IMS INTERFACE MARKET PROCEDURE – NETWORK OPERATORS AND AEMO

PREPARED BY:	System Management (WA)
DOCUMENT REF:	SO_OP_WA_3805
VERSION:	~~1~~2.0
EFFECTIVE DATE:	~~13/10/2017~~15/06/2018
STATUS:	~~FINAL~~DRAFT

Approved for distribution and use by:

APPROVED BY:	Cameron Parrotte
TITLE:	Executive General Manager~~, Strategy and Innovation~~ – WA

VERSION RELEASE HISTORY

Version	Effective Date	Summary of Changes
1.0	13/10/2017	New IMS Interface Market Procedure (as per Procedure Change Proposal AEPC_2017_07), including references to ICCP, communications standards and voice communications with the Network Operator
2.0	15/06/2018	Revision to remove sections to PSOP: Communications and Control, as detailed in Procedure Change Proposal AEPC_2018_05.

CONTENTS

LIST OF TABLES

1 PROCEDURE OVERVIEW

1.1 Relationship with the WEM Rules

1.1.1 This IMS Interface Market Procedure – Network Operators and AEMO (**Procedure**) is made in accordance with clauses 2.36A.1 and 2.36A.5 of the Wholesale Electricity Market Rules (**WEM Rules**).

1.1.2 References to particular WEM Rules within this Procedure in bold and square brackets **[Clause XX]** are current as of ~~1 October 2017.~~27 March 2018. These references are included for convenience only, and are not part of this Procedure.

1.1.3 References to particular Technical Rules within this Procedure in bold and curly braces **{Clause XX}** are current as of 1 December 2016. These references are included for convenience only, and are not part of this Procedure.

1.2 Interpretation

1.2.1 In this Procedure:

(a) terms that are capitalised but not defined in this Procedure have the meaning given in the WEM Rules;

(b) to the extent that this Procedure is inconsistent with the WEM Rules, the WEM Rules prevail to the extent of the inconsistency;

(c) a reference to the WEM Rules or Market Procedures includes any associated forms required or contemplated by the WEM Rules or Market Procedures;

(d) unless the context requires otherwise, references to AEMO include AEMO in its System Management capacity; and

(e) words expressed in the singular include the plural or vice versa.

1.2.2 In addition, the following defined terms have the meaning given in Table 1.

Table 1 Defined terms

Term	Definition
Information Management System (IMS)	System for AEMO and the Network Operator to provide each other with information.
Inter Control-Centre Communications Protocol (ICCP)	A communications protocol used to send and receive SCADA messages between different EMS installations (typically located within different organisations).
Saturable Reactor (SR)	A device used to manage reactive power on the power system.
Static VAR Controller (SVC)	A device used to manage reactive power on the power system.
~~EMS~~State Estimator	~~An Energy Management System used by AEMO to monitor and control the SWIS in real time.~~A function of an EMS that uses telemetered SCADA data as its input to produce (in real-time operational timeframes) a consistent, error-minimised estimate of the power system state to provide substitutes for telemetered data that are unavailable or erroneous. The substitutes for telemetered data are primarily used for contingency analysis, and stored for further operational analysis. The substitutes for telemetered data may also be used to provide indications of operational quantities to power system controllers.

