# Introduction

The North American Electric Reliability Corporation (NERC) is responsible for ensuring that the Reliability Standards, Violation Risk Factors (VRF), Violation Severity Levels (VSL), definitions, Variances, and Interpretations developed by drafting teams are developed in accordance with NERC processes. These standards must also meet NERC’s benchmarks for Reliability Standards, as well as criteria for governmental approval.

In Federal Energy Regulatory Commission (FERC) Order No. 672,[[1]](#footnote-1) FERC identified criteria that it will use to analyze proposed Reliability Standards for approval to ensure they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. The discussion below identifies these factors, and explains how the proposed Reliability Standard meets or exceeds the criteria.

For purposes of this filing, the use of the terms Reliability Standard and Standard are synonymous with Regional Reliability Standard, unless otherwise specified.

# Designed for a Specific Goal

**Proposed Reliability Standards must be designed to achieve a specified reliability goal.**

The proposed Reliability Standard must address a reliability concern that falls within the requirements of Section 215 of the Federal Power Act. That is, it must provide for the reliable operation of Bulk-Power System facilities. It may not extend beyond reliable operation of such facilities or apply to other facilities. Such facilities include all those necessary for operating an interconnected electric energy transmission network, or any portion of that network, including control systems. The proposed Reliability Standard may apply to any design of planned additions or modifications of such facilities that is necessary to provide for reliable operation. It may also apply to cybersecurity protection. Order No. 672 at P 321.

Further, NERC Reliability Standards are based on certain reliability principles that define the foundation of reliability for North American bulk power systems. Each Reliability Standard shall enable or support one or more of the reliability principles, thereby ensuring that each standard serves a purpose in support of reliability of the North American bulk power systems. Each Reliability Standard shall also be consistent with all of the reliability principles, thereby ensuring that no standard undermines reliability through an unintended consequence.

This project updates FAC-501-WECC-2, Transmission Maintenance (creating Version 4), and creates the Table Revision Process (Process). These two documents apply to facilities on the Bulk Electric System. The two documents work in tandem.

***Purpose and Reliability Principles: FAC-501-WECC-4 and the Table Revision Process***

*FAC-501-WECC-4, Transmission Maintenance*

Because the two documents work in tandem, both documents support the same NERC Reliability Principle. Of the eight NERC Reliability Principles, this Standard and the supporting Process address Reliability Principle 1, which states:

“Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.”

The Purpose of FAC-501-WECC-4, Transmission Maintenance is:

“To ensure the Transmission Owner of a path identified in the Table Revision Process, Attachment A, Major WECC Transfer Paths in the Bulk Electric System (Table), has a Transmission Maintenance and Inspection Plan (TMIP) for those paths, annually updates its TMIP, and adheres to the TMIP.”

The Purpose of the Process is:

“…to: a) create the process whereby the content of the Table can be revised outside of the WECC Reliability Standards Development Procedures (Procedures), and b) create the sole source listing of the Table’s content for all documents in which the Table is referenced.”

*Table Revision Process (Process)*

Unlike NERC, the WECC Reliability Standards Development Procedures (Procedures) do not have a separate procedure for approving supporting technical documents.[[2]](#footnote-2) Instead, the proposed Process has undergone full vetting using the Procedures at the same level of due process and scrutiny required to draft a Standard.

*The Table Revision Process is not a Standard.*

The same format used for Reliability Standards was chosen for the Process because of its familiarity to the industry. Using the same format facilitated the comment/response process.

The Process is **NOT A STANDARD** and is **NOT INTENDED FOR ENFORCEMENT** by any compliance entity. Rather, in its supporting role, the Process streamlines modification of the list of paths contained in the Process, Attachment A, Major WECC Transfer Paths in the Bulk Electric System (Table).

*The Table Revision Process is not for Enforcement.*

Because the Process is not intended for enforcement by a compliance entity, its content does not suggest or represent an approach to compliance with a Standard. Rather, the Process is – a process.

Though the tasks in the Process are stated as a “shall,” implementation of the proposed Process falls to the WECC Board of Directors (Board), as opposed to a compliance entity.

Failure to perform a task stated in the Process would not result in monetary sanctions. Rather, failure to perform simply places the petitioner in the position of having its request denied by the Board, and potentially having to start the request process anew.

