



PROPOSED AMENDING RULES TO THE WHOLESALE ELECTRICITY MARKET RULES – TRANCHE 1

EXPLANATORY MEMORANDUM

Message from the Taskforce Chair

Dear Stakeholder,

I am pleased to release Tranche 1 of the draft Amending Rules for the new Wholesale Electricity Market. This is a major milestone in the implementation of the Energy Transformation Strategy, and marks the culmination of extensive policy design work and industry consultation over 2019-20.

These Amending Rules set out the new arrangements for the Security Constrained Economic Dispatch (SCED) market design, Short Term Energy Market, Essential System Services (ESS) framework, Supplementary ESS Procurement Mechanism, Generator Performance Standards, and Frequency Operating Standards, Operating States and Contingency Events framework. Together, these components form the core of the new WEM, and give effect to Taskforce decisions outlined in 11 Information Papers.

I invite the industry to engage with this package of Amending Rules through the six Transformation Design and Operation Working Group meetings that have been scheduled over July and August. This is your opportunity to provide input into the development of a new WEM that is robust and flexible to respond effectively to changing power system needs while maintaining efficient market outcomes.

Following consultation and incorporation of industry feedback, I look forward to providing this package of Amending Rules to the Minister for Energy for making.

Whist this is a major achievement for the Taskforce and the industry, work remains to be done. Over the coming months, I look forward to releasing further tranches of Amending Rules for industry consultation to complete the remaining consequential arrangements for the new WEM.

I would like to take this opportunity to thank the Energy Transformation Implementation Unit, AEMO, Western Power and other energy sector stakeholders for this significant achievement, and I look forward to continue working with you in implementing an important component of the Government's Energy Transformation Strategy.

Stephen Edwell

Chair

Energy Transformation Taskforce

Background

The detailed design of most aspects of the new Wholesale Electricity Market (WEM) arrangements to be implemented on 1 October 2022 as part of the Energy Transformation Strategy is now complete.

Throughout 2019-20, the Energy Transformation Taskforce (Taskforce) released 20 Information Papers outlining the features of the new WEM design and power system security and reliability arrangements. The new arrangements are to be implemented primarily through changes to the WEM Rules.

Drafting of the first major tranche ('Tranche 1') of these Amending Rules is now complete, covering the core operational components of the new WEM and power system security and reliability arrangements. The Amending Rules comprising Tranche 1 implement the:

- 'Foundation Market Parameters' as outlined in the Taskforce information paper: [Foundation Market Parameters](#), including the introduction of a SCED market design, facility bidding for all market participants, co-optimisation of energy and frequency control ESS, and a range of secondary market design settings, such as the retention of the Short Term Energy Market (STEM);
- new framework for specification and acquisition of frequency control ESS, including the new [Supplementary ESS Procurement Mechanism \(SESSM\)](#), as outlined in the Taskforce information papers [Frequency Control Technical Arrangements](#), and [Frequency Control ESS Acquisition, Cost Recovery and Governance](#);
- revised Frequency Operating Standards, Operating States and Contingency Events framework for the South West Interconnected System (SWIS), as outlined in the Taskforce information papers [Revising Frequency Operating Standards in the SWIS](#), and [Revising the Operating States and Contingency Events framework in the SWIS](#);
- scheduling and dispatch processes for energy and ESS in the WEM, as outlined in the Taskforce information papers [Energy Scheduling and Dispatch](#), and [ESS Scheduling and Dispatch](#); and
- regulatory framework for revised generator performance standards for the SWIS to be implemented through the WEM Rules, as outlined in the Taskforce information papers [Power System Security and Reliability Framework](#), [Generator Performance Standards – Compliance and Monitoring](#), and [Generator Performance Standards – Regulatory Framework, Monitoring, and Rectification](#).

Consultation process

The Exposure Draft of the Amending Rules (Tranche 1) is now available in the consultation section of the Energy Transformation website at <https://www.wa.gov.au/organisation/energy-policy-wa/energy-transformation-strategy>.