GIS	A Geographical Information System used by AEMO to display geographical data about physical assets (such as network and generator assets).
~~ICCP~~	~~Inter Control Centre Communications Protocol, a communications protocol used to send and receive SCADA messages between different EMS installations (typically located within different organisations).~~
~~IMS~~	~~Information Management System.~~
Transmission Circuit Limit~~Overload Rating~~	~~Temporary ratings~~A limit as per the WEM Rules **[Clause 2.28.~~3~~3A(a)(~~v~~iii)]** that ~~are higher than~~ is applied to the ~~Transmission Circuit Limit to which the~~ operation of a transmission circuit ~~can be loaded for a maximum allowable overload period and provided to AEMO via Western Power's EMS as per~~in the SWIS caused by the ~~PSOP: Network Modelling Data.~~ load capability of the lowest rated component of the transmission circuit.
Power Factor (PF)	~~Power Factor, a~~A measure of active and reactive power.
Energy Management System (EMS)	A system used to monitor and control elements of the SWIS in real time.
Power System Model	Data representing components of the SWIS that can be used by the Power System Modelling and Analysis Tool to analyse how the SWIS will operate. The model data required by AEMO is in DigSILENT PowerFactory format.
Supervisory Control And Data Acquisition (SCADA)	Network Operator systems to acquire data from remote devices. AEMO accesses this information via the EMS, which enables AEMO to supervise and control the power system from a remote location.
Power System Modelling and Analysis Tool	Power system grid modelling and analysis software used by AEMO to model the SWIS and analyse it to determine how it will operate under various conditions. AEMO uses DigSILENT PowerFactory for this purpose.
~~SCADA~~	~~Supervisory Control And Data Acquisition, used to describe telemetry and associated real-time control/indication functions.~~
Security Constraint	Security constraints as per the WEM Rules **[Clause 2.28.3A(a)(iv)]** that create Security Limits due to there being technical limits on the operation of the SWIS as a whole, or on a region of the SWIS, necessary to maintain Power System Security, including both static and dynamic limits, and including limits to allow for and to manage contingencies.
~~SR~~	~~Saturable Reactor, a device used to manage reactive power on the power system.~~
~~State Estimator~~	~~A function of an EMS that uses telemetered SCADA data as its input to produce (in real-time operational timeframes) a consistent, error-minimised estimate of the power system state to provide substitutes for telemetered data that are unavailable or erroneous. The substitutes for telemetered data are primarily used for contingency analysis, and stored for further operational analysis. The substitutes for telemetered data may also be used to provide indications of operational quantities to power system controllers.~~
~~SVC~~	~~Static VAR Controller, a device used to manage reactive power on the power system.~~
Overload Rating~~Transmission Circuit Limit~~	~~A limit~~Temporary ratings as per the WEM Rules **[Clause 2.28.~~3A~~3(a)(~~iiv~~)]** that ~~is applied~~are higher than the Transmission Circuit Limit to which the ~~operation of a~~ transmission circuit ~~in the SWIS caused by~~can be loaded for a maximum allowable overload period and provided to AEMO via the ~~load capability of~~Network Operator's EMS as per the ~~lowest rated component of the transmission circuit.~~PSOP: Network Modelling Data.

1.3 Purpose and application of this Procedure

1.3.1 This Procedure describes requirements for:

(a) the arrangement by which Network Operators and AEMO must (subject to a limited exception[1]) provide each other with information under the WEM Rules; and

(b) the communications and control system requirements necessary to enable AEMO to remotely monitor the performance of a Network.

1.3.2 This Procedure applies to:

(a) AEMO in providing information needed by Network Operators under the WEM Rules;

(b) Network Operators in providing information needed by AEMO under the WEM Rules;

(c) AEMO and Network Operators in remotely monitoring the performance of Networks;

(d) all Networks forming part of the SWIS; and

(e) (where relevant) Scheduled Generators, Non-Scheduled Generators, Demand Side Programmes, Dispatchable Loads and Interruptible Loads connected to those Networks.

1.4 Associated documents

1.4.1 The following Market Procedures (available on the Market Web-site[2]) provide background information to this Procedure:

Table 2 Background Procedures

Reference	Title	Location
N/A	PSOP: Monitoring and Reporting Protocol	AEMO Website
SO_OP_WA_3802	PSOP: Communications and Control Systems	AEMO Website
SO_OP_WA_3803	PSOP: Dispatch	AEMO Website
SO_OP_WA_3807	PSOP: Network Modelling Data	AEMO Website
SO_OP_WA_3808	PSOP: Power System Security	AEMO Website
N/A	Technical Rules for the South West Interconnected Network	ERA Website
N/A	Any other Market Procedures (including Power System Operation Procedures) referred to in Table 5 of this Procedure	AEMO Website

[1] An alternative arrangement under the WEM Rules **[Clause 2.36A.2]** applies in situations where this Procedure is "inadequate" to enable AEMO or a Network Operator to comply with an obligation to provide information to the other under the WEM Rules. The alternative arrangement applies until this Procedure is amended to address the inadequacy.