For clarity, although the Process is not for enforcement, this does not impact the enforceability of any document in which the Table’s paths are listed. For example, FAC-501-WECC-4 would remain enforceable as a Standard; the Process would not be enforceable because the Process is not a Standard. The Process is a process.

*The Process “received adequate stakeholder review to assess its technical adequacy.”[[3]](#footnote-3)*

Because the Procedures do not include a bespoke means for approving associated documents, the Procedures were used to develop the Process, just as if it were a Standard.

Within the Procedures, both documents were balloted twice—once in response to Standard Authorization Request (SAR) WECC-0141, and again in response to SAR WECC-0149. Ballots conducted in both forums received a 100% affirmative vote. All documents were approved by the Board.

# Technically Sound

**Proposed Reliability Standards must contain a technically sound method to achieve the goal.**

The proposed Reliability Standard must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve this goal. Although any person may propose a topic for a Reliability Standard to the Electric Reliability Organization (ERO), in the ERO’s process, the specific proposed Reliability Standard should be developed initially by persons within the electric power industry and community with a high level of technical expertise and be based on sound technical and engineering criteria. It should be based on actual data and lessons learned from past operating incidents, where appropriate. The process for ERO approval of a proposed Reliability Standard should be fair and open to all interested persons. Order No. 672 at P 324.

## Standard Development

The initial WECC-0141 SAR was filed by Arizona Public Service (APS) in its role as Subject Matter Expert (SME) and path owner of multiple paths listed in FAC-501-WECC-2, Transmission Maintenance. WECC-0141 resulted in creation of Version 3, augmented by WECC-0149 that created Version 4. The two projects were balloted separately; both receiving a 100% affirmative ballot and separate approval from the Board.

FAC-501-WECC-2 represents the as-approved Standard.

FAC-501-WECC-3 modified the Standard but was superseded by Version 4; thus, the nomenclature jump from Version 2 to Version 4.

FAC-501-WECC-4 is the proposed nomenclature for the final Standard.

FAC-501-WECC-4 and the associated Process were developed using the Procedures as last approved by FERC in September 2021.[[4]](#footnote-4)

Per the Procedures, SMEs (biographies included with this filing) developed the proposed Standard and proposed Process, during publicly noticed drafting team meetings open to the public.

The development process included repeated public iterative comment/response cycles during which comments were received. Responses to those comments were provided by the drafting team and posted for public review.

Per the Procedures, a WECC Standards Briefing was conducted prior to opening a separate ballot for each of the projects (WECC-0141 and WECC-0149). No substantive concerns were raised during those briefings. Both projects received a 100% affirmative ballot.

After being affirmatively balloted, both projects were approved by the WECC Standards Committee and the Board for NERC/FERC disposition.

NERC posted the projects for a 45-day comment period. There were no requests for Substantive change received during either posting.

## Technically Sound

There is no additional technical justification offered in support of the Requirements and/or Measures because those components are offered essentially unchanged, and already have FERC approval. By contrast, this project does offer insights into the historic and contemporaneous inclusion of the paths listed in and offered for removal from the Table.

*Historically*

As pointed out in the proposed Standard’s Background section:

“The paths listed in the Table did not change between 2000 and 2020. Neither the (Reliability Management System, circa 1990s) RMS nor the filings of PRC-STD-005-1, FAC-501-WECC-1 or 2 explain *why* the specific paths were added to the Table, except that the RMS defines those paths as being monitored by the “Security Coordinator.”

To the extent that the list of impacted paths must be “Technically Sound,” that list has never been technically supported. As a result, the applicable entities are providing maintenance required by FAC-501-WECC-X on paths for which there is no technical support dictating the need.

The list is a holdover predating the implementation of mandatory Standards (circa 1995). It is believed that the list is a simple representation of paths that were previously monitored by the “Security Coordinator”—a predecessor of today’s Reliability Coordinator.

By approving the Process, the industry is provided a means to modify the list, based on contemporary technical support, in a streamlined environment.

*Contemporaneously*

If approved, four paths would be removed from the Table.

