

25 July 2017

Mr John Pierce  
Chair  
Australian Energy Market Commission

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Brisbane QLD 4122  
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By Electronic Submission

Dear Mr Pierce

### Requests for Rules – Market Suspension

AEMO submits the two attached proposals requesting the Australian Energy Market Commission (AEMC) to make Rules under section 91 of the National Electricity Law (NEL), relating to market pricing when the spot market is suspended:

- The first proposal is a request for an **urgent Rule** under section 96 of the NEL. It is intended to simplify the pricing regimes for market suspension, remove barriers to the automation of suspension pricing, and allow for a return to dispatch pricing where possible in an extended suspension period. This is expected to mitigate the undesirable pricing outcomes and uncertainty seen during the market suspension in South Australia between 28 September and 11 October 2016. AEMO considers the possibility of market suspension to be highest in the coming 2017/18 summer, and is working to automate suspension processes by December 2017.
- The second proposal addresses the aspect of compensation for the application of scheduled pricing during a market suspension. AEMO expects that this would reduce the need for operational intervention to maintain a secure and reliable power system while the spot market remains suspended. While AEMO appreciates the AEMC's early consideration of this proposal, it is not critical for a determination to be made by December 2017. Accordingly AEMO is not submitting this as an urgent Rule request.

AEMO requests the AEMC give consideration to making these Rules as proposed.

Any queries concerning this rule change proposal should be directed to Ruth Guest on 02 9239 9179 or [ruth.guest@aemo.com.au](mailto:ruth.guest@aemo.com.au).

Yours sincerely



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Attachments: Market Suspension Rule Changes – Proposal for Urgent Rule  
Market Suspension Rule Changes – Participant Compensation  
Minutes of Market Suspension Working Group



# MARKET SUSPENSION RULE CHANGES

PROPOSAL FOR URGENT RULE

**25 July 2017**







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## 1. SUMMARY

The Australian Energy Market Operator (AEMO) requests the Australian Energy Market Commission to make a rule to amend provisions of the National Electricity Rules (NER) relating to pricing during market suspension. AEMO considers these amendments are required as part of a broad program of changes to be in place before summer 2017/18.

This is a request for an urgent rule. The issues identified in relation to the current NER prejudice the effective administration of the wholesale electricity exchange operated by AEMO during periods of market suspension. It is most likely that any requirement to suspend the market in a NEM region would arise in extreme conditions, when the supply and demand position is tight. Based on the supply outlook for Victoria and South Australia, AEMO considers the proposed amendments need to be in place for summer 2017/18. The “standard” rule change process would not allow consultation to be completed by that time.

The proposed changes would reduce the number of suspension pricing regimes available and simplify the decision-making process for applying them, harmonise price scaling during market suspension with other forms of price scaling in the NEM and allow AEMO to revert to dispatch pricing if system conditions allow.

The changes proposed provide the market with greater pricing certainty in real time, and better pricing signals that reduce the need for (and cost of) operational intervention to keep the power system secure during a suspension. The proposed rule will facilitate the automation of suspension pricing and associated processes, allowing for significantly improved operational outcomes during periods of market suspension.





## 2. URGENCY

This is a request for an urgent rule. The issues identified in this proposal have been shown to be detrimental to the effective administration of the wholesale electricity exchange during a market suspension. A simplified pricing process that can be automated would provide certainty and substantially eliminate associated financial and operational risk for participants in non-suspended regions. It would also greatly reduce the administrative burden for AEMO at a time when resources should be fully focused on restoring power system and market operation.

It is most likely that any requirement to suspend the market in a NEM region would arise in extreme conditions, particularly extended periods of high temperatures, when the supply and demand position is tight. Following the withdrawal of significant thermal generation since early 2016, AEMO's energy current supply outlook for Victoria and South Australia<sup>1</sup> indicates this balance is indeed tight for the coming summer. AEMO also notes that recent amendments to South Australia's emergency management legislation give the Minister extended powers to issue directions in an electricity supply emergency. These could of course include a direction to suspend the spot market. Similar executive powers could also be exercised in Victoria.

AEMO considers that market suspension during summer 2017/18 must be considered possible. Because the "standard" rule change process would not allow consultation to be completed by December 2017, AEMO requests that this proposal be considered as an urgent rule change to avoid an imminent threat to the effective operation and administration of the wholesale exchange.

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<sup>1</sup> AEMO Energy Supply Outlook. June 15, 2107. <https://www.aemo.com.au/Media-Centre/AEMO-Energy-Supply-Outlook>



### 3. RELEVANT BACKGROUND

The National Electricity Market has been suspended twice since commencing in December 1998:

- Market systems failure - market suspension in all regions from trading interval ending 23:30 on 8 April 2001 to trading interval ending 01:30 on 9 April 2001.
- South Australia black system and subsequent Ministerial direction - market suspension in South Australia from trading interval ending 16:30 on 28 September 2016 to trading interval ending 22:30 on 11 October 2016.

During the September 2016 event, AEMO identified a number of issues with the current NER market suspension framework. The proposed rule seeks to implement a number of recommendations in AEMO's final report on the black system in South Australia on 28 September 2016 (Final Report)<sup>2</sup> and reflects subsequent stakeholder engagement on detailed rule changes. The relevant recommendations in the Final Report are:

Recommendation 15: AEMO to develop detailed procedures on the differences required in power system operations during periods of market suspension and identify if any NER changes are required to improve the process.

Recommendation 16: AEMO to investigate the possibility of implementing a better approach for ensuring the minimum stable load of generating units is taken into account in the dispatch process.

Recommendation 17: AEMO to review market processes and systems, in collaboration with Registered Participants, to identify improvements and any associated NER or procedure changes necessary to implement those improvements.

AEMO established a stakeholder engagement process to inform the development of this rule change proposal. A participant working group met on four occasions between April and June 2017.

AEMO is proposing rule changes in relation to recommendation 17. AEMO has, through discussions with Registered Participants, determined that existing processes are sufficient to address recommendation 16.

#### 3.1 Current framework

##### Market Suspension

Market suspension is declared by AEMO in accordance with clause 3.14.3 of the NER. A single region or multiple regions can be included in any declaration. AEMO may declare a suspension if any of the following conditions occurs:

- Collapse of the power system to a black system.
- Jurisdictional direction under state of emergency legislation.
- AEMO determines that the spot market cannot be operated in accordance with provisions of the NER.

The declaration of market suspension serves two primary roles:

- It allows AEMO to suspend central dispatch if necessary, and determine market prices in accordance with the NER clauses relating to market suspension, while the underlying cause is being resolved.
- It informs market participants of a significant issue occurring in the market and provides some price control where necessary, allowing participants to work with AEMO to manage operational issues and to invoke risk management strategies.

