



# WEM Procedure: Congestion Information Resource

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## Version Release History

Version	Effective Date	Summary of Changes
0.1		First draft released for consultation at Meeting 6 (29 October 2020) the WEM Reform Implementation Group.
0.2		Draft for consultation. Developed in accordance with draft changes to the Wholesale Electricity Market Rules

### IMPORTANT NOTICE – EXPLANATORY NOTES

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# 1. Introduction

## 1.1. Purpose and scope

- 1.1.1. This WEM Procedure: Congestion Information Resource (Procedure) is made in accordance with AEMO's functions under clause 2.1A.2(h) of the Wholesale Electricity Market Rules (WEM Rules).
- 1.1.2. The *Electricity Industry Act 2004*, the WEM Regulations and the WEM Rules prevail over this Procedure to the extent of any inconsistency.
- 1.1.3. In this Procedure, where obligations are conferred on a Rule Participant, that Rule Participant must comply with the relevant obligations in accordance with clause 2.9.7A, 2.9.7D or 2.9.8 of the WEM Rules, as applicable.
- 1.1.4. The purpose of this Procedure is to specify:
- the information to be published in the Congestion Information Resource;
  - the processes to be followed by AEMO in maintaining, publishing and updating the information in the Congestion Information Resource;
  - the processes to be followed by AEMO in preparing the annual congestion report described in clause 2.27B.6; and
  - the information that AEMO may reasonably require a Network Operator or other Rule Participant to provide to AEMO to assist it with carrying out its obligations under clause 2.27B, including:
    - the format, form and manner in which any such information must be provided; and
    - the data and time by which any such information must be provided.
- 1.1.5. Appendix A of this Procedure outlines the head of power clauses that this Procedure is made under, as well as other obligations in the WEM Rules covered by this Procedure.

## 1.2. Definitions

- 1.2.1. Terms defined in the *Electricity Industry Act 2004*, the WEM Regulations and the WEM Rules have the same meanings in this Procedure unless the context requires otherwise.
- 1.2.2. The following definitions apply in this Procedure unless the context requires otherwise.

**Table 1 Definitions**

Term	Definition
Generating System	As described in Attachment 1 of the Technical Rules
Network Opportunity Map	A document containing the information described in clause 6A.2 of the <i>Electricity Network Access Code 2004</i>
NRS	Network Reinforcement Scheme such as a runback scheme or inter-tripping scheme.
Relevant Period	The period of 12 months commencing at the start of the Trading Day which commences on 1 October and ending at the end of the Trading Day ending on 1 October of the following calendar year immediately preceding the due date of the annual congestion report prepared under paragraph 4.

## 1.3. Interpretation

- 1.3.1. The following principles of interpretation apply in this Procedure unless the context requires otherwise.
- (a) Clauses 1.3 to 1.5 of the WEM Rules apply in this Procedure.
  - (b) References to time are references to Australian Western Standard Time.
  - (c) Terms that are capitalised, but not defined in this Procedure, have the meaning given in the WEM Rules.
  - (d) A reference to the WEM Rules or WEM Procedures includes any associated forms required or contemplated by the WEM Rules or WEM Procedures.
  - (e) Words expressed in the singular include the plural and vice versa.
  - (f) A reference to a paragraph refers to a paragraph of this Procedure.
  - (g) A reference to an appendix refers to an appenfix of this Procedure.
  - (h) A reference to a clause refers to a clause or section of the WEM Rules.
  - (i) References to WEM Rules in this Procedure in bold and square brackets **[Clause XXX]** are included for convenience only, and do not form part of this Procedure.
  - (j) Text located in boxes and headed as **[EX]** in this Procedure is included by way of explanation only and does not form part of this Procedure. The Procedure prevails to the extent of any inconsistency with the explanatory notes contained within it.
  - (k) The body of this Procedure prevails to the extent of any inconsistency with the figures, diagrams, appendices, schedules, annexures or attachments contained within this document.

## 1.4. Related documents

- 1.4.1. The documents in Table 2 are associated with this Procedure.

**Table 2 Related documents**

Reference	Title	Location
WEM Rules	WEM Rules	Energy Policy Western Australia (EPWA) website
Technical Rules	Technical Rules	Western Power Website
Electricity Network Access Code 2004	Electricity Network Access Code 2004	Western Australian Legislation
WEM Procedure	WEM Procedure: Limit Advice Requirements	WEM Website
WEM Procedure	WEM Procedure: Constraint Formulation	WEM Website

## 2. Congestion Information Resource

### E[A] Bound, Near Binding, and Intervention Constraint Data

Data on Bound Constraint Equations, Near Binding Constraint Equations, and Intervention Constraint Equations will be published to the WEM Market Data website in accordance with clauses 7.13.1, 7.13.1A, and 7.13.1B. To avoid duplication, this data will not be published on the Congestion Information Resource, instead the Congestion Information Resource will provide a link to this data .