Stakeholders are invited to provide written comment on this rules package by 5:00 PM Western Standard (Perth) time on 28 August 2020 to:

energytransformation@energy.wa.gov.au

The Energy Transformation Implementation Unit is also available on request to meet with interested stakeholders to discuss the Amending Rules. Contact can be made using the email address above.

Six meetings of the Transformation Design and Operation Working Group (TDOWG) have been planned to consult with stakeholders on Tranche 1 of the Amending Rules.

Date and time of TDOWG	Topics of Amending Rules	Relevant sections of the Amending Rules
29 July 2020 9:30am -12:00pm	Frequency Operating Standards, Operating States, Contingency Events Framework; Essential Systems Services Framework	2.34A, 3.1 - 3.15, Chapter 3B, Appendix 13
5 August 2020 9:30am – 11:30 am	Supplementary ESS Procurement Mechanism (SESSM)	3.15A, 3.15B
10 August 2020 9:30am – 11.30 am	STEM	4.12, 4.26, Chapter 6
13 August 2020 9:30am -12:00pm	Scheduling and Dispatch (part 1) includes Central Dispatch pre-processes and data requirements; Real-Time Market Submissions – obligations for Market Participants in relation to format, timing, offer construction; AEMO’s validation and processing of Real-Time Market Submissions in preparation for Central Dispatch; and Dispatch Algorithm.	7.1 – 7.5
19 August 2020 9:30am – 12:00pm	Scheduling and Dispatch (part 2) includes Central Dispatch and tie-breaking; Dispatch inflexibilities; Scarcity and intervention; Market Schedules; Commitment requirements; Dispatch compliance; and Market Advisories;	7.6 – 7.11
26 August 2020 9:30am -12:00pm	Scheduling and Dispatch (part 3) includes Price determination; and Publication of market information.	7.11A – 7.11C; 7.13

Two TDOWG meetings were held on 9 June and 16 June 2020 to consult on the planned Generator Performance Standards (Chapter 3A) and related monitoring and compliance frameworks. The presentations and minutes for these TDOWGS are available in the consultation section of the [Energy Transformation Strategy website](#) (TDOWG meetings [13](#) and [14](#)). Amending Rules related to transitional arrangements to implement the new Generator Performance Standards monitoring and compliance framework for existing generators will be published for stakeholder consultation in August 2020.

Following the completion of the formal consultation period for Tranche 1, the Taskforce will make further amendments to the proposed Amending Rules as required. These will then be published on the Energy Transformation Strategy website for a period of one week. This copy of the Amending Rules will identify where changes have been made in response to stakeholder

feedback. Following the one-week publication period, the Amending Rules will be submitted to the Minister for Energy for approval and gazettal.

The Taskforce has endeavoured to anticipate the drafting of future tranches of Amending Rules as part of the preparation of Tranche 1. However, the development of future tranches of Amending Rules or the outcomes of public consultation may result in Tranche 1 being amended at a future date. Where previously consulted-on Amending Rules are altered as a result of subsequent Amending Rules development or stakeholder consultation, this will be made clear in explanatory memoranda and annotations within the draft Amending Rules.

The planned timeframes for consultation, approval and gazettal of Amending Rules tranches is outlined below:

Tranche	Tranche Content	Consultation Period	Approval and Gazettal
1	<ul style="list-style-type: none"> Foundation Market Parameters (incl. STEM) Frequency Co-optimised ESS Scheduling and Dispatch Generator Performance Standards Framework (incl. monitoring & compliance) Frequency Operating Standards, Operating States, and Contingency Events Frameworks 	24 July -28 August 2020	September/October 2020
2	<ul style="list-style-type: none"> Outage Management and Commissioning Tests Operational Planning (PASA) WEM Monitoring and Compliance Market Settlement Participation and Registration framework 	August/September 2020	October/November 2020
3	<ul style="list-style-type: none"> Reserve Capacity Mechanism (RCM) Prioritisation and Network Access Quantities Framework RCM Storage Accreditation Application and Queuing Policy for Constrained Network Access 	September/October 2020	November 2020
4	<ul style="list-style-type: none"> Transitional Arrangements 	January/February 2021	March 2021
5	<ul style="list-style-type: none"> Non-Cooptimised ESS Framework Market Information Framework Market Power Mitigation Reliability Standards Framework 	January/February 2021	April 2021

Tranche 1 of the draft Amending Rules contains the following major sections. These will be consulted on in TDOWG meetings as per the schedule above. Relevant sections of the proposed Amending Rules have been highlighted below to assist with navigating the rules.