[2] Available at: http://aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Procedures.

2 TRANSFER OF INFORMATION

2.1 General

2.1.1 There are a number of WEM Rule obligations that require provision of information between a Network Operator and AEMO, such as Outage Plans submitted by Network Operators under the WEM Rules **[Clause 3.18.5B]**. This Procedure addresses data-related information transfers[3] for which specific arrangements are not prescribed in other Market Procedures (including Power System Operation Procedures) or in the WEM Rules. Table 4 identifies some of the other information transfer requirements that are prescribed in other Market Procedures (including Power System Operation Procedures).

2.1.2 ~~Note – where~~ Contact details for information ~~is~~ to be provided by email or telephone~~, the contact details to be used~~ are as published on the AEMO website for the relevant role ~~(either System Management Operations or Planning): http://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Security-and-reliability.~~.

2.2 Provision of Information

2.2.1 Table 3 describes:

(a) categories of information that must be provided;

(b) the format, form and manner in which that information must be provided;

(c) the time by which such information must be provided (where the WEM Rules do not provide a timeframe); and

(d) the relevant WEM Rule references[4].

In general AEMO needs information for it to assess impacts of events that are occurring, or that may occur, to cause the SWIS to operate outside the Technical Envelope for each SWIS Operating State. This requires all network information on Western Power's EMS and other systems and tools to be made available to AEMO.

2.2.2 Where Table 3 refers to accessing a system or a tool at all times, this reference is to be read as being subject to that system or tool being available for use (e.g. not on outage). Where Table 3 refers to Western Power's Power System Model, this reference is to the provision of modelling information files in PowerFactory format that can be loaded within AEMO's Power System Modelling and Analysis Tool, containing modelling information that Western Power is able to share with AEMO.

Table 3 Information Requirements[5]

Category	Format, Form, Manner, Timeframe	WEM Rule reference(s)
Real-time SCADA data	Access to Western Power's EMS at all times	2.13.6, 2.13.7, 2.13.9A, 2.13.9B, 2.15.6A, 2.16.2, 2.16.7, 2.30B.3, 2.35.1, 2.35.2, 2.36.6, 3.2.2, 3.2.4, 3.3, 3.4, 3.5, 3.8.1, 3.21.3,

[3] This Procedure provides details of the information that must be exchanged and the communications and control systems required by Network Operators and AEMO to enable the SWIS to be operated in a secure and reliable manner. Access to Western Power's ICT systems is addressed in a Services Agreement between Western Power and AEMO. After the end of the Services Term in the Services Agreement, Western Power will no longer be obliged to provide access to the nominated ICT Services at the agreed Service Levels. However, after the end of the Services Term, Western Power will continue to provide all the required data in this Procedure to AEMO in the agreed format, form, manner and timeframe.

[4] The WEM Rule references in Table 3 are intended for information purposes only; they are not intended to be a full and complete listing.

[5] The format, form, manner and timeframe in this Procedure will be revised as AEMO's systems transition away from Western Power's systems over time.