<sup>2</sup> AEMO. *Black System in South Australia – Final Integrated Report*. Published 28 March 2017. [http://aemo.com.au/-/media/Files/Electricity/NEM/Market\\_Notes\\_and\\_Events/Power\\_System\\_Incident\\_Reports/2017/Integrated-Final-Report-SA-Black-System-28-September-2016.pdf](http://aemo.com.au/-/media/Files/Electricity/NEM/Market_Notes_and_Events/Power_System_Incident_Reports/2017/Integrated-Final-Report-SA-Black-System-28-September-2016.pdf)



AEMO manages a market suspension in accordance with the NER and AEMO's supporting operational procedures<sup>3</sup>. During market suspension AEMO uses pricing mechanisms other than dispatch pricing where necessary.

On 28 September 2016 AEMO declared the market suspended in South Australia following the collapse of the transmission network in that region to a black system. Subsequently, the suspension was extended under direction from the South Australian state government. This extension initially provided additional time for AEMO to complete its investigations and gain confidence that issues associated with the initial cause of suspension were not likely to immediately recur. However, the period of the direction ultimately extended beyond the time at which AEMO considered that normal dispatch in the region could resume.

## Suspension pricing

The NER stipulate a hierarchy of pricing that AEMO should move through, as applicable, as the circumstances of the market suspension unfold. These are described below as normal dispatch pricing, neighbouring region pricing, pre-dispatch pricing, and finally the market suspension pricing schedule. Whilst AEMO can move through these pricing regimes based on the current circumstances, there is no ability to move back to a previous pricing regime when circumstances would otherwise allow it.

*Normal dispatch pricing* is the pricing regime of choice. In any market suspension which is not directly impacting the ability of AEMO to run dispatch and determine spot prices in accordance with the NER, that process should be used. It allows for orderly bidding and dispatch and efficient market outcomes. Market suspension under ministerial direction is an example of where the normal dispatch pricing regime might continue to apply.

*Neighbouring region pricing* is the second pricing regime in the hierarchy, if normal dispatch pricing cannot be used when suspension is declared, or later becomes impractical. AEMO must determine if there is a neighbouring region connected by an unconstrained interconnector, with no local FCAS requirements applicable in the suspended region. In those circumstances AEMO will set prices in the suspended region equal to the neighbouring region prices adjusted for losses.

*Pre-dispatch pricing* is the third pricing regime. Pre-dispatch pricing is only available as an option if normal dispatch or neighbouring region prices have already been used during the suspension but have become impractical. This regime requires AEMO to identify if a 'current' pre-dispatch pricing schedule exists for the suspended region, and if so to apply the prices from that schedule. It is likely that this regime was originally included on the basis that pre-dispatch should closely reflect dispatch outcomes. In practice this is not necessarily the case as participant responses to pre-dispatch signals frequently leads to significant differences between pre-dispatch and dispatch prices.

*The market suspension pricing schedule* is the fourth and final pricing regime. It is used if dispatch pricing, neighbouring-region pricing, and pre-dispatch pricing are not practical or available. AEMO calculates and publishes, on an ongoing basis, a rolling average of half hourly prices for weekdays and weekends, using spot prices from a recent four-week period. Although this pricing regime is somewhat removed from the reality of the current operational and dispatch situation, it offers transparency and operational certainty to the market and is necessary when no other regimes are applicable.

The suspension pricing rules in their current form were implemented by the *National Electricity Amendment (System Restart Ancillary Services and Pricing under Market Suspension) Rule 2006* No.6.<sup>4</sup> The 2006 Rule was intended to address ambiguity in the NER at that time, which could have required the market operator (then NEMMCO) to assess what method of pricing would be adopted on a trading interval by trading interval basis during a suspension.

The 2006 Rule provided that once a method of suspension pricing is adopted it should not be changed unless the situation deteriorates further such that the chosen method is no longer practical. Thus, if pricing is being determined according to the fixed pricing schedule, as the last option, then the scheduled pricing continues until the market suspension is lifted.

<sup>3</sup> SO\_OP\_3706 - Failure of Market or Market Systems, Estimated Price Methodology Suspension, Guide to Market Suspension Pricing Schedule ([www.aemo.com.au](http://www.aemo.com.au))

<sup>4</sup> AEMC. *System restart ancillary service arrangements and pricing under market suspension*. 20 April 2006. <http://www.aemc.gov.au/Rule-Changes/System-restart-ancillary-service-arrangements-and>





In its final determination, the AEMC determined that NEMMCO should not have the additional burden of reviewing the decision at every trading interval, and that NEMMCO should move in only one direction along the hierarchy of methods for setting prices. In practice, and reflecting on the extended suspension in September 2016, the inability to revert to normal dispatch pricing is not helpful. It may incentivise behaviour that is not conducive to orderly bidding and efficient operational outcomes.

### Inter-regional price scaling

Inter-regional price scaling is applied to manage the accrual of negative inter-regional settlement residues. Transmission network service providers (TNSPs) are financially responsible for negative inter-regional residues that accrue across a regulated interconnector with a flow towards the region for which they are the TNSP. If left unmanaged, these residues can quickly accrue. AEMO is required to manage the accumulation of negative inter-regional residues in accordance with its procedure<sup>5</sup>.

When the spot price in a region is set in accordance with the market suspension pricing schedule, the NER requires AEMO to cap (or 'scale') prices in any adjoining region with flows towards the suspended region. Prices in those upstream regions are not permitted to exceed the suspension price, after adjusting for average losses. Similar (but not identical) NER provisions apply where the market price cap, market floor price or administered price cap is applied in a region. There are some differences between the price scaling rules for market suspension compared with other price scaling provisions, including:<sup>6</sup>

- The trigger for price scaling during suspension pricing is an "actual flow" (rather than an energy flow) toward a suspended region.
- Price scaling applies to spot price for market suspension, but dispatch prices for other forms of scaling.
- Price scaling applies to interconnectors for market suspension, but is limited to regulated interconnectors for other forms of scaling.

### Participant compensation

The current framework does not provide for participant compensation due to pricing during market suspension. AEMO considers that application of the market suspension pricing schedule is a form of administered pricing, with implications aligned to those arising from the application of the administered price cap. On that basis it would be appropriate to allow market participants to seek compensation for losses over the duration of the market suspension. This will reduce the risk of generators making their units unavailable for economic reasons during a time of acute operational stress, thereby requiring AEMO to issue directions. Given the urgent nature of this rule proposal, AEMO has decided not to include proposed changes relating to compensation, but will submit a separate rule change proposal to the AEMC addressing this matter.

## 3.2 Dispatch during a market suspension

On 28 September 2016 a market suspension was declared in relation to a collapse of the power system to a black system in South Australia. Late on 29 September 2016 AEMO determined that restoration of the power system had reached a level that effectively resolved the black system event. However AEMO did not consider it possible to operate the spot market in accordance with the NER until late on 3 October. On 29 September, AEMO had been directed to keep the market in SA suspended by Ministerial direction under the Essential Services Act 1981. From 4 October until 11 October it was this direction which gave effect to the ongoing market suspension. Further detail on the sequence of events during the 2016 market suspension can be found in the Final Report.

