

WEM Procedure – Requirements for Existing Transmission Connected Generating Systems

WEM Reform Implementation Group (WRIG) 26 November 2020



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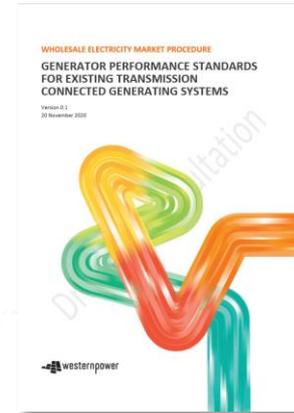
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WEM Procedure – Requirements for Existing Transmission Connected Generating Systems

Structure of the WEM Procedure is as follows:

- Overview
 - Relationship with the WEM Rules
 - Definitions and interpretation
 - Related documents
- Overview
- Determining compliance with existing standards
 - Provision of information
 - Assessment of compliance with relevant standards
- Negotiating a Proposed Alternative Standard
 - Submission of a Proposed Alternative Standard
 - Assessment of a Proposed Alternative Standard
 - Determining an Alternative Proposed Standard
- Testing of performance standards and dispute resolution
- Developing and maintaining the Generator Register
- Provision of information
- Appendix A : Relevant Reference Standards



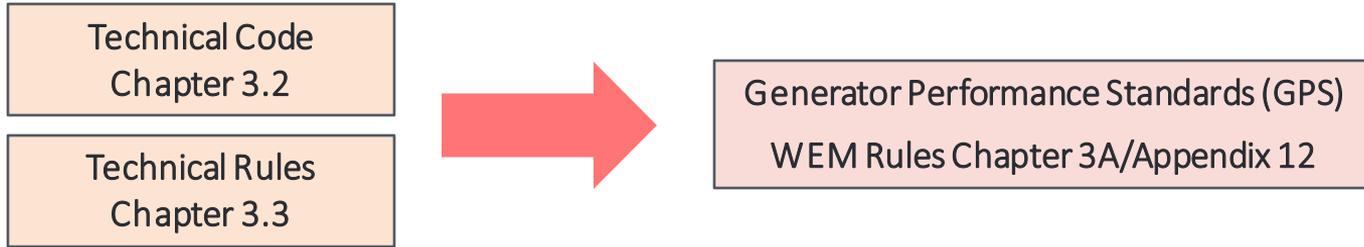
Overview

- WEM Procedure: Requirements for Existing Transmission Connected Generating Systems is made in accordance with clauses 1.40.30 of the WEM rules
- This procedure must include:
 - the processes and considerations that will be followed in assessing a Proposed Alternative Standard for an Existing Transmission Connected Generating System
 - Relevant Reference Standards which may apply to an Existing Transmission Connected Generating System.
- Applies to Western Power as a Network Operator and *Existing Transmission Connected Generating Systems*

Existing Transmission Connected Generating System: Means a Transmission Connected Generating System for which an Arrangement for Access has been executed prior to the Tranche 1 Commencement Date other than an Exempt Transmission Connected Generating System.

- Related AEMO WEM Procedures
 - Generator System Model, Generator Monitoring Plans, Arbitration Process (Disputes)

Overview



- Appendix 12 of the new WEM Rules, contains 16 Technical Requirements which describe the Ideal level of performance that a generator should meet.
- Where appropriate, a new generator may negotiate performance that is less than the ideal level of performance but no lower than minimum.
- New generators: Must comply with GPS from Tranche 1 commencement date (1 Feb 2021).
- Existing Transmission Connected Generating System: Must demonstrate and register existing performance against GPS. MAY BE LESS THAN MINIMUM

Example Technical Requirement: A12.5, Active Power Control

A12.5. Technical Requirement: Active Power Control

A12.5.1. Common Requirements

- A12.5.1.1. All Generating Systems must be capable of meeting the Dispatch Systems Requirements.
- A12.5.1.2. Any arrangements put in place as part of the Arrangement for Access to limit Active Power output in order to manage constraints on the Network must be included as part of the Generator Performance Standard.
- A12.5.1.3. Each Control System must be Adequately Damped.
- A12.5.1.4. Any relevant disconnection settings must be included as part of the Generator Performance Standard.
- A12.5.1.5. Subject to energy source availability and any other agreement by the Network Operator, a Generating System must be capable of maintaining its Active Power output consistent with its last received dispatch level in the event RME, RCE or Communications are unavailable.