The proposed Amending Rules have been annotated throughout with explanatory notes to provide a summary and/or clarify the intent of the rules. These explanatory notes also indicate where further amendments are anticipated to the rules as drafted, pending work that is progressing in other parts of the Energy Transformation Strategy. Sections of the rules that are not being consulted on, but have been added for completeness, are greyed out. Industry is requested to focus attention and feedback on the sections specified below for the purposes of consultation:

- Generator Performance Standards contained in new Chapter 3A and Appendix 12.
- Revised Power System Security and Reliability matters:
 - Frequency Operating Standards in new Chapter 3B and Appendix 13,
 - New Operating States and Contingency Events Framework in revised sections 3.2, 3.3., 3.4, 3.5 and new section 3.8A,
- New Essential Systems Services (ESS) framework, noting that the Amending Rules focus on the Frequency Co-optimised ESS. A framework for other types of non-co-optimised ESS is yet to be developed by the Taskforce, which may require potential further amendments to some of these Amending Rules at a later time:
 - ESS accreditation processes (new section 2.34A)
 - New definitions of ESS and ESS Standards in revised sections 3.9 and 3.10
 - Determining and procuring ESS requirements in revised section 3.11
 - Reviews of ESS process and Standards in revised section 3.15
 - Supplementary ESS Procurement Mechanism in new section 3.15A
 - Expressions of Interest process for ESS in new section 3.15B
- Short Term Energy Market in revised Chapter 6, and relevant clauses in Chapter 4 (4.12.1 and 4.26)
- Real-Time Market Operation and Dispatch in revised Chapter 7, with existing chapters 7A and 7B deleted.
 - Heads of power for AEMO to operate the new Real-Time Market in section 7.1
 - Central dispatch processes and data requirements in sections 7.1 and 7.2
 - Real-Time Market Submissions in section 7.4
 - Obligations related to the Dispatch Algorithm in section 7.5
 - Central Dispatch in section 7.6
 - Scarcity and intervention in section 7.7
 - Market Schedules in section 7.8

- Facility Commitment in section 7.9
- Dispatch Compliance in section 7.10
- Market Advisories in section 7.11
- Price Determination in section 7.11A – 7.11C
- Publication of specific Real-Time Market information in section 7.13

The Glossary has also been amended substantively to reflect new definitions. Although these will not directly be consulted on, where the definition adds to the context, they will be highlighted during consultation.

Components of this Amending Rules package

Generator Performance Standards, Monitoring, and Compliance

In July 2019, the Taskforce approved the relocation of GPS and associated negotiation, monitoring, and compliance frameworks from Western Power’s Technical Rules to the WEM Rules.¹ Implementation of the framework through the WEM Rules rather than the Technical Rules enables AEMO to have a shared role (along with Western Power) in the negotiation of GPS for generators connecting to the SWIS and the WEM Rules provides for a more targeted and responsive compliance regime.

A new Chapter 3A of for the WEM Rules will set out the framework, along with a new Appendix 12, which sets out the GPS under which new generators will connect to the transmission network:

- *The negotiation of GPS within an ideal and minimum range (3A.5 and Appendix 12):* Most GPS under Appendix 12 include an ‘ideal’ and ‘minimum’ standard, with negotiated standards to apply to a generator only permitted within this range. The framework places obligations on generators to address certain matters identified by AEMO and the Network Operator in proposing GPS during the connection process. The new framework allows for trigger events to be included within a negotiated GPS.
- *a GPS Register to document all agreed standards (3A.7):* The Network Operator will be required to establish a register containing minimum information for each relevant generator on the SWIS (the GPS Register). This GPS Register will become the single source of information against which compliance will be measured. The GPS Register will not be public; however, the Network Operator is required to share the contents of the GPS Register with AEMO and the Economic Regulation Authority (ERA).
- *A self-monitoring program to monitor compliance with Registered GPS (3A.6):* Generators are required to develop their own GPS self-monitoring plan consistent with a template outlined by AEMO in a WEM Procedure, unless variations can be justified. AEMO is responsible for approving all self-monitoring plans, which must be in place before a generator receives its final approval to generate. Generators will be provided with six

¹ Applicable to Market Participants with transmission connected generating systems. Those generators connecting to the distribution system, or who do not wish to participate in the WEM, are referred to Western Power’s Technical Rules.

months to undertake any required changes and resubmit for AEMO approval if the template is amended.

- *A compliance framework (3A.8 and 3A.10 - 3A.12)*: The framework allows for non-compliance or suspected non-compliance to be detected through a generator's own monitoring, or by the Network Operator or AEMO through central monitoring activities or other observation. Generators will have the option to submit a Rectification Plan in relation to any identified non-compliance to AEMO. Rectification Plans must be agreed by AEMO, and the Network Operator. Once approved, generators will be immune from investigation in relation to the non-compliance, except in very serious incidences, or where the non-compliance is a repeat occurrence.

Other matters addressed in the new Chapter 3A include:

- *Generator Modifications (3A.13)*: In response to stakeholder feedback, the new framework provides improved guidance on how generator modifications are to be defined and the process for undertaking them.
- *A Testing Procedure (3A.9)*: AEMO is required under the framework to develop a WEM Procedure outlining the range of testing requirements for generators.
- *Exemptions (3A.3)*: Section 3A.3 allows the Network Operator (in consultation with AEMO) to exempt a generator from the requirements under Chapter 3A and Appendix 12, except those sections that relate to exemptions and generator modifications

A detailed explanatory memo addressing each element of the new Chapter 3A of the WEM Rules was published on the [Taskforce website](#) on 20 June 2020. An amended version of the memo has subsequently been published in its place, reflecting changes resulting from public consultation.

Transitional rules to apply the new GPS framework to existing generators are currently in development by the Taskforce and are expected to be published for stakeholder comment in August 2020. Further information on these transitional arrangements can be found in the Taskforce information paper [GPS Compliance and Monitoring- Transitional Arrangements](#).

Frequency Operating Standards, Operating States and Contingency Events Framework

The Amending Rules allow for the introduction of a new Reliable Operating State, new Power System Security Reliability Principles, and a new WEM Procedure to outline the way in which AEMO will determine and mitigate risks to reliability.

Changes to the existing Operating States Framework remove the existing “cascading” Normal and High-Risk states. Two new operating states – *Satisfactory* and *Secure* – are introduced in their place. The framework described in the Amending Rules articulates specific Principles that AEMO must follow when maintaining Power System Security and provide for additional detail to be contained in WEM Procedures.

The Amending Rules outline the powers AEMO has in order to maintain Power System Security and Power System Reliability.

The existing Emergency Operating State is retained under the Amending Rules, but is modified to be less prescriptive and to take account of the new operating states. AEMO is required to develop a new WEM Procedure to outline the conditions under which it can declare an Emergency Operating State.

A Contingency Events framework is introduced in a new section 3.8A of the Amending Rules. This framework is required to support the operation of SCED and the new ESS framework, as well as the assessment of appropriate GPS to apply to facilities connecting to the SWIS.

Definitions for *Contingency Event*, *Credible Contingency Event*, and a *Non-credible Contingency Event* are introduced in the Amending Rules, along with a reclassification mechanism. The Amending Rules also require AEMO to develop a new WEM Procedure that explains the process for determining a Credible Contingency Event, as well as the conditions under which AEMO might reclassify from one type of event to another (and back), and the process for doing so. This includes a requirement to notify Rule Participants, and the information required when doing so.

