NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

March 22, 2018

VIA OVERNIGHT MAIL

Sheri Young, Secretary of the Board
National Energy Board
517 – 10th Avenue SW
Calgary, Alberta
T2R 0A8

Re: *North American Electric Reliability Corporation*

Dear Ms. Young:

The North American Electric Reliability Corporation hereby submits Notice of Filing of the North American Electric Reliability Corporation of Retirement of Regional Reliability Standard VAR-002-WECC-2. NERC requests, to the extent necessary, a waiver of any applicable filing requirements with respect to this filing.

Please contact the undersigned if you have any questions concerning this filing.

Respectfully submitted,

/s/ Shamai Elstein

Shamai Elstein
Senior Counsel for the North American Electric Reliability Corporation

Enclosure

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BEFORE THE
NATIONAL ENERGY BOARD

NORTH AMERICAN ELECTRIC	**)**
RELIABILITY CORPORATION	**)**

NOTICE OF FILING OF THE NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION OF RETIREMENT OF REGIONAL RELIABILITY STANDARD VAR-002-WECC-2

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NOTICE OF FILING OF THE
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION OF RETIREMENT OF REGIONAL RELIABILITY STANDARD VAR-002-WECC-2

The North American Electric Reliability Corporation ("NERC") respectfully provides notice of the retirement of WECC Regional Reliability Standard VAR-002-WECC-2 Automatic Voltage Regulators (AVR).

The primary purpose of Regional Reliability Standard VAR-002-WECC-2 is to ensure that automatic voltage regulators on synchronous generators and condensers shall be kept in service and controlling voltage. As discussed below, experience with Regional Reliability Standard VAR-002-WECC-2 has shown that the reliability-related issues addressed in the regional standard are adequately addressed by the continent-wide Voltage and Reactive ("VAR") Reliability Standards and that retention of the regional standard would not provide additional benefits for reliability. The retirement of the regional standard will thus have no adverse effect on the reliability of the Bulk-Power System and is in the public interest.

I. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:

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II. BACKGROUND

A. Regulatory Framework

A regional difference from a continent-wide Reliability Standard must either be: (1) more stringent than the continent-wide Reliability Standard (which includes a regional standard that addresses matters that the continent-wide Reliability Standard does not), or (2) necessitated by a physical difference in the Bulk-Power System. Due weight is given to the technical expertise of a Regional Entity, like WECC, that is organized on an Interconnection-wide basis with respect to a Regional Reliability Standard applicable within that Interconnection.

WECC Reliability Standards are intended to apply only to registered entities in the Western Interconnection. WECC develops Regional Reliability Standards in accordance with its *Reliability Standards Development Procedures* ("RSDP").[1] Proposed WECC Regional Reliability Standards are subject to approval by NERC, as the ERO, and the applicable governmental authorities.

[1] The currently-effective WECC RSDP is available at http://www.nerc.com/FilingsOrders/us/Regional%20Delegation%20Agreements%20DL/WECC%20RSDP_20171027.pdf.

B. Procedural History

This section provides a discussion of the development and approval of the standard being proposed for retirement, WECC Regional Reliability Standard VAR-002-WECC-2, as well as an overview of the standard development process for the proposed retirement of the regional standard.

1. Development and Approval of the WECC VAR Regional Reliability Standard

On June 8, 2007, the Federal Energy Regulatory Commission ("FERC") approved WECC Regional Reliability Standard WECC-VAR-STD-002a-1 - Automatic Voltage Regulators as mandatory and enforceable on entities within the Western Interconnection.[2] This and other WECC regional standards were translations of existing reliability criteria under WECC's Reliability Management System ("RMS"). As noted in FERC's order approving WECC-VAR-STD-002a-1, WECC developed the RMS predecessor to this standard based on its experience with a 1996 disturbance caused by insufficient supply of reactive power from generators, including automatic voltage regulators that were not operating in voltage control mode. WECC determined that, as a result of this experience, there should be only very limited circumstances where a generator should remove its unit from automatic voltage regulation operation. The WECC standard was intended to be more stringent than the continent-wide VAR standards in place at that time.[3]

On April 7, 2009, NERC submitted a revised version of the standard, VAR-002-WECC-1. This standard consisted of two Requirements. Requirement R1 required Generator Operators[4]

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[2] *Order Approving Regional Reliability Standards for the Western Interconnection and Directing Modifications*, 119 FERC ¶ 61,260 (2007).

[3] *Id.* at P 114.