Between 28 September 2016 and 11 October 2016, AEMO continued to provide dispatch instructions to participants in SA, initially manually and later via the central dispatch system. Participants complied with these instructions and energy produced and consumed during this period was settled at the market suspension pricing schedule prices.

<sup>5</sup> Brief on Automation of Negative Residue Management ([www.aemo.com.au](http://www.aemo.com.au))

<sup>6</sup> Refer clauses 3.14.5(e) and 3.14.5(m) compared with clauses 3.9 5(c), 3.9.6A(c), 3.14.2(e)(2) and 3.14.2(e)(4)



Dispatch prices were not linked to the dispatch pattern of generation during the suspension, as the market suspension pricing schedule had been invoked on 28 September. AEMO requested that Generators continue to bid their plant into AEMO's systems and follow dispatch instructions unless otherwise instructed. This helped to ensure that, subject to system security constraints, generation continued to be dispatched as close as possible to economic merit order. Due to the fixed pricing, some generators were incentivised to bid in a way that ensured they were dispatched. Such disorderly dispatch outcomes were counterproductive to the efficient and secure operation of the market.

Towards the end of the market suspension some market participants bid their generation unavailable and awaited direction from AEMO as required. It is likely that this was an economic decision. AEMO directed twice in the last two days of the suspension in order to maintain power system security. AEMO believes that if pricing had been reflective of dispatch outcomes (or a compensation framework was in place), the issuing of directions could most likely have been avoided. AEMO considers the issuing of directions a last resort, it is a complex, resource intensive process which should not be incentivised by the rules.

### 3.3 Issue and proposed changes

The current NER were developed with a major system or computer failure in mind, with AEMO fully occupied with managing the power system. The assumptions made in developing these rules did not consider the possibility of an extended period of market suspension. In South Australia in 2016, a Ministerial direction to keep the market suspended in that region extended the overall period of suspension to about two weeks.

As a result of the events of 2016, AEMO has identified significant inefficiencies created by the current framework during a market suspension:

- Complex decision-making processes for deciding when to apply pricing regimes, with potentially unworkable pricing regimes and price scaling methodologies.
- Resource intensive processes for manually reviewing, adjusting and updating prices during suspension.
- Distortion of subsequent market suspension pricing schedules arising from the delay in manual revision of prices (which could be avoided by automation).
- Incentives on participants to minimise financial loss for non-commercial decisions that are not eligible for compensation.
- Risks to power system security due to an inconsistency between central dispatch and suspension pricing.

The proposed changes would reduce the number of suspension pricing regimes available, simplify the decision making process for applying them, provide for dispatch interval pricing to facilitate automation, and allow AEMO to revert to central dispatch pricing if system conditions allow.



## 4. STATEMENT OF ISSUE

### 4.1 Current Rules

Clause 3.14.5 of the NER details the process AEMO follows for pricing during a market suspension. Figure 1 shows this process, highlighting the path followed for the South Australian black system on 28 September. The previous market suspension in 2001 occurred under the pre-2006 market suspension pricing regime.<sup>7</sup>

There are four possible pricing regimes:

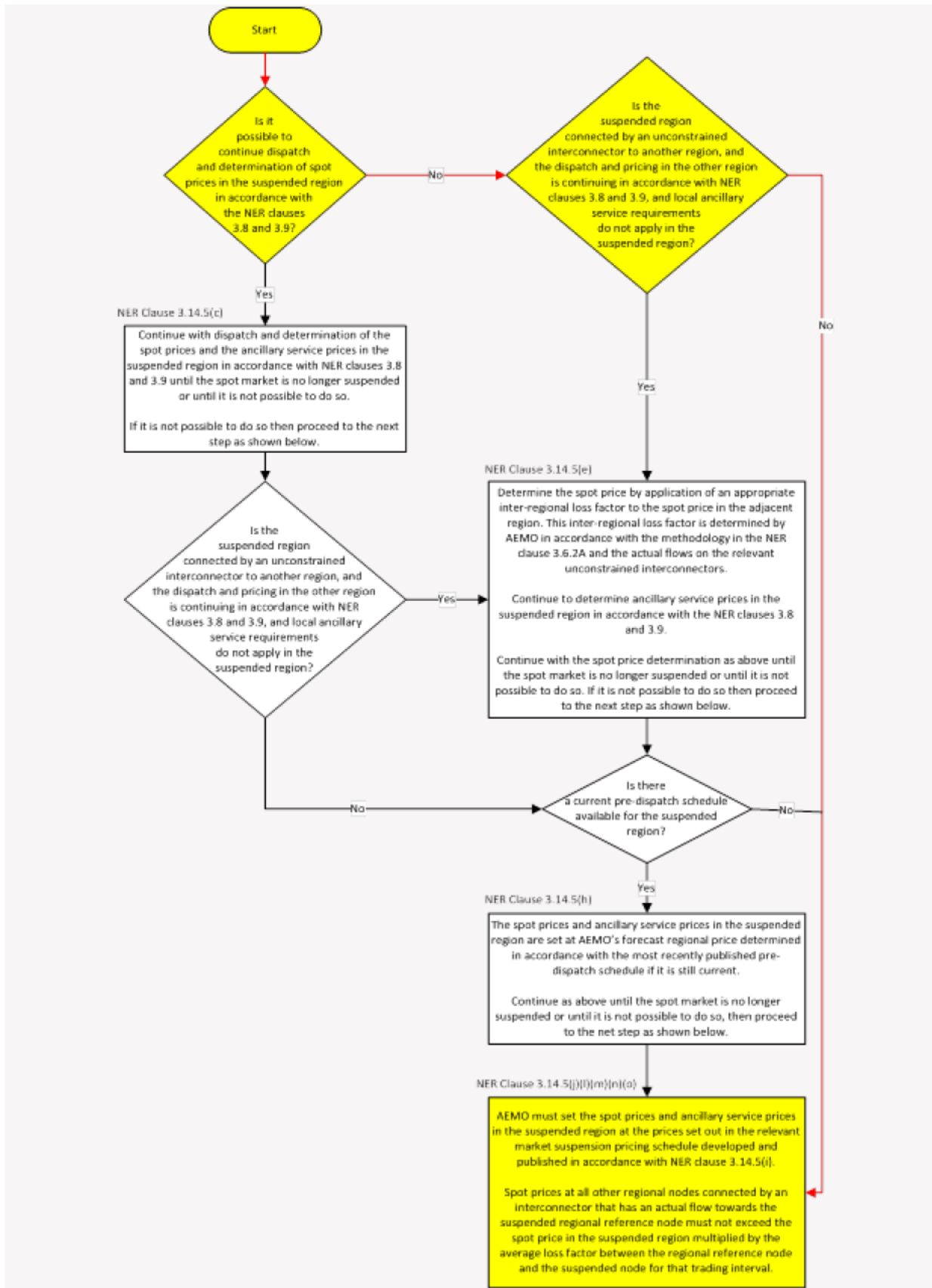
- Normal dispatch pricing (clause 3.14.5(c)).
- Pricing based on a neighbouring region (clause 3.14.5(e)), if:
  - Dispatch pricing in the suspended region is not possible.
  - Dispatch pricing continues in a neighbouring region.
  - There is an unconstrained interconnector between that neighbouring region and the suspended region.
  - There are no local FCAS requirements in the suspended region.
- Pre-dispatch pricing (clause 3.14.5(h)), if:
  - Dispatch pricing or neighbouring-region pricing have already been used during the market suspension.<sup>8</sup>
  - Dispatch pricing and neighbouring-region pricing are no longer practical.
  - A current pre-dispatch schedule exists for the suspended region.
- Pricing based on the market suspension pricing schedule (clause 3.14.5(j)), if dispatch pricing, neighbouring-region pricing, and pre-dispatch pricing are not practical.
  - Clause 3.14.5(l) requires that the schedule reflects reasonable estimates of typical market prices during the periods to which the schedules relate. In practice, AEMO calculates a rolling average of half hourly prices for weekdays and weekends, using spot prices from a recent 4-week period.