A new Chapter 3B, and associated Tables in Appendix 13, sets out the Frequency Operating Standards (FOS) in the Amending Rules. The FOS specify the electrical frequencies at which the power system should be operated under different system and network conditions. For the most part, the frequency settings in the Amending Rules reflect those that are contained in section 2.2 of Western Power's Technical Rules. The Amending Rules cover both the SWIS and Islands² to account for how technological advancements are changing the way in which parts of the system can become islanded.

The Amending Rules introduce new definitions for several different 'bands' which each specify the allowable frequency ranges for various events, and will be used in setting ESS quantities and be referred to in other security related rules and procedures. This includes the *Normal Operating Frequency Band* (which AEMO is required to operate within 99 percent of the time) *Credible Contingency Event Frequency Band* and *Multiple Contingency Event Frequency Band*. Tables in Appendix 13 specify the frequency operating range for each band, including timeframes for the frequency to 'recover' or 'stabilise'.

The Amending Rules for the new Frequency Operating Standards and the Contingency Events framework will commence on 1 February 2021. This is due to the linkage with the Generator Performance Standards which will be commenced under the new Chapter 3A at the same time.

AEMO will develop relevant transitional WEM Procedures for consultation with stakeholders in late 2020.

The Amending Rules for the new Operating States are planned to commence on 1 October 2022 as this is aligned with the commencement of the new WEM arrangements.

The Essential System Services (ESS) Framework

The new framework for frequency co-optimised ESS (FCESS) will replace existing Ancillary Services in the WEM. The five new FCESS are defined in sections 3.9 and 3.10 of the Amending Rules and these are:

1. Regulation Raise
2. Regulation Lower
3. Contingency Reserve Raise

² 'Islands' is a defined term and has been included to account for the existence of several different types of island within the SWIS and the potential for 'separation events' which lead to them being operated by someone other than AEMO, therefore AEMO is not required to meet performance requirements for them.

4. Contingency Reserve Lower
5. Rate of Change of Frequency (RoCoF) control service.

The processes for accrediting Facilities for their ESS capability is outlined in section 2.34A. The Amending Rules provide for detail of equipment testing for the purposes of ESS accreditation to be outlined in a WEM Procedure. For participation in Contingency Reserve, Facilities will be assigned Speed Factors, which for the purposes of dispatch will be converted into Performance Factors (values between 0 and 1). For all other ESS, Facility Performance Factors at new WEM commencement will be 1.

The Amending Rules remove the requirement for AEMO to submit to and seek approval of annual ESS requirements from the Economic Regulation Authority (ERA). The process of determining ESS requirements is to be outlined in a WEM Procedure, noting that these requirements need to be dynamically determined going forward taking into account the dynamic nature of the power system.

The Amending Rules outline a set of conditions where shortfalls in ESS will require AEMO to trigger the Supplementary ESS Procurement Mechanism (SESSM). The trigger conditions are drafted to ensure that the threshold for shortfall is high enough that the benefits of avoiding the shortfall will be worth the cost of running the SESSM processes, but low enough to avoid significant AEMO intervention distorting market outcomes. While a shortfall in ESS is generally undesirable, in setting a trigger threshold the need to build new capacity to prevent an infrequent or unlikely event is avoided where the cost of pre-emptive manual load shedding would be less than the cost of building the new ESS capability.

The Amending Rules also change the ESS reviews to be conducted by the ERA. The first review is to be conducted within two and a half years of new WEM commencement, and subsequently at least once every three years. The content of the reviews is to focus not only on technical parameters, but also whether the costs of ESS provision in the WEM are at an economically efficient level.

The Amending Rules for the ESS framework are planned to commence from 1 October 2022. Transitional arrangements and related Amending Rules and WEM Procedure for ESS accreditation are currently under development and will be consulted-on in coming months, and will commence in early-2021 to provide information and certainty to Market Participants in relation to their obligations.

The Supplementary ESS Procurement Mechanism

The Amending Rules in section 3.15A set out the processes for the new SESSM.