[4] Unless otherwise designated, all capitalized terms shall have the meaning set forth in the *Glossary of Terms Used in NERC Reliability Standards*, *available at* http://www.nerc.com/files/Glossary_of_Terms.pdf.

and Transmission Operators to have automatic voltage regulation in service and in automatic voltage control mode 98% of all operating hours for synchronous generators or synchronous condensers, and provided that entities may exclude hours for certain circumstances when calculating the 98% requirement. Requirement R2 required entities to maintain documentation identifying the number of hours excluded.[5]

The second of the two Requirements was later determined to be an administrative requirement and was eliminated in the currently-enforceable version of the standard, VAR-002-WECC-2.[6] NERC submitted VAR-002-WECC-2 on December 30, 2014.

2. Summary of VAR-002-WECC-2 Retirement History

In November 2016, a regional Standard Authorization Request ("SAR") was submitted to review WECC Regional Reliability Standard VAR-002-WECC-2 for potential retirement on the basis that the standard is duplicative of, and not more stringent than, the continent-wide VAR standards VAR-001-4.2 and VAR-002-4.1. In accordance with WECC's RSDP, the SAR was approved by the WECC Standards Committee on December 6, 2016.

Project WECC-0127 was initiated by WECC stakeholders to review the regional standard on the premise that, in light of changes made in the continent-wide VAR-002 standard and the addition of the WECC Regional Variance in the continent-wide VAR-001 standard, there was no longer a need for VAR-002-WECC-2. The standard drafting team for this project evaluated the regional standard and the relevant continent-wide standards and recommended that the regional standard be retired. In accordance with the WECC RSDP, the proposed retirement of VAR-002-

[5] Regional Reliability Standard VAR-002-WECC-1, available at http://www.nerc.com/files/VAR-002-WECC-1.pdf.

[6] With the retirement of Requirement R2 in VAR-002-WECC-2, the Measure corresponding to Requirement R1 (M1.4.3) was revised to add information regarding the date of an outage to the documentation entities would keep in order to demonstrate compliance with the Requirement. The reporting Measure was originally included as a means of measurement and enforcement, and was not considered a requirement necessary to maintain reliability.

WECC-2 was posted for a 45-day comment period from May 31, 2017 through July 18, 2017. The WECC Standards Committee approved a request for ballot by the WECC Ballot Pool on July 31, 2017. The ballot pool was open from August 30, 2017 through September 14, 2017, and the final ballot was held from September 21, 2017 through October 11, 2017. The proposed retirement achieved a 80.9% quorum and 100% approval.

In accordance with Section 312 of NERC's Rules of Procedure,[7] NERC posted the proposed retirement of VAR-002-WECC-2 for a 45-day comment period from November 3, 2017 through December 18, 2017. Commenters agreed that WECC's process was open, inclusive, balanced, transparent, and that due process was followed. The WECC Board of Directors approved the retirement of VAR-002-WECC-2 on December 6, 2017. The NERC Board of Trustees approved the retirement on February 8, 2018.

III. JUSTIFICATION FOR RETIREMENT

In 2015, FERC approved Regional Reliability Standard VAR-002-WECC-2 on the grounds that it was more stringent than the then-effective continent-wide standard VAR-002-3.[8] Through its further analysis and experience with the standard, WECC has determined that VAR-002-WECC-2 is not in fact more stringent than the continent-wide standard when application of the various exceptions in the WECC regional standard is considered. As the reliability goal of maintaining voltage stability is addressed adequately in the two continent-wide VAR standards, WECC has determined that the regional standard should be retired.

[7] The NERC Rules of Procedure are available at http://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx.

[8] *See Order Approving Two Regional Reliability Standards*, 150 FERC ¶ 61,164, at PP 11, 14 (2015) at PP 11, 14.

A. In Practical Application, Regional Reliability Standard VAR-002-WECC-2 is Not More Stringent than the Continent-Wide VAR Reliability Standard VAR-002-4.1

Regional Reliability Standard VAR-002-WECC-2 Requirement R1 provides that "Generator Operators and Transmission Operators shall have [automatic voltage regulators] in service and in automatic voltage control mode 98% of all operating hours for synchronous generators or synchronous condensers," unless they are permitted to not run under any one of ten possible scenarios described in the standard.[9] In calculating compliance with the 98% requirement, entities may exclude the following hours:

- The synchronous generator or synchronous condenser operates for less than five percent of all hours during any calendar quarter (R1.1).
- Performing maintenance and testing up to a maximum of seven calendar days per calendar quarter (R1.2).
- Automatic voltage regulator exhibits instability due to abnormal system configuration (R1.3).
- Due to component failure, the automatic voltage regulator may be out of service up to 60 consecutive days for repair per incident (R1.4).
- Due to a component failure, the automatic voltage regulator may be out of service up to one year provided the Generator Operator or Transmission Operator submits documentation identifying the need for time to obtain replacement parts and if required to schedule an outage (R1.5).
- Due to a component failure, the automatic voltage regulator may be out of service up to 24 months provided the Generator Operator or Transmission Operator submits documentation identifying the need for time for excitation system replacement (replace the automatic voltage regulator, limiters, and controls but not necessarily the power source and power bridge) and to schedule an outage (R1.6).
- The synchronous generator or synchronous condenser has not achieved Commercial Operation (R1.7).
- The Transmission Operator directs the Generator Operator to operate the synchronous generator, and the automatic voltage regulator is unavailable for service (R1.8).