### E[B] Additional data published on the Congestion Information Resource

The objective of the Congestion Information Resource is to enable Rule Participants and other interested stakeholders to understand patterns of Network congestion and the market impact of Network congestion.

To meet this objective, AEMO may publish additional data on the Congestion Information Resource (or links to such data) beyond what is specified in paragraph 2.1.2, including:

- relevant outputs of the dispatch process;
- outage information;
- details of changes made to the Constraints Library (e.g. new or updated Constraint Equations, or retirement of Constraint Equations) and an archive of historical Constraint Equations;
- other relevant reports, including, but not limited to, reports relating to Alternative Network Constraint Equations;
- relevant WEM Procedures and publications;
- Network capability and status information to be provided by Network Operators, as set out in paragraph 3.3;
- educational material, such as references to training resources;
- descriptions of how AEMO prepared the data and what AEMO uses the data for; and
- any privacy and legal notices.

## 2.1. Overview

2.1.1. Under clauses 2.27B.1 and 2.27B.2, in order to implement the Congestion Information Resource Objective of providing information in a cost-effective and timely manner to Rule Participants and other interested stakeholders to enable them to understand patterns of Network congestion and the market impact of Network congestion, AEMO must develop, maintain and publish a Congestion Information Resource.

2.1.2. The Congestion Information Resource must include:

- (a) the Constraints Library, as specified in clause 2.27B.3(a);
- (b) as soon as practicable after a Dispatch Interval, each Constraint Equation that bound during that Dispatch Interval;
- (c) annual congestion reports published under clause 2.27B.6 and quarterly reports published under clause 7.2.7(b);
- (d) any other information that AEMO, in its reasonable opinion considers relevant to implement the Congestion Information Resource Objective; and
- (e) other information as follows [**Clause 2.27B.3(e)**]:
  - (i) links to Intervention Constraints data published under clause clause 7.13.1(g);
  - (ii) links to Near Binding Constraint Equation data published under clauses 7.13.1A(i) and 7.13.1B(e); and
  - (iii) in addition to the annual congestion reports (described above in paragraph 2.1.2(c)), links to any previous annual congestion reports.

2.1.3. The Congestion Information Resource may also include any of the following information (or links to that information) if AEMO, in its reasonable opinion, considers it relevant to enable Rule Participants and other interested stakeholders to understand patterns and market impact of Network congestion:

- (a) other outputs of the dispatch process;
- (b) Outage information;
- (c) details of changes to the Constraints Library (e.g. new or updated Constraint Equations, or retirement of Constraint Equations) and an archive of historical Constraint Equations;
- (d) other reports, including, but not limited to, reports relating to Alternative Network Constraint Equations;
- (e) relevant WEM Procedures and publications which, may include:
  - (i) WEM Procedure: Development of Limit Advice;
  - (ii) WEM Procedure: Limit Advice Requirements; and
  - (iii) WEM Procedure: Constraint Formulation;
- (f) Network capability and status information to be provided by Network Operators, as set out in paragraph 3.3; and
- (g) educational material, such as references to training resources.

2.1.4. AEMO may include explanatory notes in the Congestion Information Resource where AEMO determines these will enable interested stakeholders to better understand the contents of the Congestion Information Resource. Explanatory notes may describe, without limitation:

- (a) what AEMO uses the information for;
- (b) how the information is prepared; and
- (c) any relevant privacy and legal notices.

2.1.5. Where information is provided by Network Operators for the purpose of the Congestion Information Resource, AEMO must publish the information in accordance with the requirements of Table 3.

## 2.2. Publishing, maintaining and updating the Congestion Information Resource

2.2.1. AEMO will publish the Congestion Information Resource on the WEM Website.

2.2.2. AEMO must keep up to date the information in the Congestion Information Resource (excluding the annual congestion report referred to in paragraph 2.1.2(c)) in accordance with the requirements of paragraph 2.2.3 and Table 3 [**Clause 2.27B.4**].

2.2.3. Upon becoming aware of any other material changes to the contents of the Congestion Information Resource currently published on the WEM Website, AEMO must publish the following on the WEM Website as soon as practicable:

- (a) the proposed date and time (being as soon as reasonably practicable after AEMO becomes aware of the material change) when relevant information will be updated to reflect the current and/or correct information and published on the WEM Website;
- (b) details of any possible consequential impacts to the remaining contents of the Congestion Information Resource, due to such material changes.

2.2.4. AEMO must notify Rule Participants by email each week if the Constraints Library was updated in the previous week.