A12.5.2. Ideal Generator Performance Standard

- A12.5.2.1. For a Scheduled Generator, a Generating System must have an Active Power Control system capable of:
 - (a) maintaining and changing its Active Power output in accordance with its Dispatch Instructions;
 - (b) ramping its Active Power output linearly from one level of Dispatch to another; and
 - (c) in a thermally stable state, changing Active Power generation in response to a Dispatch Instruction at a rate not less than 5% of the Generating Unit's or Generating System's Rated Active Power per minute.
- A12.5.2.2. For a Non-Scheduled Generator, subject to energy source availability, a Generating System must not change its Active Power generation at a rate greater than 10 MW per minute or 15% of the Power Station's aggregate Nameplate Rating per minute, whichever is the lower or as agreed with the Network Operator and AEMO.

A12.5.3. Minimum Generator Performance Standard

- A12.5.3.1. For a Scheduled Generator, a Generating System must have an Active Power Control System capable of maintaining and changing its Active Power output in accordance with its Dispatch Instructions.
- A12.5.3.2. For a Non-Scheduled Generator, subject to energy source availability, a Generating System must ensure that the change of Active Power output in a 5 minute period does not exceed a value agreed with AEMO and the Network Operator.

A12.5.4. Negotiation Criteria

- A12.5.4.1. There are no Negotiation Criteria for this Technical Requirement.

Common Requirements: All generators must meet

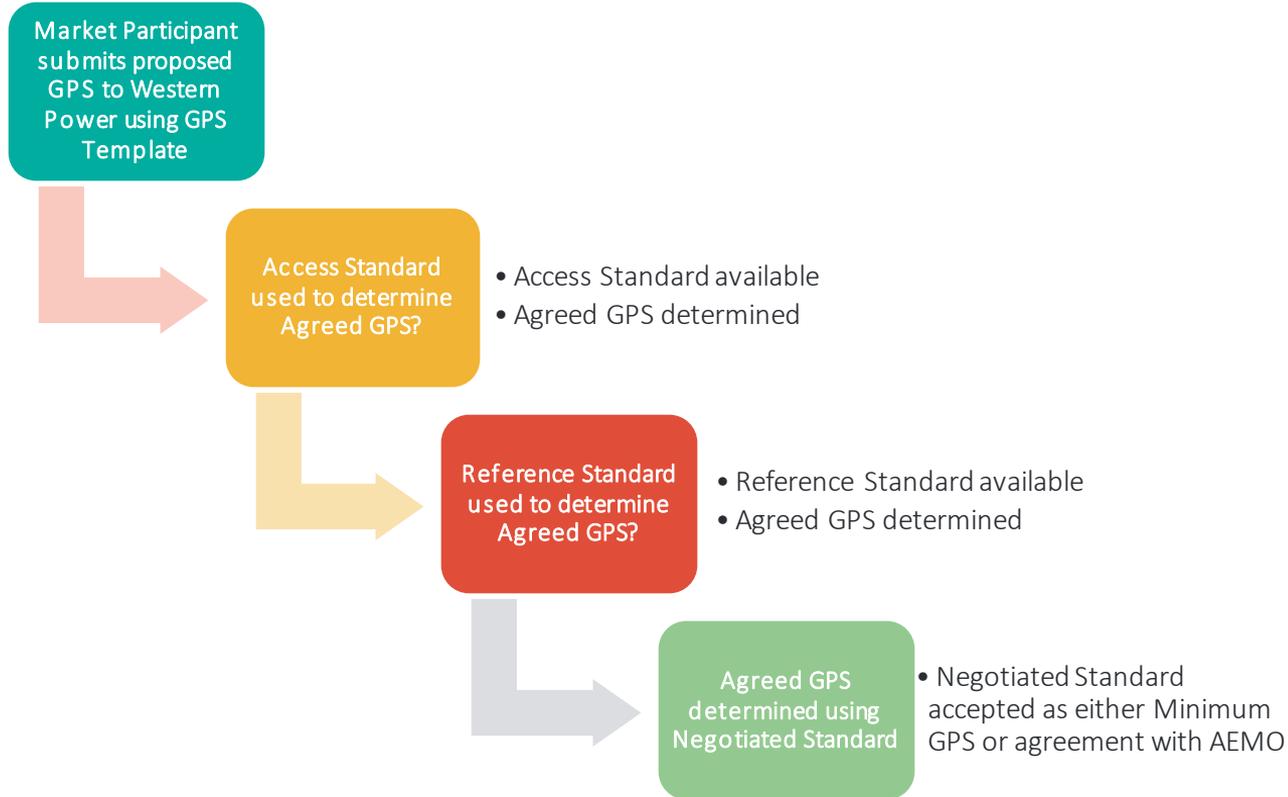
New Generator should aim to achieve this level of performance