Category	Format, Form, Manner, Timeframe	WEM Rule reference(s)
		7.6, 7.6A, 7.10.4, 7.11.5, 7.13.4, 7A.3.7, 7A.3.7A, 7A.3.9, 7B.3.6, 7B.3.8, 7B.4
Transmission network and connection point modelling data	(a) Access to Western Power's EMS at all times (b) Access to Western Power's Power System Model: – on material change, the latest model and associated files available uploaded to AEMO's model upload website no later than 5 Business Days (or as otherwise agreed by AEMO) prior to a network element being added, removed or modified – the latest model and associated files available uploaded to AEMO's model upload website on request from AEMO within 5 Business Days (or as otherwise agreed by AEMO) prior to the network changing.	2.13.6, 2.13.7, 2.13.9A, 2.13.9B, 2.15.6A, 2.16.7, 2.27.19, 2.28.3A, 2.36.6, 3.2.2, 3.2.4, 3.3, 3.4, 3.5, 3.18.2, 7.6, 7.6A, 7.10.4, 7.11.5
Transmission network and connection point topology	(a) Access to Western Power's EMS at all times (b) Access to Western Power's Power System Model: – on material change, the latest model and associated files available uploaded to AEMO's model upload website no later than 5 Business Days (or as otherwise agreed by AEMO) prior to a network element being added, removed or modified – the latest model and associated files available uploaded to AEMO's model upload website on request from AEMO within 5 Business Days (or as otherwise agreed by AEMO) (c) Access to Western Power's GIS systems at all times. (d) Periodic electronic file transfer, within timeframes suitable to the end use requirements of the data, containing current transmission network geographic topology including: – Geographic coordinates of all 66kV, 132kV, 220kV and 330kV substations in the SWIS – Geographic coordinates of all 66kV, 132kV, 220kV and 330kV transmission line structures in the SWIS The file referred to in this paragraph must be emailed to System Management Operations using the contact details on AEMO's website (or sent as otherwise agreed), per the following timeframes:	2.13.6, 2.13.7, 2.13.9A, 2.13.9B, 2.15.6A, 2.16.7, 2.27.19, 2.28.3A, 2.35.2, 2.36.6, 3.2.2, 3.2.4, 3.3, 3.4, 3.5, 3.18.2, 7.6, 7.6A, 7.10.4, 7.11.5

Category	Format, Form, Manner, Timeframe	WEM Rule reference(s)
	– Full list as soon as practicable after this Procedure commences – On change, no later than 5 Business Days (or as otherwise agreed by AEMO) after a network element has been added, removed or modified – An updated file on request from AEMO within 5 Business Days (or as otherwise agreed by AEMO)	
Historical SCADA data	Access to Western Power's historical SCADA data systems at all times	2.13.6, 2.13.7, 2.13.9A, 2.13.9B, 2.15.6A, 2.16.2, 2.16.7, 2.30B.3, 2.36.6, 3.2.2, 3.2.4, 3.3, 3.4, 3.5, 3.8.1, 3.21.3, 4.10.1(e)(iv), 4.26.5, 4.28A.2, 6.13.1, 6.15.3, 6.17, 7.1, 7.6, 7.6A, 7.10.4, 7.11.5, 7.12.1, 7.13.1, 7.13.2, 7.13.4, 7A.3.7, 7A.3.7A, 7A.3.9, 7B.3.8, 7B.4, 10.5.1(y)
SCADA control	Access to Western Power's EMS at all times, noting that AEMO does not require control of Western Power equipment including equipment for voltage control.	2.35.2, 2.36.6, 3.12.1, 7.6, 7.6A, 7.8.1, 7B.3.6, 7B.4
Equipment Limit data	(a) Access to Western Power's EMS at all times (b) Access to Western Power's limit management systems at all times	2.36.6, 3.2.2, 3.3, 3.4, 3.5, 7.12.1
Areas of the SWIS not designed to be operated to the relevant Technical Code	Electronic list of current exclusions, emailed to System Management Operations using the contact details on AEMO's website (or sent as otherwise agreed by AEMO), per the following timeframes: – Full list as soon as practicable after this Procedure commences – On change, no later than 5 Business Days (or as otherwise agreed by AEMO) after an exemption has been added, removed or modified – On request from AEMO within 5 Business Days (or as otherwise agreed by AEMO)	3.2.5(e)
Investigation data	(a) Access to Western Power's EMS at all times (b) Access to Western Power's historical SCADA data systems at all times (c) Provision of protection and disturbance information on request within a reasonable timeframe (d) Provision of Western Power design information on request on a case-by-case basis within a reasonable timeframe (e.g. drawings, settings, configuration data, etc.)	2.13.6A, 2.13.8, 2.13.9C, 2.13.9D, 2.13.12, 3.8
Operational telephones	Either:	2.35, 2.36.6

Category	Format, Form, Manner, Timeframe	WEM Rule reference(s)
	• access to Western Power's operational voice systems at all times; or • connection of Western Power's operational voice systems to AEMO's operational voice systems at all times. Access to historical telephone records – through either: • access to Western Power's historical telephone records system at all times; or • provision of telephone records on request within a reasonable timeframe, noting that access to historical telephone records pertaining to its field or control room conversations are confidential, and are to be provided by Western Power only if required by regulatory bodies.	
Security Limits	(a) Access to Western Power's EMS at all times (b) Electronic list of current special protection schemes or special network operating instructions to maintain SWIS security, emailed to System Management Operations using the contact details on AEMO's website (or sent as otherwise agreed by AEMO), per the following timeframes: – Full list as soon as practicable after this Procedure commences – On change, no later than 5 Business Days (or as otherwise agreed by AEMO) after the list has been materially modified – On request from AEMO within 5 Business Days (or as otherwise agreed by AEMO)	3.2.4

2.2.3 Table 4 provides additional details about the required level of access for each of the systems identified in Table 3.