The removal of these paths was supported by APS and the Bonneville Power Administration (BPA) in the form of repeated public presentations to multiple technical committees at WECC, supported by comment / response iterations at the committee level plus those required per the Procedures. These presentations were augmented by public discussions occurring during multiple drafting team meetings, supported by technical studies posted to various WECC websites. The bulk of these studies and presentations are posted to the WECC-0149 Home Page, on the NERC Filings accordion.[[5]](#footnote-5) These presentations and studies were shared directly with WECC and FERC during the development process.

During the development of WECC-0141 and WECC-0149, there were no concerns raised regarding the technical support offered for removing the four paths from the Table.

As to the technical support in favor of adding two new allowable maintenance methods (see the TMIP), the newly proposed Risk-based method is based on proactive maintenance triggered by predictive modeling.[[6]](#footnote-6) Requirements needed to apply the Original Equipment Manufacturer method can be provided by the original manufacturer.[[7]](#footnote-7)

# Applicability

**Proposed Reliability Standards must be applicable to users, owners, and operators of the bulk power system, and not others.**

The proposed Reliability Standard may impose a requirement on any user, owner, or operator of such facilities, but not on others. Order No. 672 at P 322.

As proposed, the Purpose, Applicability, and Facilities sections of FAC-501-WECC-4 read as follows:

**3. Purpose:** To ensure the Transmission Owner of a path identified in the *Table Revision Process*, Attachment A, Major WECC Transfer Paths in the Bulk Electric System (Table), has a Transmission Maintenance and Inspection Plan (TMIP) for those paths, annually updates its TMIP, and adheres to the TMIP. (Emphasis added.)

## 4. Applicability

4.1 Transmission Owners maintaining paths listed on the Table.

**5. Facilities**

5.1 Bulk Electric System Facilities, Elements, Transmission Lines, and other equipment as listed on *Attachment A Transmission Maintenance and Inspection Plan (TMIP) Content*, comprising the named paths on the Table. (Emphasis added.)

For clarity, it should be noted that the Purpose refers to Attachment A of the proposed *Process*, whereas the Facilities sections refers to Attachment A of the *Standard*. As noted, these are two separate documents.

The proposed applicability section for the Process is as follows:

**4. Applicability**

**4.1.** Transmission Owner(s), Transmission Operator(s), and Reliability Coordinator(s), operating in the Western Interconnection (AKA: Requesting Entity[[8]](#footnote-8))

# Clear and Unambiguous

**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.

(See Technically Sound and Applicability sections above.)

# Understandable Consequence

**Proposed Reliability Standards must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.**

The possible consequences, including range of possible penalties, for violating a proposed Reliability Standard should be clear and understandable by those who must comply. Order No. 672 at P 326.

This filing does not require changes to either the Violation Risk Factors (VRF) or the Violation Severity Levels (VSL).

# Measurability for Compliance

**Proposed Reliability Standards must identify a clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner.**

There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner. Order No. 672 at P 327.

As to the proposed Standard, the filing does not substantively change the Measures.

As to the proposed Process, it should be reiterated that the document is not intended to be enforced by a Compliance Enforcement Entity nor are monetary fines proposed for those not in adherence to the prescribed process.

The Process is just that—a process.

Whereas the Board would administer the Process to include changes to the Table, FERC would administer any changes to the Process itself.

# Effective and Efficient

**Proposed Reliability Standards should achieve a reliability goal effectively and efficiently - but does not necessarily have to reflect “best practices” without regard to implementation cost.**

The proposed Reliability Standard does not necessarily have to reflect the optimal method, or “best practice,” for achieving its reliability goal without regard to implementation cost or historical regional infrastructure design. It should however achieve its reliability goal effectively and efficiently. Order No. 672 at P 328.

During the six postings of WECC-0141, the two postings for WECC-0149, and the two 45-day postings at NERC, no concerns were raised regarding implementation costs. That said, applying the specified maintenance programs of FAC-501-WECC-4 to those paths listed in the Table means that the path’s owner is incurring a cost to maintain the paths: 1) for which there is no known technical support or residual record explaining “why” the maintenance is required, or 2) “why” the paths were originally identified. The path list is an unsupported legacy predating mandatory Standards.

Please see the Background section of the proposed Standard.

# Lowest Common Denominator

**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.

This filing does not change the previously approved reliability tasks.