New Generator can negotiate a level of performance less than Ideal but no lower than minimum

A Proposed Negotiated Generator Performance Standard must be as consistent as practicable with the corresponding Ideal Generator Performance Standard for that Technical Requirement, having regard to:

- (a) the need to protect the Transmission Connected Generating System from damage;
- (b) power system conditions at the location of the connection or proposed connection; and
- (c) the commercial and technical feasibility of complying with the Ideal Generator Performance Standard.

GPS Procedure for Existing Generators



Definitions:

Access Standard: Means an existing standard or technical level of performance in respect of the same or equivalent matter as a Technical Requirement that is either:

- (a) set out in and required by an Arrangement for Access; or
- (b) otherwise previously agreed by the Network Operator at the time of connection of the Existing Transmission Connected Generating System to the SWIS, or prior to the Tranche 1 Commencement Date.

Reference Standard: Means a standard or technical level of performance that applied at the time of connection of the Existing Transmission Connected Generating System to the SWIS or a modification of an Existing Transmission Connected Generating System before the Tranche 1 Commencement Date

GPS Procedure for Existing Generators - Negotiation

In cases where:

- An Access Standard or Reference Standard is not able to be used to deem a standard of Performance for a Technical Requirement to be an Agreed GPS
- A Market Participant does not reasonably consider that an Existing Generator can comply with a Reference Standard
- Western Power and a Market Participant disagree about interpretation

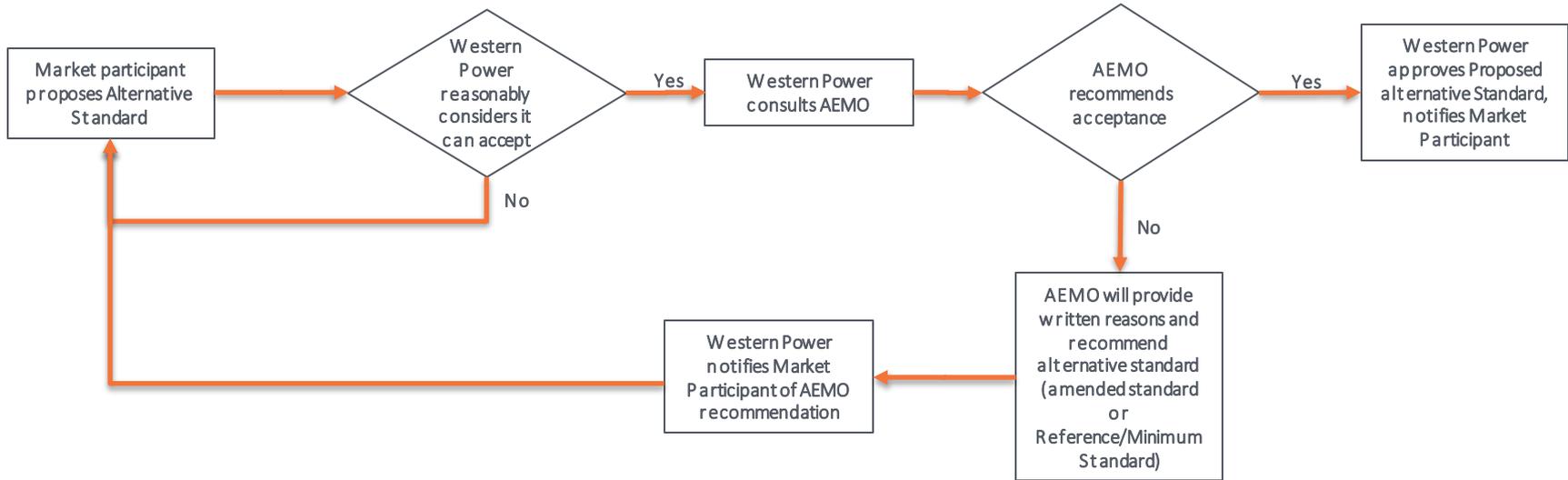
Then the Market Participant responsible for the Existing Transmission Connected Generating System must notify Western Power as soon as practicable and submit a Proposed Alternative Standard.

