were not all similarly constructed;
- Were not all listed in WECC’s Path Rating Catalog;
- Were not all operated at the same voltage; nor
- Did all cross over a Control Area (2000) boundary / Balancing Authority boundary.

What the drafting team does know for certain is that the list of 40 paths has been static for 20 years and was a defined term in the RMS (executed in 2000), Definition for Table 2 (that would later change to Table 4). The only commonality in that definition was that each path was monitored by the “Security Coordinator” (2000) / AKA: Reliability Coordinator (2020). Beyond the fact that the 40 paths were monitored in 2000, the drafting team found no other commonality and no other documented reason for performing additional maintenance on the stated 40 paths. As such, requiring additional maintenance on the 40 paths is arbitrary in 2020.

The 40 paths have not changed in 20 years

Of the 40 paths included in the final RMS Table 4 (2000) and the 40 paths included in the FAC-501-WECC-2, Attachment B, there are ostensibly three paths that are different: Path 53 and Path 80, and Path 41.

As to Path 53 and Path 80, although Path 53 was delisted from the RMS Table 4, the path’s operations are still addressed in FAC-501-WECC-2, Attachment B. Path 53’s operations were subsumed into those of Path 80, circa 2007-2008. Therefore, with Path 80 resident in FAC Attachment B, operationally there has been no change in the Major Paths table since the 2000 RMS.

As to Path 41, even though it was delisted from the RMS in 2000, operationally it is still represented in the Major Path table. Like Path 53, Path 41’s operational impact was subsumed elsewhere. As seen in the 2020 WECC Path Rating Catalog, Path 41 is a subset of the lines connecting Path 40, COI/PDCI to the LADWP and SCE systems. As such, even though Path 41 did not explicitly migrate from RMS 2000 to FAC-501-WECC-2, it is still operationally represented in FAC-501-WECC-2.



Posting 1 / Support for Retirement and/or Modification

As a result, all paths represented in the RMS Table 4 as executed in 2000 are operationally present in FAC-501-WECC-2, Attachment B. There has been no substantive change to the Major Paths table in 20 years.²⁷

Thus, the Attachment B now embedded in FAC-501-WECC-2 was operationally resident in the RMS on June 7, 2000—seven years before it migrated into a NERC Reliability Standard.^{28 29}

Finally, any standard relying on the 40 paths is predicated on a 20-year-old static list for which the establishing criteria has been lost to the ages. If retirement is not approved, the result is a more stringent Regional Reliability Standard that lacks a documented foundation.

Recommendations

Because each aspect of FAC-501-WECC-2, Transmission Maintenance is either administrative, ambiguous, allows for the lowest common denominator, or arbitrary in its application, FAC-501-WECC-2 neither adds nor detracts from the reliability of the grid.³⁰

FAC-501-WECC-2, Requirements R1 and R2 are purely administrative: (R1) have a plan and (R2) update the plan. Having a plan, regardless of its characteristics, neither adds to nor subtracts from the

²⁷ The drafting team speculates that since there are many lines to take the power from the Path 40 PDCL, the function of Path 41 may be largely administrative metering how much of the power flowing on Path 40 would flow to or come from SCE.

²⁸ Within the RMS, the FAC Attachment B is referred to as Table 1, Existing WSCC Transfer Paths (BTP) (Revised Table 1 - June 7, 2000), later updated as Table 4 in the 2000 RMS. Whereas the 2000 RMS Table 4 has 41 paths, the current FAC Attachment lists 40 paths. Path 53, "Billings-Yellowtail" (which consisted of the lines between Billings and Yellowtail) was replaced in 2006 or 2007 by Path 80, "Montana Southeast" (which consists of the lines between Billings-Yellowtail and between Huntly Tap-Hardin). Thus, there has been no substantive change to the Attachment B since June 7, 2000.

²⁹ Final changes to the Attachment B/Table list were made as part of the RMS Phase Two review. "Additions to Table 1 are Path 41—Sylmar LDWP to Sylmar SCE, Path 55—Brownlee East, Path 61 Lugo—Victorville 500 kV, and Path 76 - Alturas. Reference to TOT 2 was removed from Table 1 since TOT 2A, TOT 2B, and TOT 2C are included and cover the entire path. CPTF reviewed Table 3 to ensure that all RAS were included that could potentially affect one of the major transmission paths or the RAS failure has the potential to result in cascading. Additions to Table 3 are Path 30—TOTIA, Path 31—TOT2A, Path 34 TOT2B, Path 39—TOTS, Path 16—Idaho—Sierra, Path 45—SDGE—CFE, Meridian 500/230 kV transformers, and SDGE RAS. A revised list of transmission paths and RAS are included in Tables 4 and 5 (see pages 35 and 36)." WSCC Analysis of RMS Phase 2 Evaluation Period, September 1998 through February 2000, page 6.

³⁰ Contrary to Order 672, P325, the standard is ambiguous and allows for adoption of the lowest common denominator, P329. Further, the NERC Standards Efficiency Review (SER) did not evaluate regional standards. In keeping with the NERC SER evaluation, the drafting team identified all three requirements as non-essential for reliability and therefore candidates for retirement.