# Costs

**Proposed Reliability Standards may consider costs to implement for smaller entities but not at consequence of less than excellence in operating system reliability.**

A proposed Reliability Standard may take into account the size of the entity that must comply with the Reliability Standard and the cost to those entities of implementing the proposed Reliability Standard. However, the ERO should not propose a “lowest common denominator” Reliability Standard that would achieve less than excellence in operating system reliability solely to protect against reasonable expenses for supporting this vital national infrastructure. For example, a small owner or operator of the Bulk-Power System must bear the cost of complying with each Reliability Standard that applies to it. Order No. 672 at P 330.

# During the six postings of WECC-0141, the two postings for WECC-0149, and the two 45-day postings at NERC, no concerns were raised regarding implementation costs.

# Continent-wide and Regional Variations

**Proposed Reliability Standards must be designed to apply throughout North America to the maximum extent achievable with a single reliability standard while not favoring one area or approach.**

A proposed Reliability Standard should be designed to apply throughout the interconnected North American Bulk-Power System, to the maximum extent this is achievable with a single Reliability Standard. The proposed Reliability Standard should not be based on a single geographic or regional model but should take into account geographic variations in grid characteristics, terrain, weather, and other such factors; it should also take into account regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard. Order No. 672 at P 331.

In the Order 740 Remand at P4, the Commission states that:

“Reliability Standards that the ERO proposes to the Commission may include Reliability Standards that are proposed to the ERO by a Regional Entity… When the ERO reviews a regional Reliability Standard that would be applicable on an interconnection-wide basis and that has been proposed by a Regional Entity organized on an interconnection-wide basis, the ERO must rebuttably presume that the regional Reliability Standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest. In turn, the Commission must give “due weight” to the technical expertise of the ERO and of a Regional Entity organized on an interconnection-wide basis.”

Further, regional entities may propose Regional Reliability Standards that set more stringent reliability requirements than the NERC Reliability Standard or cover matters not covered by an existing NERC Reliability Standard. NERC Rules of Procedure, Section 312, Regional Reliability Standards.

The proposed Standard addresses transmission maintenance in the Western Interconnection. There are no continent-wide Standards specific to transmission maintenance.

As for the Requirements/Measures, the Commission has already approved the reliability tasks in previous versions of the Standard.

# No Undue Negative Effect

**Proposed reliability standards should cause no undue negative effect on competition or restriction of the grid.**

As directed by section 215 of the FPA, the Commission itself will give special attention to the effect of a proposed Reliability Standard on competition. The ERO should attempt to develop a proposed Reliability Standard that has no undue negative effect on competition. Among other possible considerations, a proposed Reliability Standard should not unreasonably restrict available transmission capability on the Bulk-Power System beyond any restriction necessary for reliability and should not limit use of the Bulk-Power System in an unduly preferential manner. It should not create an undue advantage for one competitor over another. Order No. 672 at P 332.

The assigned drafting team does not foresee any negative impacts on competition resulting from either the proposed Standard or the associated Process.

During the development phase of this project, the industry raised no concerns regarding competition or restrictive use of the grid.

Outside of the Procedures, one entity raised concerns with WECC staff that the time burden imposed by the Standard and/or the Table Revision Process may take time away from other reliability-related tasks. The reporting entity provided no evidence in support of its claim.

Whereas the proposed Requirements are not Substantially different from those already approved, and whereas the procedural tasks described in the Process are a memorialization of existing processes, the drafting team suggests that any change in burden would be de minimis.

# Implementation of New Requirements (Effective Date)

**The implementation time for the proposed Reliability Standards must be reasonable.**

In considering whether a proposed Reliability Standard is just and reasonable, the Commission will consider also the timetable for implementation of the new requirements, including how the proposal balances any urgency in the need to implement it against the reasonableness of the time allowed for those who must comply to develop the necessary procedures, software, facilities, staffing or other relevant capability. Order No. 672 at P 333.

**Proposed Effective Date and Justification**

The proposed effective date is “[t]he first day of the second quarter following regulatory approval of FAC-501-WECC-4, Transmission Maintenance *plus* approval of the Table Revision Process.” (Emphasis added.)

The proposed Standard creates no new Requirements; thus, no new burden.

To the extent the proposed Process memorializes existing processes, no new burden is created. To the extent the proposed Process creates any new burden, that burden is outweighed by the standardization of the process, the prescribed inclusion of specific reliability-related information, and the added benefit of an expedited process for changes to the Table.