Table 4 Additional System Details

System	Details
Western Power's EMS	For all users specified by AEMO – access to displays and tools in order to: (a) monitor the transmission network through real-time telemetry and State Estimator output including: – transmission network connectivity – transmission network equipment status – transmission network parameters (including MW, MVAr, amps, kV, PF, tap position) – status of transmission network voltage management devices (e.g. capacitors, reactors, SVCs, SRs) – associated calculated values (b) monitor and control generation plant registered in the market (c) monitor and control system frequency (d) monitor transmission network outages (e) monitor transmission fault levels (where applicable) (f) view transmission network limits (g) monitor the status of special protection schemes (h) monitor the status of the communications and secondary equipment associated with the transmission network (i) monitor the status of the EMS (j) perform and store system security studies
Western Power's historical SCADA data systems	Access to tools and interfaces that allow AEMO to retrieve historical information recorded from Western Power's EMS. This includes historical SCADA data and historical SCADA events.
Western Power's limit management systems	Access to tools and interfaces that allow AEMO to view transmission network equipment limits and perform temporary re-ratings (as available).
Western Power's protection and disturbance systems	On request from AEMO, Western Power to provide information within reasonable timeframes from its protection and disturbance systems to allow AEMO to view and extract design and disturbance information (as available). Where specified, high speed monitoring data (e.g. fault records) files to be uploaded to AEMO periodically, or made available for AEMO to download on demand.
Western Power's GIS systems	Access to tools, systems and data that represent geographical details for Western Power's network, including the location and details of structures, conductors, cables, transmission substations, power stations and distribution connected market participants (as well as details of those components). On expiry of the Services Agreement, Western Power will provide periodic GIS data transfers to AEMO as per the PSOP: Network Modelling – Network Operators and AEMO within reasonable timeframes indicated in this Procedure to ensure currency of information for which it is utilised.

2.2.4 Table 5 identifies other information transfer requirements that are captured in the WEM Rules and Market Procedures (including Power System Operation Procedures).

Table 5 References to other Market Procedures and WEM Rule requirements

Information	Market Procedure(s)/Rule Requirement(s)
Loss Factors	Market Procedure – Determining Loss Factors

Information	Market Procedure(s)/Rule Requirement(s)
Network Modelling Data	Power System Operation Procedure – Network Modelling Data
Equipment Limits	(a) Power System Operation Procedure – Network Modelling Data (b) Power System Operation Procedure – Power System Security
Facility Technical Compliance Testing Information	Power System Operation Procedure – Commissioning and Testing
Security Limit Information	Power System Operation Procedure – Power System Security
Load Shedding Plans	In accordance with the WEM Rules **[Clause 3.6]**
System Restart Information	Data and information provided under procedures developed in accordance with the WEM Rules **[Clause 3.7.1]**
Ancillary Service Information	Power System Operation Procedure – Ancillary Services
Network Outage Information	Power System Operation Procedure – Facility Outages
Consequential Outage Information	Power System Operation Procedure – Facility Outages
Commissioning Information	Power System Operation Procedure – Commissioning and Testing
Expected Transmission Network Capabilities	Market Procedure – Undertaking the LT PASA and Conducting a Review of the Planning Criterion
Information to Support Applications for and testing of Reserve Capacity	(a) Market Procedure – Certification of Reserve Capacity (b) In accordance with the WEM Rules **[Clause 4.25.2]**
Network Control Service Information	In accordance with the WEM Rules **[Clause 5.3A]**
Estimation of Non-Scheduled Generator Quantities	Power System Operation Procedure – Dispatch
Voice Communications	(a) Power System Operation Procedure – Dispatch (b) Power System Operation Procedure – Communications and Control Systems

2.2.5 Table 6 describes the information that is to be provided by AEMO to a Network Operator, in order to assist in fulfilling its Network Operator obligations.