“Upstream” Region prices may need to be scaled for pre-dispatch pricing and market suspension pricing schedule in accordance with clause 3.14.5(m) to avoid negative inter-regional settlement residues.

<sup>7</sup> In 2001, NEMMCO used the most recent valid pre-dispatch schedule. This was because the central dispatch process had stopped in all regions.

<sup>8</sup> Pre-dispatch pricing is not available as the initial pricing regime on suspension. The wording of clause 3.14.5(g) is different from paragraphs (d) and (j) in that it applies only ‘during’ (rather than ‘on or during’) a suspension.

**Figure 1 Market suspension pricing logic and path for 28 September 2016**







## 4.2 Issues with the current Rule

### 4.2.1 Suspension pricing complexity

Figure 1 illustrates that the process for selecting the pricing regime is a multi-step process of escalation based on the price intended to reflect the most recent market conditions, subject to the restriction that AEMO progressively moves away from dispatch pricing in the suspension pricing hierarchy, but never back towards it. AEMO considers this process to be unnecessarily complex, as it requires detailed and ongoing examination (at least every 30 mins) of the circumstances against the criteria for moving through the hierarchy. At the extreme, during neighbouring region pricing, reassessment may be required every five minutes.

AEMO has also identified that the rules for neighbouring-region pricing are likely to be unworkable in many scenarios, while pre-dispatch pricing has very limited application and increases decision-making complexity for no obvious gains in efficiency.

*Neighbouring-region pricing* requires an unconstrained interconnector between the suspended region and an unsuspended neighbouring region, but does not specify which neighbouring region to select if more than one suitable region exists. For example, the Victorian region is currently connected to the New South Wales region, the Tasmanian region<sup>9</sup>, and – by two interconnectors – to the South Australian region. If the spot market is suspended only in the Victorian region, the current operating procedure requires the Victorian region to be priced off the neighbouring region which has the greatest headroom on the adjoining interconnector.<sup>10</sup> Maintaining dispatch pricing in the neighbouring regions also requires flow constraints on all relevant interconnections to the suspended region. These constraints are intended to vary according to the latest pre-dispatch schedule, if it is current, or fixed at the latest flow measurement if the latest pre-dispatch schedule is not current. Difficulties in determining the currency of the latest pre-dispatch schedule are discussed below. Overall, the possibility of having more than one valid neighbouring region, and the requirement to impose multiple interconnector flow constraints, at a time of probable control room stress, makes neighbouring-region pricing potentially unworkable. In summary, the conditional terms of this form of pricing, the potential for more than one neighbouring region and the complexity in determining the final prices renders this regime impractical.

*Pre-dispatch pricing* under the NER can only be used if suspension prices have previously been determined either in accordance with normal dispatch pricing or the neighbouring-region method, but these have subsequently become impractical. That is, pre-dispatch pricing is not available as the first option on suspension of the market.

Where it is available, pre-dispatch pricing requires AEMO to conclude that a pre-dispatch schedule still remains 'current' for the suspended region. If the spot market was suspended due to a black system, no such pre-dispatch schedule will exist because the most recently published pre-dispatch run would have been issued before the event and will not reflect the current system conditions. If suspension was due to a jurisdictional direction or a systemic IT failure, a current pre-dispatch schedule might exist, but it is unlikely to remain current for long.<sup>11</sup> Any material change to demand, supply, or network configuration could render a pre-dispatch schedule invalid. Given the dynamic nature of pre-dispatch in general, and the increased potential for abrupt changes at the start of a market suspension, a pre-dispatch schedule seems unlikely to provide a reasonable substitute for market prices for more than an hour at most. That hour may contain prices that are arguably more reflective of current conditions than the market suspension schedule prices to which the market would transition if the suspension is maintained. However, any incremental market efficiencies from using pre-dispatch prices are unlikely to justify the uncertainty and complexity associated with applying this pricing regime for a very brief window.

In the event of a short suspension, such as that experienced in 2001, pre-dispatch pricing may be more representative than the market suspension pricing schedule. However, this is by no means a certain outcome, because participant responses to pre-dispatch signals frequently result in significant differences between pre-dispatch and dispatch prices. AEMO considers that any potential benefit of retaining the option to use a pre-dispatch schedule is outweighed by the uncertainty that it presents to the market.

<sup>9</sup> Although the Victorian region is connected to the Tasmanian region by Basslink, an MNSP, the NER as currently drafted specify only an interconnection, not a regulated interconnection.

<sup>10</sup> SO\_OP\_3706 Failure of Market or Market Systems.

<sup>11</sup> In the case of an IT failure, it is also possible that the most recently published pre-dispatch schedule is invalid, but that an earlier pre-dispatch schedule could be considered current. However, the NER requires consideration of only the most recently published pre-dispatch schedule.



Dispatch pricing and market suspension schedule pricing are certain and stable in comparison to neighbouring-region pricing and pre-dispatch pricing.

#### 4.2.2 Inconsistency between central dispatch and pricing

One of the market design principles is “consistency between central dispatch and pricing”.<sup>12</sup> This is expanded further in the principles applicable to spot price determination which say, among other things, that “dispatch prices determine dispatch such that a generating unit or load whose dispatch bid or dispatch offer at a location is below the spot price at that location will normally be dispatched”.<sup>13</sup> These principles do not apply during market suspension if AEMO is using market suspension price schedules.

During the prolonged SA region suspension in September/October 2016, the central dispatch process had returned to normal operation, but the current suspension pricing provisions in the NER prevented AEMO from moving back through the hierarchy and applying dispatch pricing in SA. Market participants, in participating in the central dispatch process, were therefore responding to the unrelated market suspension price signal. Some consequences of this included:

- Participants offering a large proportion of their generation at negative prices, resulting in negative dispatch prices which were then overridden by the suspension price schedule.
- AEMO issuing directions to secure the power system with plant that had been displaced by plant offering at low prices.