# Fair and Open Process

**The Reliability Standard development process must be open and fair.**

Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about whether the ERO implemented its Commission-approved Reliability Standard development process for the development of the particular proposed Reliability Standard in a proper manner, especially whether the process was open and fair. However, we caution that we will not be sympathetic to arguments by interested parties that choose, for whatever reason, not to participate in the ERO’s Reliability Standard development process if it is conducted in good faith in accordance with the procedures approved by the Commission. Order No. 672 at P 334.

WECC followed the WECC Reliability Standards Development Procedures (Procedures) approved by FERC in effect at the time of each step in the process.

In accordance with the Procedures, all drafting team meetings are open to the public.

All drafting team meetings were announced via the WECC Standards Email List for the period prescribed in the Procedures. Notice of the meetings was provided to NERC and posted on the WECC Calendar.

All meetings were supported by a telephone conference bridge associated with an online internet visual capability allowing all participants to see the document(s) as they were being developed. Further, this team held an open-mic Standards Briefing before balloting, which afforded the industry an additional opportunity to have its questions addressed.

WECC-0141 was posted six times for public comment. WECC-0149 was posted twice for public comment. At NERC, the two projects were each posted for a 45-day review of procedure.

Comments and the associated responses are currently posted on the WECC website, on the WECC-0141 and WECC-0149 project pages, under the Submit and Review Comments accordion. Responses to Comments received were provided with this filing.

# Balanced with Other Vital Interests

**Proposed Reliability Standards must balance with other vital public interests.**

Finally, we understand that at times development of a proposed Reliability Standard may require that a particular reliability goal must be balanced against other vital public interests, such as environmental, social and other goals. We expect the ERO to explain any such balancing in its application for approval of a proposed Reliability Standard. Order No. 672 at P 335.

WECC is not aware of any other vital public interests. No such balancing concerns were raised or noted.

# Consideration of Other Facts

**Proposed Reliability Standards must consider any other relevant factors.**

In considering whether a proposed Reliability Standard is just and reasonable, [FERC] will consider [several] general factors, as well as other factors that are appropriate for the particular Reliability Standard proposed. Order No. 672 at P 323.

As mentioned above, research could not unearth any technical support for including any of the paths in the Standard. As such, the transmission maintenance specified in the as-approved Standard results in maintenance costs for which there is no known technical support. At minimum, when arguing for path delisting, this presents the applicable entity with the dilemma of arguing against a position for which there is no certain premise, other than that the paths were monitored by the Security Coordinator. Further, without any original technical support to explain why the list is included, the utility is faced with complying with the Standard, incurring costs, then passing those costs on to consumers—without technical support for the costs in incurred.

1. [FERC Order 672](http://www.nerc.com/files/final_rule_reliability_Order_672.pdf) [↑](#footnote-ref-1)
2. Manual, Section 11.0: Process for Posting Supporting Technical Documents Alongside an Approved Reliability Standard [↑](#footnote-ref-2)
3. Manual, 11.1, Item 3, page 40. [↑](#footnote-ref-3)
4. <https://www.wecc.org/Reliability/WECC%20Reliability%20Standards%20Development%20Procedures%20-%20FERC%20Approved%2009-13-2021.pdf> [↑](#footnote-ref-4)
5. On the NERC Filings accordion, these documents are annotated with a designation of “Attachment T-X.” [↑](#footnote-ref-5)
6. This approach conducts maintenance proactively based on predictive modeling. This approach is a benefit/burden analysis weighing the cost of maintenance against the likelihood of component failure. Equipment posing a greater risk to reliability in the event of failure may be maintained more frequently than components posing a lower reliability risk in the event of failure. [↑](#footnote-ref-6)
7. This approach is based on the recommendations of the equipment manufacturer. [↑](#footnote-ref-7)
8. The Reliability Coordinator may serve as the Requesting Entity on behalf of any entity not listed in Section 4. Applicability. For example, if a Generator Owner seeks to add a path to the Table, the Generator Owner is required to make that request through the Reliability Coordinator that oversees the path. The Reliability Coordinator may accept or reject the request, subject to appeal to WECC Director of Standards (DOS). [↑](#footnote-ref-8)