**Table 3 Publishing, maintaining and updating contents of Congestion Information Resource**

Type of Information	When to Update	Comments
Updates/changes to content within the Constraints Library	As soon as practicable after AEMO becomes aware of or makes changes to the contents of the Constraints Library	Past changes to remain published
Binding Constraint Equations (forecast)	Within 5 minutes of determining each Dispatch Schedule, and within 30 minutes of determining each Pre-Dispatch Schedule and Week-Ahead Schedule or the Dispatch Schedule	References (e.g. hyperlink) to the location on the WEM Website where binding Constraint Equations are published in accordance with clause 7.13.1A(h)
Binding Constraint Equations (dispatch)	Within 5 minutes of AEMO using the Dispatch Algorithm for the purposes of the Central Dispatch Process and no later than the end of the Dispatch Interval	References (e.g. hyperlink) to the location on the WEM Website where binding Constraint Equations are published in accordance with clause 7.13.1B(d)
Near Binding Constraint Equations (forecast)	Within 5 minutes of determining each Dispatch Schedule, and within 30 minutes of determining each Pre-Dispatch Schedule and Week-Ahead Schedule	References (e.g. hyperlink) to the location on the WEM Website where Near Binding Constraint Equations are published in accordance with clause 7.13.1A(i)
Near Binding Constraint Equations (dispatch)	Within 5 minutes of AEMO using the Dispatch Algorithm for the purposes of the Central Dispatch Process and no later than the end of the Dispatch Interval	References (e.g. hyperlink) to the location on the WEM Website where Near Binding Constraint Equations are published in accordance with clause 7.13.1B(e)
Outage schedule	Every half hour starting at midnight	References (e.g. hyperlink) to the location on the WEM Website where Outage related data is published
Annual congestion report	31 March each year	Refer to paragraph 4.1.4
Reports related to Alternative Network Constraint Equations	As required	Refer to paragraph 4 of the WEM Procedure: Constraint Formulation
Thermal Network Limit Advice	Weekly updates	Refer to paragraph 5.2.1 of the WEM Procedure: Limit Advice Requirements
Non-thermal Network Limit Advice	Weekly updates after AEMO issues a report stating the Limit Advice is finalised	Refer to paragraph 5.2.2 of the WEM Procedure: Limit Advice Requirements
RCM Limit Advice	By 5:00 PM on the last Business Day falling on or before 20 May annually, or in accordance with the Reserve Capacity Cycle timetable set out under clause 4.1.	Refer to clauses 4.4B.5(d) and clause 4.4B.6(a)
Preliminary RCM Constraint Equations	By 5:00 PM on the last Business Day falling on or before 20 May annually, or in accordance with the Reserve Capacity Cycle timetable set out under clause 4.1.	Refer to clause 4.4B.6(b)
RCM Constraint Equations used in the Network Quantity Access models	By 5:00 PM on the last Business Day falling on or before 30 September annually, or in accordance with the Reserve Capacity Cycle timetable set out under clause 4.1.	Refer to clause 4.1.16A
Network Opportunity Map	1 October each year	References (e.g. hyperlink) to the relevant Network Operator's website



## 3. Information to be provided by Network Operators

### 3.1. Scope

3.1.1. For the avoidance of doubt, this paragraph 3 applies to information required to be provided by Network Operators for the purposes of inclusion in the Congestion Information Resource.

### 3.2. Limit Advice

3.2.1. Network Operators must provide all Limit Advice, required to be published by AEMO in the Congestion Information Resource, in accordance with the requirements specified in the WEM Procedure: Limit Advice Requirements.

3.2.2. AEMO will publish and update Limit Advice in accordance with Table 3.

### 3.3. Other Network capability and status information

3.3.1. AEMO may provide references or links on the WEM Website to related information about a Network available on the Network Operator's website, such as its Network Opportunity Map.

## 4. Annual congestion report

4.1.1. AEMO must prepare and publish on the WEM Website by 31 March each year, an annual congestion report in accordance with clause 2.27B.6.

4.1.2. The annual congestion report must include the information set out in clauses 2.27B.6 and to avoid doubt will include the following:

- (a) analysis of the Constraint Equations that bound during a Dispatch Interval, which includes, but not is limited to:
  - (i) the Constraint Equations that bound most frequently and insights (such as parts of the SWIS where the Constraint Equations bound and the power system conditions under which this occurred); and
  - (ii) comparisons to previous years and trends, where data is available;
- (b) assessment of market impact of Network congestion, which includes, but is not limited to, comparisons to previous years and trends, where data is available;
- (c) for the purposes of clause 2.27B.6(b)(i), augmentations of the SWIS refers to expected major Network augmentations<sup>1</sup> that are likely to affect, or could result in Network congestion in the next 5 years, or any other period as proposed by the Network Operator, and agreed with AEMO, that are known to AEMO at the time of preparing the annual congestion report; and
- (d) changes in load profile, including where this is impacted by embedded generation, that significantly impacted Network congestion.