Introducing the possibility of returning to dispatch pricing during a market suspension could restore the consistency between dispatch and pricing sooner than the current NER permit.

#### 4.2.3 Price scaling

The differences in price scaling during market suspension and at other times are:

- The trigger for price scaling under market suspension is an “actual flow” (rather than an energy flow) toward a suspended region. The effect of this requirement on the outcome of price scaling is expected to be minimal. However, because the actual flow has to be measured the scaled prices cannot be calculated in real time. AEMO considers this discrepancy may have arisen because pricing for suspension was viewed as an ex post activity.
- Price scaling applies to the 30-minute spot price for market suspension, but to 5-minute dispatch prices for other instances of scaling. Whether scaling should occur on a spot or dispatch basis is a matter of policy. However, on the basis that the spot price is the average of the six dispatch prices in the interval and that this relationship should hold during market suspension, AEMO’s view is that dispatch price scaling is more appropriate, and would allow for automation.
- Price scaling applies to interconnectors for market suspension, but only regulated interconnectors for other instances of scaling. A non-regulated interconnector is operated by a market network service provider (MNSP). Settlement residues are not created across a non-regulated interconnector. The MNSPs manage flow and price differentials across the interconnector through their bidding behaviour, and receive the accrued settlement amounts. Bidding strategies can be employed during a market suspension to avoid flow against a negative price differential. AEMO does not believe that it is appropriate to price scale for a non-regulated interconnector. Any financial losses that an MNSP incurs during market suspension should be recoverable through a participant compensation framework.

Harmonisation of the price scaling provisions for market suspension with other price scaling provisions in the NER, including moving from spot-price scaling to dispatch-price scaling, is a prerequisite for automating market suspension pricing.

Automation will allow for real time pricing and greater certainty for participants. This in turn will increase the ability of participants to manage price risk during market suspension.

<sup>12</sup> See clause 3.1.4(a)(4) of the Rules.

<sup>13</sup> See clause 3.9.1(a)(3)





Issues with manual handling of prices that became evident during the 2016 market suspension include:

- **Uncertainty over prices:** prices in neighbouring regions were reviewed manually, taking a business day to complete.
- **Manual handling of data, complex manual calculations:** prices during market suspension were manually reviewed and, where necessary, adjusted before being uploaded into NEM databases. This was a resource-intensive process that involved a high risk of error.
- **Conflicting and misleading market information:** current automated systems do not incorporate market suspension, leading to automated notices that were not correct. In particular, dispatch intervals that may contain a manifestly incorrect input are flagged as subject to review based on dispatch prices. In the case of the South Australian market suspension, dispatch prices would later be overwritten by market suspension schedule prices, but not before erroneous market notices were generated, firstly stating that prices were under review, and later that prices were firm when they were not. Automated processes for negative residue management were also triggered but had to be manually blocked.

These issues would be reduced, and in most cases eliminated, through automation. Changes to the NER are necessary to support automated processes.

AEMO has identified some issues with price scaling rules generally but, given the urgent nature of this request, is not seeking to address them in this proposal. For information, however, these include:

- **During cap or override events,** the scaled-back price for upstream regions prevents any accumulation of negative residues, but also prevents the subsequent triggering of automatic negative residue management constraints that attempt to scale-back inter-regional flows while ensuring consistent dispatch and pricing. Price scaling can cause losses for upstream generators dispatched above the scaled price, potentially giving rise to compensation claims under the NER or (in the case of market suspension, where there is no compensation) the threat of withdrawing capacity to ensure being directed and receiving direction compensation.
- **At other times,** some accumulation of negative residues is allowed before automatic negative residue management constraints attempt to scale-back inter-regional flows to manage further accumulation while ensuring consistent dispatch and pricing.

#### 4.2.4 Drafting and Consequential Changes

The drafting changes included in the proposed rule are summarised in this section.

##### Pricing

References to pricing have been amended to or clarified as dispatch pricing:

- Clause 3.9.2(e)(5) has been added to include the market suspension regime in the list of possible exceptions to dispatch algorithm pricing, consistent with the proposal to determine suspension prices on a dispatch interval basis.
- Similarly, the reference to suspension pricing has been removed from clause 3.9.2(h), which deals with the determination of spot prices.
- Clauses 3.14.4(a), 3.14.4(c), 3.14.4(2), 3.14.5(a), 3.14.5(c), 3.14.5(i), 3.14.5(m), 3.14.5(n) have been edited to refer to dispatch pricing.

The suspension pricing mechanisms have been modified to include only normal dispatch pricing and market suspension price schedule regimes (removing neighbouring-region and pre-dispatch pricing):

- Clauses 3.14.5(d), 3.14.5(e), 3.14.5(f), 3.14.5(h), 3.14.5(j) and 3.14.5(k) have been removed and 3.14.5(g) edited to reflect the market suspension pricing schedule as an alternative to normal dispatch pricing 3.14.5(c).
- Clause 3.14.5(i)(2) allows for a return to normal dispatch pricing during suspension should conditions allow.



- Clause 3.14.5(l)(2) has been edited to remove duplication of wording from 3.14.5(l)(1).

Clarification of how suspension pricing interacts with other forms of price capping or intervention has been provided through clause 3.14.5(g1):

- 3.14.5(g1)(1) clarifies that administered pricing is still applicable during market suspension
- 3.14.5(g1)(2) clarifies that neither the market price cap (MPC) override for load shortfall, nor intervention pricing will apply in a suspended region while prices are being determined by the market suspension price schedule. It is not possible to develop a coherent set of principles for application of the MPC override or intervention pricing during periods of power system instability and without a dispatch outcome. In both instances, the pricing is overwritten in the suspended region with the market suspension price schedule.
- 3.14.5(g1)(3) and 3.14.5(m1) clarify that if a neighbouring price is revised following a manifestly incorrect input assessment it will not be scaled to the market suspension price. This requirement does not currently apply during normal operation and there is no logic to apply it during a market suspension.
- 3.14.5(g1)(4) clarifies that mandatory restrictions pricing will not apply during market suspension in a suspended region while prices are being determined by the market suspension price schedule. Mandatory restrictions pricing is an output of the dispatch process which is then overwritten by the schedule.

Price scaling during market suspension pricing has been made more consistent with other instances of price scaling, making it suitable for real time publication of prices:

- Clause 3.14.5(m) has been amended to reference net energy rather than actual flows and reference regulated interconnectors rather than interconnectors. The use of net energy provides clarification that where there is more than one regulated interconnector between regions it is the aggregate flow that is considered.

## Declaration of market suspension

Proposed changes have been made to the process for declaring a market suspension in clause 3.14.4(a), to clarify:

- Clause 3.14.4 is the provision for declaring a market suspension, in contrast to 3.14.3(a) which outlines the conditions in which AEMO may decide to suspend the market.
- The declaration of suspension is effected by AEMO's notice to the market.