Posting 1 / Support for Retirement and/or Modification

reliability of the grid. Even if the value of R1 relies on the “detail” of Attachment A, the language there is so amorphous as to allow creation of a TMIP that brings little to no value to reliability, and, if manipulated, could degrade reliability. As such, these administrative requirements can be retired.

FAC-501-WECC-2, Requirement R3 is dependent on the underpinning of R1 and R2, which in turn, are dependent on Attachments A and B. If R1 and R2 are retired are administrative, Attachment A is retired by default as it is no longer attached to a requirement. Similarly, if Attachment B is retired, the entire standard fails because it predicated on enhanced maintenance on 40 paths in a 20-year old list. R3 becomes null and should be retired.

Further, because that which constitutes performance of R3 is not clear, the requirement lacks the clarity required by the Commission in Order 672.³¹ Finally, because the applicable entity can set the bar as low as desired (adopting the lowest common denominator set out in Attachment A), the requirement fails to meet FERC’s Order 672 requirement to avoid inclusion of the lowest common denominator.³²

³¹ Proposed Reliability Standards must be clear and unambiguous as to what is required and who is required to comply. The proposed Reliability Standard should be clear and unambiguous regarding what is required and who is required to comply. Users, owners, and operators of the Bulk-Power System must know what they are required to do to maintain reliability. Order No. 672 at P 325.

³² Proposed Reliability Standards cannot be “lowest common denominator,” i.e., cannot reflect a compromise that does not adequately protect bulk power system reliability.

The proposed Reliability Standard must not simply reflect a compromise in the ERO’s Reliability Standard development process based on the least effective North American practice—the so-called “lowest common denominator”—if such practice does not adequately protect Bulk-Power System reliability. Although the Commission will give due weight to the technical expertise of the ERO, we will not hesitate to remand a proposed Reliability Standard if we are convinced it is not adequate to protect reliability. Order No. 672 at P 329.

Posting 1 Review

The drafting team is suggesting retirement of all or portions of FAC-501-WECC-2. The drafting team acknowledges that there are alternatives to full retirement. Of specific concern, if FAC-501-WECC-2, Attachment B is retired and the industry concurs that there are specific transmission assets in need of enhanced transmission maintenance, the static list would have to be replaced with an established criteria identifying those specific assets. This option is supported in FERC Order 751.

In light of the first-blush analysis, the drafting team is seeking further guidance from the industry to determine the team's next steps. Your detailed responses to the following questions would be greatly appreciated as the team determines its next steps:

- 1) The drafting team suggests that Requirement R1 (the entity must have a TMIP) is administrative in nature and can therefore be retired. Do you agree? If you disagree, please explain your answer.
- 2) The drafting team suggests that Requirement R2 (the entity must annually review the plan) is administrative in nature and can therefore be retired. Do you agree? If you disagree, please explain your answer.
- 3) The drafting team suggests that Requirement R3 (the entity must adhere to the TMIP) is administrative in nature and can therefore be retired. Do you agree? If you disagree, please explain your answer.
- 4) If the entire standard is retired, do you believe that retirement will create a reliability gap? If your answer is "yes", please: 1) identify and explain the specific reliability gap, and 2) provide a suggested remedy.
- 5) The drafting team suggests that some of the requirements of FAC-501-WECC-2 may be covered in other standards.
 - a. If you believe that the reliability related substance of FAC-501-WECC-2 is addressed in another NERC Standard, please identify the standard number and associated requirement.
 - b. If you believe there are portions of FAC-501-WECC-2 that are only addressed in that standard and therefore must be retained, please identify those specific aspects and their location in the standard.
- 6) FAC-501-WECC-2, Attachment B is a static list of paths created in 2000. There is no known documentation explaining how the list was created or why the listed paths were included. Is Attachment B still relevant for identifying those assets in need of enhanced maintenance? If your answer is "no," please describe the appropriate criteria for making that identification.
- 7) Do you believe the 40 paths listed in Attachment B are all *critical* to the reliability of the Western Interconnection? Please explain your answer.



Posting 1 / Support for Retirement and/or Modification

- 8) The list of 40 paths in FAC-501-WECC-2, Attachment B was created between 1998 and 2000, predating mandatory standards by several years. The records identifying the specific *criteria* used to identify the 40 paths could not be located.
 - a. Does your firm have any documentation specifying the *criteria* used to select the 40 paths? If yes, please provide the drafting team with that documentation.
- 9) FAC-501-WECC-2, Attachment B is also incorporated by reference in: 1) FAC-003-4 Transmission Vegetation Management, Section 4.2.3., 2) PRC-004-WECC-2 Protection System and Remedial Action Scheme Misoperation (to be retired January 1, 2021), and 3) PRC-023-4 Transmission Relay Loadability, Attachment B, Criteria B1, where that standard colloquially refers to the “major transfer path within the Western Interconnection” without directly referencing the WECC Major Transfer Paths in the Bulk Electric System and without further description. If Attachment B is retired, please identify any actions required in the aforementioned standards.
- 10) The drafting team invites comment on other areas of the project not specifically addressed above.