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<sup>1</sup> Augmentation has the meaning given in Technical Rules

- 4.1.3. The annual congestion report will also include the information that AEMO, in its reasonable opinion considers relevant in order to implement the Congestion Information Resource Objective which may include:
- (a) Constraint Equation changes and insights (such as inclusions and retirements of Constraint Equations and reasons for the changes);
  - (b) major transmission Outages or augmentations during the Relevant Period, including trends and insights (such as Outage duration, types of Outages, time of submission of the Outages versus the start time of the Outages, and impact of these Outages on Constraint Equations or Network congestion); and
  - (c) major Network Outages in the next 5 years or any other period as proposed by the Network Operator, and as agreed with AEMO (such as Outage duration, types of Outages, time of submission of the Outages versus the start time of the Outages, and impact on Constraint Equations or congestion of these Outages).

#### **E[C] Network Outages Assessment**

In this assessment, AEMO would consider information already available from Network Operators through Outage submissions or the Network Operator' Outage Intention Plan

- 4.1.4. In preparing the annual congestion report for the current year, AEMO must only publish Public Information.
- 4.1.5. Network Operators must confirm and, if it has not already not already done so, provide to AEMO all information required by Table 4 that relates to the Relevant Period, by 5:00PM on 30 November following the Relevant Period.
- 4.1.6. Network Operators must provide any information required under paragraph 4.1.4 to AEMO electronically and in the following format:
- (a) in one or more documents that clearly specify all details required for each type of information in Table 4;
  - (b) where additional information is provided in support of information provided under paragraph 4.1.6(a), it must be in a format suitable for the additional information.
- 4.1.7. When providing forecast dates under in paragraph 4.1.4, Network Operators may provide indicative dates if the exact date is not yet known.
- 4.1.8. All information provided by Network Operators under paragraph 4.1.4 must be based on the best available information known to the Network Operator at the time of preparing the information.
- 4.1.9. Without limiting paragraph 4.1.4, AEMO may request in writing, and Network Operators must provide AEMO with, any additional information that AEMO, in its reasonable opinion, considers relevant to the Congestion Information Resource Objective.

**Table 4 Information to be provided by Network Operators to AEMO**

Information <sup>2</sup>	Detail
<b>New connection to SWIS – Generating System</b>	<ul style="list-style-type: none"> <li>• Location;</li> <li>• General Network connection arrangements;</li> <li>• General details of the Generating System;</li> <li>• Generating System commissioning status;</li> <li>• Forecast date Generating System will enter into service.</li> </ul>
<b>New connection to SWIS – Load</b>	<ul style="list-style-type: none"> <li>• Location;</li> <li>• General Network connection arrangements;</li> <li>• Maximum size of the Load;</li> <li>• Load uptake status<sup>3</sup>;</li> <li>• Forecast date Load will enter into service.</li> </ul>
<b>Augmentation to SWIS, including any NRS</b>	<ul style="list-style-type: none"> <li>• Background;</li> <li>• Forecast date, or actual date where known, the augmentation will enter into service;</li> <li>• Details of impact on the Network<sup>4</sup>.</li> </ul>
<b>Decommissioning of a Generating System, Load, or any Network elements</b>	<ul style="list-style-type: none"> <li>• Location;</li> <li>• Details of Generating System/Load being decommissioned;</li> <li>• Forecast date/time, or actual date/time where known, of decommissioning.</li> </ul>
<b>Changes to Network elements or operation including:</b> <ul style="list-style-type: none"> <li>• primary equipment (e.g. new substation/line)</li> <li>• secondary equipment (e.g. new special protection scheme)</li> <li>• operating arrangements (e.g. new/modified open points)</li> <li>• contractual arrangements (e.g. new Network Control Service)</li> </ul>	<ul style="list-style-type: none"> <li>• Background and general details;</li> <li>• Forecast effective date, or actual date where known, of change;</li> <li>• Details of impact on the Network.</li> </ul>

<sup>2</sup> Information relevant to material changes that have resulted in, are likely to result in or could result in Network congestion.

<sup>3</sup> Refers to how the active power and reactive power of a Load will increase over the lifecycle of a project, e.g. over a number of planned stages and their timings.

<sup>4</sup> Impact on the Network includes, but is not limited to, details of commissioning, Outages related to the commissioning and changes to power system operation prior to, during and after a relevant augmentation to the SWIS.

## Appendix A. Relevant clauses of the WEM Rules

Table 5 details:

- (a) the head of power clauses in the WEM Rules under which the Procedure has been developed; and
- (b) each clause in the WEM Rules requiring an obligation, process or requirement be documented in a WEM Procedure, where the obligation, process or requirement has been documented in this Procedure.

**Table 5 Relevant clauses of the WEM Rules**

Clause
2.27B.8(a)
2.27B.8(b)
2.27B.8(c)
2.27B.8(d)
2.27B.3(e)
2.27B.4(b)
2.27B.6(d)