## Redundancy

Some clauses have been identified as redundant or replaced with drafting elsewhere:

- Clause 3.14.3(a1) has been deleted as the prices to be used during a suspension are already stated in 3.9.2(h) and repeated in 3.14.4.
- Clause 3.14.5(b) has been deleted as determination of pricing is stated in 3.14.5(a).





## 5. HOW THE PROPOSAL WILL ADDRESS THE ISSUES

### 5.1 How the proposal will address the issues

The proposed rule will address the issues by:

- Simplifying the process for price determination during market suspension, by removing the neighbouring-region pricing and pre-dispatch pricing regimes.
- Providing for a return to dispatch pricing while the market is suspended, if practicable.
  - this would address issues with inconsistency between central dispatch and pricing
- Harmonising price scaling rules during market suspension with the price scaling rules for the market price cap, administered price cap, market floor price and administered floor price, facilitating automation.

### 5.2 AEMO procedure changes

AEMO is revising its market suspension procedures and its market systems to implement these changes in time for summer 2017/18.

If the proposed Rule is not made in time, AEMO will consider the options available to implement sufficient changes to reduce the impact of the risks associated with an extended market suspension occurring in the coming summer.

### 5.3 Stakeholder engagement

AEMO has engaged with stakeholders on the proposed rule changes as follows:

- Publication of the Final Report in March 2017, including findings and recommendations for potential changes to the market suspension rules and procedures.
- AEMO's NEM Wholesale Consultative Forum (NEMWCF) received a presentation on AEMO's recommendations in March 2017 and an update in May 2017.
- The NEMWCF in March was invited to nominate representatives to participate in a technical working group to assist AEMO in the detailed implementation of the recommendations from the black system, including the broad policy and detailed drafting of the rule changes.

The Market Suspension Working Group has met on four occasions in April, May and June 2017. The working group endorsed AEMO's proposed program of work, including the proposed rule changes.

Minutes of the working group meetings are provided with this proposal.



## 6. DESCRIPTION OF THE PROPOSED RULE

AEMO proposes the following amendments.

Clauses 3.14.4 “Declaration of market suspension” and 3.14.5 “Pricing during market suspension” would be amended to refer to the determination of dispatch prices rather than spot prices. This would allow AEMO to streamline its administration of market suspension through automation.

Clause 3.14.5 would be amended to simplify the decision-making process by removing the neighbouring-region and pre-dispatch pricing regimes. This clause would also be amended to allow AEMO to revert to dispatch pricing during a suspension where practicable, and to clarify how suspension pricing interacts with other price intervention provisions in Chapter 3.

Clause 3.14.5(m) would be further amended to better align the suspension price scaling provisions with corresponding clauses in the NER for other forms of administered pricing. Alternatively, however, price scaling for all applicable conditions (administered pricing periods, market suspension, or market price cap or floor price application) could be addressed in a single, consistent provision. This could be located in clause 3.9.2.

A number of consequential amendments are also proposed, together with other amendments to clarify meaning or remove redundant provisions.

A draft of the rule proposed by AEMO is in section 9.



## 7. HOW THE PROPOSED RULE CONTRIBUTES TO THE NATIONAL ELECTRICITY OBJECTIVE

The proposed rule would address issues with transparency and information provision to NEM participants during market suspension. By allowing for automation of market suspension pricing, price uncertainty will be reduced, allowing market participants to better manage their risks in a timely manner.

Changes to simplify the pricing mechanism and provide a greater level of certainty and transparency in the pricing regimes that will be implemented during market suspension, accompanied by real time pricing information to the market during this time, directly promote efficient operation of electricity services in accordance with the National Electricity Objective (NEO).

Transparency and certainty in pricing during suspension, including a return to dispatch pricing where practicable, directly impacts the ability of market participants to manage pricing risk and AEMO to manage operational risks during this time. Risk management is a fundamental mechanism to ensure that in the long term prices can be contained. This promotes the NEO by maintaining efficient operation of the electricity services for the long-term interests of consumers with respect to price and security of supply.



## 8. EXPECTED BENEFITS AND COSTS OF THE PROPOSED RULE

This rule change would deliver the following benefits:

- Increase quality, timeliness and reliability of market pricing information during market suspension
- Improve market operations by returning to dispatch pricing where practicable and reducing unnecessary triggering of negative residue management constraints.
- Avoid operational risk of error associated with staff performing large quantities of manual calculations.
- Minimise the need to divert specialist resources to perform manual tasks for long hours during suspension events, when they are likely to be needed in critical operational functions.

This rule change would provide market participants with a greater understanding of the pricing regimes involved during market suspension and their application. This transparency, along with the predominantly real time publication of pricing during a suspension (which is dependent on the rule change), will make it easier for participants to manage risk. An early return to dispatch pricing will work to minimise any consequential losses which arise as a result of the market suspension pricing schedule. This rule change would not involve any costs to market participants.

This rule change will allow AEMO to avoid manually revising prices and uploading data to their systems during a market suspension. This can result in approximately ten key personnel working under stressful conditions to revise, check and upload 288 dispatch prices, each to five decimal places, and 48 spot prices per affected region each day. The delayed publication of prices requires management of prudential processes which reflect unrevised pricing and also pricing reports provided to third parties in support of financial exchange related products. This effort is detrimental to the well-being of staff during an extended market suspension as well as removing managers and dispatch and IT specialists from the key activity of managing the market suspension.

Costs to AEMO relate to system and procedural changes, which are targeted for completion prior to the 2017-18 summer season. These costs are estimated to be in the order of \$400,000. (Automation against the current rules is not workable.)

Ultimately certainty, transparency and a focus on resolution of the issues relating to market suspension will allow participants and AEMO to recognise and manage risks most effectively. This is expected to have the long term effect of reducing the costs and risks of managing a market suspension, which can be expected to flow on to electricity consumers.





## 9. DRAFT RULE

This draft is based on version 93 of the National Electricity Rules.

### 3. Market Rules

#### 3.9 Price Determination

##### 3.9.2 Determination of spot prices

- (a) **[Deleted]**
- (b) **[Deleted]**
- (c) Each time the *dispatch algorithm* is run by AEMO, it must determine a *dispatch price* for each *regional reference node* for a *dispatch interval* in accordance with clause 3.8.21(b), provided that if AEMO fails to run the *dispatch algorithm* to determine *dispatch prices* for any *dispatch interval* then the *dispatch price* for that *dispatch interval* is the last *dispatch price* determined by the *dispatch algorithm* prior to the relevant *dispatch interval*.
- (d) The *dispatch price* at a *regional reference node* represents the marginal value of *supply* at that location and time, this being determined as the price of meeting an incremental change in *load* at that location and time in accordance with clause 3.8.1(b).
- (e) Notwithstanding clauses 3.9.2(c) or (d), for any *dispatch interval* if:
  - (1) the *dispatch price* for that *dispatch interval* has not already been set by the *central dispatch process* and AEMO reasonably determines that the *central dispatch process* may determine that all *load* in a *region* could not otherwise be supplied and AEMO issues instructions that are current for that *dispatch interval* to *Network Service Providers* or *Market Participants* to shed *load*, then AEMO must set the *dispatch price* at that *region's regional reference node* to equal the *market price cap*;
  - (2) AEMO has declared a *dispatch interval* to be an *intervention price dispatch interval* under clause 3.9.3(a), then subject to clauses 3.9.3(c) and 3.9.3(d) AEMO must set the *dispatch price* in accordance with clause 3.9.3; ~~and~~
  - (3) **[Deleted]**
  - (4) an *administered price period* in accordance with ~~clause rule~~ 3.14.2 applies, then AEMO must limit the *dispatch price* in accordance with clause 3.14.2(d1);
  - (5) AEMO has made a declaration that the spot market in a region is suspended under clause 3.14.4, then AEMO must set the dispatch price for each dispatch interval during the period for which the spot market is suspended in accordance with clause 3.14.5.
- (f) **[Deleted]**