[9] Regional Reliability Standard VAR-002-WECC-1 – Automatic Voltage Regulators, http://www.nerc.com/files/VAR-002-WECC-1.pdf.

- The Reliability Coordinator directs Transmission Operator to operate the synchronous condenser, and the automatic voltage regulator is unavailable for service (R1.9).
- If the automatic voltage regulator exhibits instability due to operation of a load tap changer transformer in the area, the Transmission Operator may authorize the Generator Operator to operate the excitation system in modes other than automatic voltage control until the system configuration changes (R1.10).

Continent-wide Reliability Standard VAR-002-4.1 – Generator Operation for Maintaining Network Voltage Schedules sets forth the requirements applicable to Generator Operators and Generator Owners for providing the necessary reactive support and voltage control necessary to protect equipment and maintain reliable operations.[10] Reliability Standard VAR-002-4.1 Requirement R1 provides that each Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (with its automatic voltage regulator in service and controlling voltage) unless: (1) it is instructed to operate in a different control mode by the Transmission Operator; (2) the generator is exempted by the Transmission Operator; (3) the Generator Operator has notified the Transmission Operator that the generator is being operated in start-up, shutdown, or testing mode pursuant to a Real-time communication or a procedure that was previously provided to the Transmission Operator; or (4) the Generator Operator has notified the Transmission Operator that the generator is not being operated in automatic voltage control mode or in the control mode that was instructed by the Transmission Operator for a reason other than start-up, shutdown, or testing.

[10] Reliability Standard VAR-001-4.2 – Voltage and Reactive Control sets forth the requirements applicable to Transmission Operators (and Generator Operators within the Western Interconnection for the WECC regional variance) for scheduling, monitoring, and controlling Reactive Power resources to regulate voltage and Reactive Power flows for the reliable operation of the Bulk-Power System.

In its order approving VAR-002-WECC-2, FERC determined that the regional standard was more stringent than then-effective VAR-002-3. Specifically, FERC determined that the exceptions in VAR-002-3, which are carried forward into currently-effective VAR-002-4.1, were broader than the ten exceptions in the regional standard, "particularly the exception [in VAR-002-3] allowing generator operators not to operate in automatic voltage control mode or in the control mode that was instructed by the transmission operator for a reason other than start-up, shutdown, or testing."[11] Therefore, FERC approved the regional standard as consistent with its regional standard approval criteria.[12]

WECC initially drafted the regional standard to reflect exactly the language of the RMS requirements. In petitioning for approval of the standard, WECC argued that, by identifying the specific circumstances where an automatic voltage regulator may be exempt from the requirement to be in service, the Regional Reliability Standard was more stringent than the continent-wide standard. Because it was not practical to develop a list of all possible circumstances an automatic voltage regulator could be out of service, and to maintain consistency with its prior approach toward enforcement of the standard, WECC included a 98% run time requirement in the standard rather than a 100% run time requirement. WECC's further analysis of the regional standard, however, has demonstrated that the regional standard is not in fact more stringent than the continent-wide standard when practical application of the various exemptions is considered. By layering each of the regional standard's specific exemptions, an entity may remain compliant with the standard and yet have its automatic voltage regulator out of service for an indeterminate amount of time.

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[11] VAR-002-WECC-2 Approval Order at P 14.

[12] *Id.* at P 11.

WECC's analysis of all ten VAR-002-WECC-2 exemptions has demonstrated that an application of eight of the ten exemptions (R1.1, R1.3, and R1.5 through R.10) could result in an automatic voltage regulator being out service 100% of the time (i.e., in operation for zero percent of the time), in some cases for up to two years. An entity using the Requirement R1.2 seven-day maintenance and testing exemption may end up also using other exemptions depending on the facts of the particular situation. The automatic voltage regulator may continue to be out of service beyond the seven-day maintenance and testing window due to instability (R1.3 and R1.10), component failure (R1.4, R1.5, and R1.6), or unavailability (R1.8 and R.9). Similarly, an entity using the 60-day "per incident" component failure exemption (R1.4) may continue to have its automatic voltage regulator out of service due to additional incidents or due to instability, component failure, or unavailability.[13]

Further, WECC has determined that while the VAR-002-WECC-2 exemptions were intended to be highly specific, certain undefined terms in the exemptions could be interpreted broadly to further extend the time an automatic voltage regulator may be out of service. For example, neither Requirement R1.3 nor Requirement R1.10 define what constitutes "instability" allowing an automatic voltage regulator to be removed from service. The term "component" is not defined, even though component failure could result in an automatic voltage regulator being off for up to two years (*see* Requirement R1.6). Lastly, there is no criteria to define what may make an automatic voltage regulator "unavailable" under Requirements R1.8 and R1.9 and thus exempt from the requirement to be in service.