The SESSM is designed to be triggered when there is a shortfall in the provision of ESS, or when inefficient market outcomes (such as the presence and/or exercise of market power) is observed.

AEMO can trigger the SESSM based on:

- forecast medium-term shortfalls in capacity accredited to provide one or more FCESS (an accreditation shortfall); and/or
- frequent short-term forecast shortfalls in capacity participating in real-time FCESS markets, leading to AEMO directions to accredited facilities that are not participating (a participation shortfall).

The ERA can trigger the SESSM based on inefficient market outcomes observed in:

- real-time bidding patterns; and/or
- information received from market-testing processes, such as calls for Expression of Interest (EOI), or other sources of market information that lead the ERA to conclude that new entrants may be able to provide ESS at a lower price than is being observed in the real-time markets.

AEMO's trigger exists to respond to scarcity in the FCESS markets. The ERA's trigger responds to potential or extant exercise of market power with the potential to create inefficiency in the FCESS markets.

The Amending Rules provide for trigger processes for AEMO and the ERA, requiring both entities to outline how conditions for triggering the SESSM and associated evidence will be developed and published.

The Amending Rules also set out processes and requirements for the characteristics of the service to be procured such as the service quantity and service quantity profile, service timing, commencement date, SESSM award duration and minimum availability requirement.

The ERA can veto AEMO's trigger of the SESSM if it is not satisfied that AEMO followed the process outlined in the relevant WEM Procedure. The Amending Rules outline the timeframe within which the ERA must make a decision. The ERA's power to veto is a check to ensure AEMO is applying rigour in determining whether a shortfall exists and therefore whether the SESSM should be triggered. If the ERA does not veto, then AEMO will initiate the procurement of the specified ESS.

When the ERA triggers the SESSM to address inefficient market outcomes, it will require Market Participants that were potentially exercising market power in the FCESS market(s) to provide submissions to the SESSM procurement process. This is to enable the ERA to view the relevant facility's operating costs of providing FCESS. Where such a facility is selected for a SESSM Award, its offer price will be capped to ensure mitigation of market power in the real-time FCESS market.

Once submissions are received from existing and new FCESS service providers, AEMO will be required to undertake a heuristic analysis of the information in the submissions by comparing it to historical ESS price profiles. This analysis enables the determination of the lowest-cost submissions (or a combination of submissions) that should be recommended to be selected for a SESSM Award. AEMO will provide its analysis to the ERA. The ERA will have a final opportunity to veto the SESSM Award (regardless of whether the SESSM was triggered by AEMO or the ERA) if, in its reasonable opinion, the Award will not achieve the lowest practicably sustainable cost of providing the relevant FCESS. If the ERA does not veto the Award, AEMO will confirm the Award and the requirements of service provision to the selected participant.

Once a facility has been granted a SESSM Award, specific bidding requirements will apply to that Facility. These include the minimum quantity the Facility must make available in the relevant real-time FCESS market, and the offer price cap. Refunds will apply where the facility does not meet its obligations in the SESSM award. The refund equations will be drafted through the Market Settlements workstream.

The Amending Rules in section 3.15B require a market test (EOI) process to be run every two years to assess interest in participation from new potential providers. This will help assess if structural issues are emerging in the FCESS markets such that the cost of ESS provision (when compared to prices observed in the real-time FCESS markets) could be lower by facilitating new entrants through the SESSM.

The Amending Rules for SESSM are planned to commence on 1 October 2022 as part of new WEM commencement. Transitional arrangements for a pre-market start EOI process are currently under development and will be consulted-on in due course.

The Short Term Energy Market (STEM)

The Amending Rules make only minor changes to the STEM, with adjustments being made to streamline operational processes and align the market with the introduction of real-time SCED.

The Amending Rules leave current STEM operation deadlines unchanged, but remove the restrictions on the time windows in which Market Participants can submit bilateral contract positions and STEM Submissions ahead of those deadlines.