- (g) **[Deleted]**
- (h) The *spot price* at a *regional reference node* for a *trading interval* equals the time weighted average of the *dispatch prices* at the *regional reference node* for each of the *dispatch intervals* in the *trading interval*, ~~provided that if AEMO has made a declaration that the market is suspended under clause 3.14.3, then the spot price in any trading interval during the period during which the spot market is suspended must be determined in accordance with clause 3.14.5.~~
- (i) **[Deleted]**
- (j) **[Deleted]**
- (k) If a test is being conducted on a *generating unit* or *scheduled load* in accordance with clause 3.11.2 and for the purpose of conducting that test, the *generating unit* or *scheduled load* is excluded from *central dispatch*, then that *generating unit* or *scheduled load* cannot be used to set the *dispatch price* for energy in the relevant *dispatch interval*.

## 3.14 Administered Price Cap and Market Suspension

### 3.14.3 Conditions for suspension of the spot market

- (a) Subject to clause 3.14.3(b), *AEMO* may declare the *spot market* to be suspended in a *region* when in respect of that *region*:
  - (1) the *power system* has collapsed to a *black system*;
  - (2) *AEMO* has been directed by a *participating jurisdiction* to suspend the *market* or operate all or part of the *power system* in a manner contrary to the provisions of the *Rules* following the formal declaration by that *participating jurisdiction* of a state of emergency under its emergency services or equivalent legislation; or
  - (3) *AEMO* determines that it is necessary to suspend the *spot market* in a *region* because it has become impossible to operate the *spot market* in accordance with the provisions of the *Rules*.
- (a1) ~~**[Deleted]** If *AEMO* declares the *spot market* to be suspended in a *region*, then all *spot dispatch prices* and *ancillary service prices* are set in accordance with clause 3.14.5 for that *region*.~~
- (b) *AEMO* must not suspend the *spot market* solely because:
  - (1) ~~*spot dispatch*~~ *prices* have reached the *market price cap*;
  - (1A) ~~*dispatch spot*~~ *prices* have reached the *market floor price*;
  - (2) *AEMO* has issued a *direction*; or
  - (3) *AEMO* has otherwise intervened in the *market* under rule 3.12.
- (c) *AEMO* must conduct reviews of each occasion when it suspended the *spot market* in order to assess the adequacy of the provision and response of



*facilities* or services, and the appropriateness of actions taken to restore or maintain *power system security*.

- (d) The report of the review carried out in accordance with clause 3.14.3(c) must be made available to *Registered Participants* and the public.
- (e) A *Registered Participant* must co-operate in any such review conducted by AEMO (including making available relevant records and information).

**Note**

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (f) A *Registered Participant* must provide to AEMO such information relating to the performance of its equipment during and after a suspension of the *spot market* as AEMO reasonably requires for the purposes of analysing or reporting on that suspension.

**Note**

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

- (g) AEMO must provide to a *Registered Participant* such information or reports relating to the performance of that *Registered Participant's* equipment during a suspension of the *spot market* as that *Registered Participant* reasonably requests and in relation to which AEMO is required to conduct a review under this clause 3.14.3.

### 3.14.4 Declaration of market suspension

- (a) The *spot market* in a region can only be suspended by a declaration by AEMO ~~under-in the circumstances described in~~ clause 3.14.3(a), and AEMO must publish ~~and if the spot market is suspended, AEMO must notify all Registered Participants that declaration~~ without delay.
- (b) ~~[Deleted] AEMO must not declare the spot market to be suspended retrospectively.~~
- (c) The *spot market* in a region is ~~to be~~ deemed to be suspended at the start of the ~~trading-dispatch~~ interval in which AEMO makes a declaration that the *spot market* is suspended.
- (d) Following a declaration by AEMO under clause 3.14.3(a), the *spot market* is to remain suspended in the relevant region until AEMO declares and informs all *Registered Participants*:
  - (1) that *spot market* operation is to resume in accordance with this Chapter 3; and
  - (2) of the *time* at which the *spot market* is to resume.
- (e) If AEMO declares that the *spot market* is suspended:





- (1) *AEMO* may ~~then~~ issue directions to Registered Participants in accordance with clause 4.8.9; and
- (2) ~~spot-dispatch~~ prices and ancillary service prices in the relevant region are to be set by *AEMO* in accordance with clause 3.14.5 until the time at which the spot market is resumed.
- (f) *AEMO* must within 10 business days following the day on which, in accordance with the notice given by *AEMO* under clause 3.14.4(d), the spot market resumed, commence an investigation of that spot market suspension.
- (g) The investigation must examine and report on the reason for the suspension and the effect that the suspension had on the operation of the spot market. *AEMO* must make a copy of the report available to Registered Participants and the public as soon as it is practicable to do so.

### 3.14.5 Pricing during market suspension

- (a) If *AEMO* declares that the spot market is suspended in a region then, as far as *AEMO* considers it practically and reasonably possible, it must follow the procedures in the Rules for PASA, central dispatch and the determination of dispatch prices, spot prices and ancillary service prices in the suspended region, subject to the application of clause 3.14.5.
- (b) ~~[Deleted] The spot price and the ancillary service price during a trading interval for which AEMO has declared the spot market to be suspended is to be determined by AEMO in accordance with clause 3.14.5.~~
- (c) Subject to clauses 3.14.5(d), (g) and (j), if the spot market is suspended in a region then central dispatch and the determination of dispatch prices, spot prices and ancillary service prices in the suspended region are to continue in accordance with rules 3.8 and 3.9.
- (d) ~~[Deleted]~~
- (e) ~~[Deleted]~~
- (f) ~~[Deleted]~~
- (d) ~~If at any time on or during suspension of the spot market in a region:~~
  - (1) ~~in AEMO's reasonable opinion it is not possible to continue dispatch and the determination of spot prices in the suspended region in accordance with rules 3.8 and 3.9;~~
  - (2) ~~the suspended region is connected by an unconstrained interconnector to another region;~~
  - (3) ~~the dispatch and determination of spot prices and ancillary service prices in the other region is continuing in accordance with rules 3.8 and 3.9; and~~
  - (4) ~~local market ancillary service requirements do not apply in the suspended region;~~