In light of these practical considerations, identified through WECC's experience with and further review of the standard, WECC has determined that the 98% run time requirement and

[13] *See* Exhibit C, Technical Justification at 3-4.

exemptions in the regional standard can no longer be considered more stringent than the corresponding obligations and exemptions of the continent-wide standard and should not be retained on that basis.

B. The Retirement of the Regional Reliability Standard Would Have No Adverse Impact on Reliability

Retirement of Regional Reliability Standard VAR-002-WECC-2 would have no adverse impact on reliability. The continent-wide VAR Reliability Standards provide a flexible, results-oriented means of achieving the reliability goal of maintaining voltage stability and are sufficient to ensure reliable operations in the Western Interconnection without the need for a separate regional standard regarding automatic voltage regulators, as described in Exhibit A and below.

Reliability Standard VAR-001-4.2 – Voltage and Reactive Control requires the Transmission Operator to specify a system voltage schedule (Requirement R1) and to schedule sufficient reactive resources to regulate voltage levels under normal and Contingency conditions (Requirement R2). Whereas VAR-002-WECC-2 creates a static setting for automatic voltage regulators, thereby removing discretion from the Transmission Operator, VAR-001-4.2 allows the Transmission Operator to attain the same reliability goal based on all the surrounding circumstances in real time. For example, although VAR-002-WECC-2 requires synchronous condensers to be in service and set to automatic voltage regulation mode, VAR-001-4.2 Requirement R3 and associated schedule-related requirements allow greater flexibility of operation while meeting the same reliability goal. By creating the voltage schedule, the Transmission Operator sets the reliability goal to be met without restricting the specific type of resource to be used. Stated differently, this approach is inclusive of VAR-002-WECC-2 without specifying how the goal is to be met. Reliability Standard VAR-001-4.2 also contains a Regional Variance for the Western Interconnection that supersedes continent-wide Requirements R4 and

R5. This Regional Variance works to ensure that voltage levels are within limits to protect equipment during system disturbances in the Western Interconnection. When applied, this Variance does not allow the Transmission Operator to exempt the Generator Operator from operating its automatic voltage regulator; any generator not having a functioning automatic voltage regulator is required to work with its Transmission Operator to correct the issue. With the retirement of the VAR-002-WECC-2 standard, the more stringent approach to automatic voltage regulator operation is retained in the VAR-001-4.2 Regional Variance to ensure reliability in the Western Interconnection.

Reliability Standard VAR-002-4.1, as discussed above, addresses the Generator Operator's responsibilities to have automatic voltage regulators in service and controlling voltage. The continent-wide Reliability Standard provides benefits for reliability that are not otherwise reflected in the regional standard. For example, Reliability Standard VAR-002-4.1 requires ongoing communication with the Transmission Operator regarding automatic voltage regulator or reactive capability status (*see, e.g.*, VAR-002-4.1 Requirements R3 and R4) or when the Generator Owner is unable to comply with a schedule (Requirement R2.2) and requires deployment of an alternate means to meet the reliability goal in the event there is a concern with the automatic voltage regulator (*see* Requirement R2.1).

For these reasons, retirement of the regional standard VAR-002-WECC-2 would have no adverse impact on reliability. Because compliance with VAR-002-WECC-2 is structured towards documentation, an entity may layer exemptions to build up to the 98% requirement to run an automatic voltage regulator, rather than keeping the equipment in service at all times. Its retirement would eliminate what has proven to be an administrative requirement to count hours that ultimately provides little additional benefit to reliability. Indeed, retiring the regional

standard would benefit reliability in the Western Interconnection by focusing the in-service requirement on the performance of the automatic voltage regulator, rather than counting the hours each one is online.

For these reasons, the retirement of Regional Reliability Standard VAR-002-WECC-2 would have no adverse impact on reliability.

IV. EFFECTIVE DATE OF RETIREMENT

Tthe retirement of WECC Regional Reliability Standard VAR-002-WECC-2 will be effective as of the date in the proposed implementation plan (Exhibit B).

Respectfully submitted,

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EXHIBIT A — C