AEMO will no longer be obliged to provide data for use in constructing STEM submissions to participants at a specific time each day. Rather, AEMO will continually update and publish STEM-specific information based on Pre-Dispatch Schedules which project the outcomes of the Real-Time Market. Participants will use this Pre-Dispatch Schedule data to inform their STEM Submissions.

The Amending Rules do not fundamentally change the approach to market power mitigation in the STEM. They introduce explicit requirements to make STEM Submissions 'in good faith' and relax the requirement for a Market Participant to offer into STEM at short-run marginal cost where it has market power. A Market Participant will be allowed to incorporate a risk premium in STEM offer prices where, due to potential network constraints or Essential System Service dispatch, it is uncertain that a Facility will be able to be dispatched for energy in the Real-Time Market. Consequentially, Reserve Capacity Obligations in clause 4.12.1 are adjusted to remove explicit exclusion of Ancillary Service quantities from the capacity that must be offered into STEM.

The Amending Rules introduce two new optional parameters for STEM Submissions: the *Participant Minimum Interval STEM Price* and the *Participant Interval Maximum STEM Price*. These parameters represent the lowest and highest prices at which a Market Participant is willing to participate in the STEM. A Market Participant can use these parameters to avoid being forced to fully cover its bilateral contract position in the day ahead market, when doing so would otherwise require it to buy energy at the price cap or sell energy at the price floor.

The existing Net STEM Shortfall calculation is replaced with an equivalent *Net Offer Shortfall* which expands the calculation to compare both STEM and Real-Time Market offer quantities with the Reserve Capacity Obligation Quantity. This explicitly ties offers for energy in the Real-Time Market to RCM refund calculations. The calculation remains net of Outages, which are now accounted for based on the *Remaining Available Capacity* for a Facility rather than the quantity of capacity derating for a Facility.

The treatment of Outages and Reserve Capacity Obligations will be reviewed with Amending Rules in Tranches 2 and 3 respectively, and WEM Rules for market power mitigation may be further amended as part of Tranche 5.

The Amending Rules for changes to the STEM have a commencement date of 1 October 2022, aligning with the availability of data at the start of the new Real-Time Market.

Energy and ESS – scheduling and dispatch

The Amending Rules reflect fundamental changes to the design of scheduling and dispatch arrangements in the WEM, adopting a SCED market model. SCED is fundamental to realising

the benefits of the sustainable and efficient management of network constraints, and is expected to deliver:

- transparent determination of the least-cost dispatch outcome for the market, accounting for generation offers and network conditions, resulting in increased competition in the Real-Time Market and a downward pressure on the energy price over time;
- greater automation in the calculation of network constraints, improving network efficiency by allowing constraints to be set less conservatively without compromising system reliability; and
- greater automation in the dispatch process, so that system security can be managed efficiently as the level of constraints increases, and the generation mix continues to change.

These changes are incorporated in a significantly revised Chapter 7. Existing chapters 7A (Balancing Market) and 7B (Load Following Service Market) are deleted.

A new *Real-Time Market* will determine dispatch for energy and ESS. AEMO will operate the market using a new *Dispatch Algorithm* which seeks to minimise the overall cost of supply while accounting for network and security constraints. AEMO must describe the detailed mathematical formulation of the Dispatch Algorithm in a Market Procedure to provide transparency to Market Participants and other stakeholders. AEMO must also set out the *Real-Time Market Timetable*, setting out timelines for submissions and publication of market results.

The Amending Rules require every Market Participant to make *Real-Time Market Submissions* for each of its Registered Facilities under new section 7.4, with requirements to account for Outages, Reserve Capacity Obligations, Supplementary ESS Awards, and intermittent generation forecasts. Submissions may be made at any time, subject to being before *Gate Closure* (a maximum of 15 minutes ahead of real-time) and before the *Real-Time Market Submission Acceptance Horizon* (a minimum of four weeks ahead).