~~*AEMO* must:~~





- ~~(5) determine the spot price in the suspended region in accordance with clause 3.14.5(e); and~~
- ~~(6) continue to determine ancillary service prices in the suspended region in accordance with rules 3.8 and 3.9.~~
- ~~(e) In the circumstances described in clause 3.14.5(d) the spot price is to be determined by application of an appropriate inter regional loss factor to the spot price in the adjacent region referred to in clause 3.14.5(d)(2), such inter regional loss factor being determined by AEMO in accordance with the methodology in clause 3.6.2A and the actual flows on the relevant unconstrained interconnectors.~~
- ~~(f) If the spot price in the suspended region is being determined in accordance with clause 3.15.4(e), the spot price must continue to be determined in accordance with that clause until the earlier of:~~
  - ~~(1) the time that the spot market is no longer suspended in the region; and~~
  - ~~(2) the time that the spot price in the region is required to be determined in accordance with either clause 3.14.5(g) or clause 3.14.5(j).~~
- ~~(g) If at any time during suspension of the spot market in a region:~~
  - ~~(1) either:~~
    - ~~(A) dispatch and the determination of spot prices and ancillary service prices is being effected in accordance with rules 3.8 and 3.9; or~~
    - ~~(B) the spot prices and ancillary service prices in the suspended region are being determined in accordance with clause 3.14.5(e); and~~
  - ~~(2) in AEMO's reasonable opinion it is no longer practical to continue dispatch and the determination of spot prices and ancillary service prices in the suspended region in accordance with the clauses under which dispatch, spot prices and ancillary service prices are currently being determined; and~~
  - ~~(3) in AEMO's reasonable opinion a current pre dispatch schedule exists in respect of the suspended region,~~

~~then AEMO must determine the spot prices and ancillary service prices in the suspended region in accordance with clause 3.14.5(h).~~
- (g) If, in AEMO's reasonable opinion, it is not practicable to operate central dispatch and determine dispatch prices and ancillary service prices in a suspended region in accordance with rules 3.8 and 3.9, AEMO must set dispatch prices and ancillary service prices for the suspended region at the prices applicable to the relevant dispatch interval in the current estimated price schedule developed and published in accordance with paragraph (l).
- (g1) Dispatch prices and ancillary service prices determined in accordance with paragraph (g) for a suspended region:



- (1) continue to be subject to the application of clauses 3.14.2(d1) and 3.14.2(d2) in respect of administered price periods, and are to be adjusted (where applicable) in accordance with clause 3.14.2(e);
- (2) are not to be adjusted in the circumstances set out in clause 3.9.2(e)(1) or clauses 3.9.2(e)(2) and 3.9.3;
- (3) are not subject to review under clause 3.9.2B; and
- (4) are not subject to clause 3.12A.6.
- (h) ~~[Deleted] In the circumstances described in clause 3.14.5(g), the spot prices and ancillary service prices in the suspended region are set at AEMO's forecast regional reference price and ancillary service prices determined in accordance with the most recently published pre-dispatch schedule if it is still current.~~
- (i) If the dispatch spot prices and ancillary service prices in ~~at the~~ suspended region are being determined in accordance with paragraph (g) clause 3.15.4(h), they must continue to be determined in accordance with that paragraph ~~clause~~ until the earlier of:
  - (1) the ~~time~~ time that the *spot market* is no longer suspended in the relevant region; and
  - (2) the ~~time~~ time that, in AEMO's reasonable opinion, it is practicable to resume central dispatch and the determination of the spot dispatch prices and or the ancillary service prices (as the case may be) in the suspended region ~~are determined in accordance with rules 3.8 and 3.9~~ clause 3.14.5(j).
- ~~(j) If at any time on or during suspension of the spot market in a region:~~
  - ~~(1) either:~~
    - ~~(A) dispatch and the determination of spot prices and ancillary service prices is being effected in accordance with rules 3.8 and 3.9; or~~
    - ~~(B) the spot prices and ancillary service prices in the suspended region are being determined in accordance with either clause 3.14.5(e) or clause 3.14.5(h); and~~
  - ~~(2) in AEMO's reasonable opinion it is no longer practical to set the spot prices and ancillary service prices in the suspended region in accordance with either clauses rules 3.8, 3.9, clause 3.14.5(e) or clause 3.14.5(h) (as the case may be);~~

~~then AEMO must set the spot prices and ancillary service prices in the suspended region at the prices set out in the relevant market suspension pricing schedule developed and published in accordance with clause 3.14.5(l).~~
- ~~(k) If the spot prices and ancillary service prices in the suspended region are being determined in accordance with clause 3.15.4(j), they must continue to be determined in accordance with that clause until the spot market is no longer suspended in that region.~~



~~(j) [Deleted]~~

~~(k) [Deleted]~~

(l) *AEMO* must:

- (1) develop in accordance with the *Rules consultation procedures* a methodology to be used by *AEMO* (**estimated price methodology**) to prepare and update schedules containing reasonable estimates of typical *market* prices during the periods to which the schedules relate (**estimated price schedules**);
- (2) develop and update estimated price schedules in accordance with the estimated price methodology, to be used ~~and that set out *AEMO's* reasonable estimate of typical market prices~~ during any periods in which the *spot market* is suspended; and
- (3) *publish* the estimated price methodology promptly after it has been developed and *publish* the estimated price schedule at least 14 days prior to the first day to which the schedule relates.

~~(m)~~ If a ~~*dispatch*~~~~*spot*~~ price is set in accordance with paragraph clause 3.14.5(g) ~~or clause 3.14.5(j)~~ at a regional reference node (**suspension node**), then ~~*dispatch*~~~~*spot*~~ prices at all other regional reference nodes connected by one or more ~~an~~ regulated interconnector interconnectors that ~~have~~ an ~~net energy~~ actual flow towards the suspension node must not exceed the ~~*dispatch*~~~~*spot*~~ price in the *suspended region* divided by the average loss factor that applies for energy flow in that direction for that ~~*dispatch*~~~~*trading*~~ interval.

~~(m1)~~ Paragraph (m) does not apply to a *dispatch* price at another regional reference node that has been replaced in accordance with clause 3.9.2B.

~~(n)~~ *AEMO* must use reasonable endeavours to ensure that any adjustments required to ~~*dispatch regional reference*~~ prices so that they do not exceed the limits set by paragraph clause 3.14.5(m) are finalised as soon as practicable but in any event by ~~no later than one~~ the end of the next business day following the day on which the *spot market* in the *region* ceased to be suspended.

(o) *AEMO* must determine ~~calculate~~ the average loss factor applicable to clause paragraph 3.14.5(m) by reference to the *inter-regional loss factor* equations relating to the relevant *regulated interconnectors*.

## Chapter 10

### 10. Glossary

#### *suspended region*

A region in which the *spot market* is suspended in accordance with clause 3.14.43.14.5(a).