GPS Procedure for Existing Generators - Negotiation

A Proposed Alternative Standard submitted must be as consistent as practicable to the Minimum GPS or Reference Standard, having regard to:

- (a) the need to protect the Existing Transmission Connected Generating System from damage;
- (b) power system conditions at the location of the connection;
- (c) the commercial and technical feasibility of complying with the Minimum GPS or Reference Standard;
- (d) the costs associated with complying with the Minimum GPS or Reference Standard; and
- (e) the capability of the Existing Transmission Connected Generating System.

GPS Procedure for Existing Generators - Negotiation



- Negotiation may require iteration until Agreed GPS is determined
- If negotiation does not lead to an alternative GPS being accepted then an Arbitration Process exists for disputes, refer WEM Rules 1.42

Relevant Reference Standards

Technical Requirement	WEM Rules	Technical Rules				Technical Code	
		01-Dec-16	01-Aug-16	01-Dec-11	26-Apr-07	07-Apr-04	31-Mar-97
Active Power Capability	A12.2	-	-	-	-	-	-
Reactive Power Capability	A12.3	3.3.3.1	3.3.3.1	3.3.3.1	3.3.3.1	3.2.4.1	3.2.4.1
Voltage and Reactive Power Control	A12.4	3.3.4.5	3.3.4.5	3.3.4.5	3.3.4.5	3.2.5.4	3.2.5.4
Active Power Control	A12.5	3.3.3.5	3.3.3.5	3.3.3.5	3.3.3.5	-	-
Inertia and Frequency Control	A12.6	3.3.4.4	3.3.4.4	3.3.4.4	3.3.4.4	3.2.5.3	3.2.5.3
Disturbance Ride Through - Frequency Disturbance	A12.7	3.3.3.3	3.3.3.3	3.3.3.3	3.3.3.3	3.2.4.3	3.2.4.3
Disturbance Ride Through - Voltage Disturbance	A12.8	3.3.3.3	3.3.3.3	3.3.3.3	3.3.3.3	3.2.4.3	3.2.4.3
Disturbance Ride Through - Multiple Disturbances	A12.9	3.3.3.3	3.3.3.3	3.3.3.3	3.3.3.3	3.2.4.3	3.2.4.3
Disturbance Ride Through - Partial Load Rejection	A12.10	3.3.3.4	3.3.3.4	3.3.3.4	3.3.3.4	3.2.4.4	3.2.4.4
Disturbance Ride Through for Quality of Supply	A12.11	2.2.3 2.2.4 2.2.5 2.3.4	2.2.3 2.2.4 2.2.5 2.3.4	2.2.3 2.2.4 2.2.5 2.3.4	2.2.3 2.2.4 2.2.5 2.3.4	3.2.4.3	3.2.4.3
Quality of Electricity Generated	A12.12	2.2.3 2.2.4 2.2.5	2.2.3 2.2.4 2.2.5	2.2.3 2.2.4 2.2.5	2.2.3 2.2.4 2.2.5	3.2.4.2	3.2.4.2
Generation Protection Systems	A12.13	3.3.3.8	3.3.3.8	3.3.3.8	3.3.3.8	3.2.4.9 3.4	3.2.4.9 3.4
Remote Monitoring Requirements	A12.14	3.3.4.1	3.3.4.1	3.3.4.1	3.3.4.1	3.2.5.1	3.2.5.1
Remote Control Requirements	A12.15	3.3.4.2	3.3.4.2	3.3.4.2	3.3.4.2	3.2.5.1	3.2.5.1
Communications Equipment Requirements	A12.16	3.3.4.3	3.3.4.3	3.3.4.3	3.3.4.3	3.2.5.2	3.2.5.2
Generation System Model	A12.17	3.3.9 2.3.7	3.3.9 2.3.7	3.3.9 2.3.7	3.3.9 2.3.7	-	-

- Reference Standards were published from 31 March 1997 (starting with the introduction of the Technical Code), prior to this date no publicly available reference standards were available.
- Records of internal Reference Standards prior to the Technical Code being introduced in 1997 are poor. (ref State Records Act 2000)
- Western Power will continue to use reasonable endeavours to provide relevant documentation.

WEM Procedure Consultation

- The WEM Procedure Limit Advice Development will be circulated on Friday 11 December 2020
- Please provide feedback or any direct any queries to Western Power
 - RegulatoryReforms@westernpower.com.au
 - Attention – Mike Chapman (Senior Technical Rules Engineer)
- Feedback due before 8 January 2021





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