2.2.6 Where Table 6 refers to accessing a system or a tool at all times, this reference is to be read as being subject to that system or tool being available for use (e.g. not on outage).

Table 6 Network Operator Information Requirements

Information	Form, Manner, Timeframe	WEM Rule reference(s)
Generator planned availability	Access to generator planned availability, classified as Public or Rule Participant Network Restricted, via AEMO's website or the same information provided via an agreed system interface to SMMITS (or an equivalent system) at all times	3.18.5D
Network Outage acceptance and approval information	Access to SMMITS Network Outage portal at all times	3.18, 3.19

Information	Form, Manner, Timeframe	WEM Rule reference(s)
Load forecast information	Access to load forecast information published each day, available on the AEMO website	3.16.9, 3.17.1, 7A.3.21, 10.5.3
Network Control Service Settlement Information	Quantities required under the WEM Rules **[Clause 5.9.2]** to be provided by AEMO via email to an address specified by the Network Operator, by 5:00PM on the Invoicing Date for Non-STEM Settlement Statements for that Trading Month	5.9

2.3 Provision of data on expiry of services agreement

2.3.1 On expiry of the relevant services provided in the Services Agreement between AEMO and Western Power, access for AEMO to a number of Western Power's systems and tools will be removed. AEMO will require mechanisms for data transfers from Western Power's systems to enable it to determine information on the operation of the SWIS[6]. The data required by AEMO will be sourced from Western Power's systems and tools as described in Table 3 in this Procedure.

2.3.2 Western Power and AEMO must ensure that the required systems interfaces and data communications mechanisms are operational in time for removal of access to each Service.

2.3.3 In accordance with clauses 2.28.3B and 2.28.3C of the WEM Rules, AEMO may require additional data or data from other Western Power systems or tools to ensure that the SWIS is operating in a secure and reliable manner.

~~2.4 SCADA System and EMS Data via ICCP[7]~~

~~2.4.1 To support a transition to an independent EMS, AEMO will provide communications links to Western Power for the purposes of developing, configuring and testing an ICCP interface. The configuration of this link will be based on a bilateral agreement table agreed between the parties. AEMO and Western Power will each be responsible for its costs of implementing and maintaining its respective ICCP and associated infrastructure. Over time, the required SCADA system and EMS data described in the tables in this Procedure will transition to be sourced via the ICCP link instead of via access to Western Power's EMS.~~

~~2.4.2 AEMO will specify the data required to be sent via the ICCP link, which may include controls and indications.~~

~~2.4.3 AEMO publishes its communication requirements in relation to the provision of data via ICCP electronically on the Market Website as part of the "Power Systems Data Communications Standard" which can be found here, as updated from time to time[8]:~~

~~http://www.aemo.com.au/-/media/Files/Electricity/NEM/Network_Connections/Transmission-and-Distribution/AEMO-Standard-for-Power-System-Data-Communications.pdf~~

~~2.4.4 This standard describes the performance requirements of the ICCP link between AEMO and Network Operators.~~

[6] Some possible alternative mechanisms may include but are not limited to the following:
- routine transfers of EMS and Power System Model based positive, negative, and zero sequence data;
- routine transfers of EMS, Power System Model, and GIS based network topology information;
- routine transfers of Power System Model and EMS based Security Constraint information;
- routine transfers of Western Power limit management systems based Transmission Circuit Limits and Overload Ratings;
- routine transfers of network equipment short circuit current capabilities; and
- transfers of telemetry data in real-time timeframes via the ICCP link;

as required on occurrence of network changes. In this case AEMO would define data templates for publication and use by Western Power.