Participants must signal commitment intentions by designating each megawatt offered as either *In-Service Capacity* (meaning the capacity is planned to be synchronised and will be available for dispatch) or *Available Capacity* (meaning that the capacity is not planned to be synchronised, but would be available for dispatch if given notice in accordance with Standing Data startup time) Facilities which can start, reach minimum running level, and shut down within 60 minutes are classed as *Fast Start Facilities*, and may submit a *Dispatch Inflexibility Profile* to reflect startup and shutdown profiles. These Facilities may be dispatched where offered as Available Capacity, but AEMO must respect the relevant Dispatch Inflexibility Profile. Market Participants may account for startup and minimum running costs in the prices in their Real-Time Market Submissions.

The Dispatch Algorithm must include Constraint Equations to reflect the range of restrictions required to implement secure dispatch. This includes constraints on network capacity, ESS requirements and their relationship with energy dispatch, facility energy storage capacity, and facility capability to provide ESS at different levels of energy dispatch.

AEMO will use the Dispatch Algorithm to operate the *Central Dispatch* process in the new section 7.6 contained in the Amending Rules. AEMO will issue Dispatch Instructions to Market Participants to vary injection of a Registered Facility and to enable a Registered Facility for provision of a Frequency Co-optimised Essential System Service. Scheduled Facilities will receive a Dispatch Target, which must be met within a tolerance. Semi-Scheduled Facilities will generally receive a Dispatch Cap which must not be exceeded, but if scheduled for Essential System Services may receive a Dispatch Target. The Taskforce is considering whether to amend this requirement for hybrid facilities (a combination of energy storage and generation) where AEMO has direct control of part of the facility. AEMO may maintain direct control of a Registered

Facility via Automated Generator Control when it is providing a Frequency Co-optimised Essential System Service, and for energy where the Market Participant has taken that option. AEMO must still determine Dispatch Instructions for such Facilities.

AEMO may intervene in the Central Dispatch process in certain circumstances under the new section 7.7 of the Amending Rules. These powers are generally tied to having made prior notification to the market in accordance with rules for Projected Assessment of System Adequacy, and include the use of Supplementary Capacity Contracts, recalling or cancelling Outages, requiring Facilities accredited to provide ESS to make themselves available, and adjusting ESS requirements. As far as possible, intervention will be implemented through inputs to the Dispatch Algorithm.

AEMO must publish three sets of *Market Schedules* under new section 7.8:

1. The *Dispatch Schedule* covers every five-minute *Dispatch Interval* in the next two hours.
2. The *Pre-Dispatch Schedule* covers every 30-minute *Pre-Dispatch Interval* in the next two days
3. The *Week-Ahead Schedule* covers every Pre-Dispatch Interval in the next week.

Each Market Schedule may contain multiple *Scenarios*, representing different sets of input data (such as high and low load or with and without network outages). Each Market Schedule must contain a single designated *Reference Scenario* which represents AEMO's best estimate of future market outcomes.

Market Participants are required to comply with Dispatch Instructions, and must ramp at a linear rate to meet Dispatch Targets. Semi-Scheduled Facilities must not deliberately operate in a way that increases their variation from their forecast output.

A new section 7.11 combines the previous Dispatch Advisory and Market Advisory into a single Market Advisory section, requiring AEMO to provide information to the market in certain situations which have not already been signalled by another mechanism.

AEMO will determine Market Clearing Prices for energy and each Frequency Co-optimised Essential System Service based on the marginal cost of meeting an incremental change in the requirement. Sections 7.11A, 7.11B and 7.11C also provide for:

- forecast prices to be used where the Dispatch Algorithm cannot be run;
- prices from the previous interval to be used where the Dispatch Algorithm runs with incorrect input data; and
- intervention pricing where AEMO intervenes in dispatch inputs or outputs.

Almost all information from every Market Schedule will be made public under section 7.13 shortly after the schedule is run, including forecast Dispatch Targets and Essential System Service enablement for each Facility. Real-Time Submission data (including prices) will be made public after real time. Amendments to Chapter 10 recognising specific confidentiality classes for market information will be made in Amending Rules for Tranche 5.

The Amending Rules to introduce SCED for the WEM will commence on 1 October 2022.