~~[7] AEMO's intention ultimately is to review the PSOP: Communications and Control Systems to determine if this section should be relocated. However, for the time being, this section has been included in this Procedure to provide clarity for Market Participants.~~

~~[8] This standard is currently under review. This Procedure will refer to the most recently published standard, as amended from time to time.~~

3 COMMUNICATION AND CONTROL SYSTEM DIRECTIONS[9]

3.1 Directions to a Network Operator

3.1.1 Where AEMO determines that it must issue a direction to a Network Operator under the WEM Rules **[Clause 2.36A.3]** the following process will be followed:

(e) AEMO must identify the required changes (consulting with the Network Operator and/or any other Market Participants where appropriate).

(f) AEMO must document the required changes in a "Communication and Control System Change Direction".

(g) AEMO will issue the "Communication and Control System Change Direction" electronically to the nominated Network Operator's Communication and Control System Change officer (as notified by the Network Operator to AEMO and updated from time to time).

(h) The Network Operator must respond within 10 Business Days with a proposed implementation timeframe.

(i) Where AEMO agrees with the proposed implementation timeframe, the Network Operator must implement the changes within that timeframe.

(j) Where an implementation timeframe cannot be agreed, senior managers from AEMO and the Network Operator must meet to agree a timeframe.

(k) Where an implementation timeframe cannot be agreed by senior managers from AEMO and the Network Operator, pursuant to the WEM Rules **[Clause 2.36A.4(a)]**, AEMO acting reasonably will determine the implementation timeframe for the Network Operator to comply with.

3.2 Provision of Participant SCADA

3.2.1 The process in step 3.1.1 above also applies where a Market Participant may be required by AEMO to provide SCADA information or controls. In this case, AEMO will agree with the Market Participant the requirements within a protocol document, reflecting any requirements specified in the PSOP: Communications and Control Systems (and associated documents).

3.2.2 Where Western Power is the SCADA service provider for the Market Participant, the requirements will then be passed to Western Power for implementation within Western Power's EMS (along with any associated ICCP changes required).

3.2.3 Where Market Participants are connecting Facilities (or modifying connections for Facilities) to the South West Interconnected Network, Western Power must consult with AEMO to determine any specific SCADA requirements to be implemented within Western Power's EMS (in accordance with the Technical Rules **{clauses 3.3.4 and 3.4.10}**).

[9] AEMO's intention ultimately is to review the PSOP: Communications and Control Systems to determine if this section should be relocated. However, for the time being, this section has been included in this Procedure to provide clarity for Market Participants.

4 COMMUNICATION AND CONTROL SYSTEM REQUIREMENTS[10]

4.1 Data Communications Standard

4.1.1 The communication and control system requirements must be agreed between AEMO and Western Power (in accordance with the Technical Rules **{Clauses 3.3.4 and 3.4.10}**). AEMO publishes its communication requirements electronically on the Market Website as the "Power Systems Data Communications Standard" which can be found here, as updated from time to time[11]:

http://www.aemo.com.au/-/media/Files/Electricity/NEM/Network_Connections/Transmission-and-Distribution/AEMO-Standard-for-Power-System-Data-Communications.pdf

4.1.2 The requirements described in this document will also be applicable for the SWIS. Where a Network Operator is required to modify equipment to meet this standard, AEMO may agree with the Network Operator on a reasonable timeframe for implementation.

4.2 Voice Communications

4.2.1 Western Power must provide AEMO with access to its operational voice communications system in accordance with the Technical Rules **{Clause 3.3.4.3}**. This can be either via physical access to a phone turret, or through connection to AEMO's operational voice communication system (via communications links provided by AEMO).

4.2.2 The operational voice communications system must provide:

(l) voice communications to Western Power's control rooms (primary and backup) independent of the public switched telephone network; and

(m) voice communications to Market Participants, independent of the public switched telephone network (where the list of Market Participants is to be agreed between AEMO and Western Power)[12].

[10] AEMO's intention ultimately is to review the PSOP: Communications and Control Systems to determine if this section should be relocated. However, for the time being, this section has been included in this Procedure to provide clarity for Market Participants.

[11] This standard is currently under review. This Procedure will refer to the most recently published standard, as amended from time to time.

[12] The Technical Rules **{Clauses 3.3 and 3.6.9(d)}** currently only require backup voice communications for generators with a capacity of 10MW or greater and generators above 1MVA that have been deemed to require this.