AEMC

RULE

Australian Energy Market Commission

DIRECTIONS PAPER

NATIONAL ELECTRICITY AMENDMENT (COMPENSATION FOR MARKET PARTICIPANTS AFFECTED BY INTERVENTION EVENTS) RULE

PROPONENT
AEMO

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INQUIRIES

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ABOUT THE AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

SUMMARY

1 This paper focuses on the compensation framework for affected participants and market customers with scheduled loads who are dispatched differently as a result of intervention events which trigger intervention pricing (for example, dispatching the reliability and emergency reserve trader (RERT)). It primarily addresses issues related to the approach to calculating compensation in the draft rule for the *Compensation for market participants affected by intervention events* rule change (Compensation rule change), which were raised by the Australian Energy Market Operator (AEMO) in its submission to the draft determination.

2 The Compensation rule change is a consolidation of two rule change requests received from AEMO on 19 September 2019. The first request sought to allow participants to lodge a claim where they suffer losses related to frequency control ancillary services (FCAS) enablement. The second concerned the formula for compensation payable to market customers with scheduled loads, which could result in these participants being under-compensated after intervention events which trigger intervention pricing.

3 The draft rule, published by the Australian Energy Market Commission (AEMC or Commission) in September 2020, was a more preferable draft rule that:

1. Incorporated FCAS into the automatic process for calculating compensation for both affected participants and market customers with scheduled loads
2. Introduced a volume weighted approach to calculating the input BidP for the compensation formula for market customers with scheduled loads
3. Retained the one-way approach to compensating market customers with scheduled loads, and
4. Adopted a target based approach to calculating compensation for both affected participants and market customers with scheduled loads.

4 Stakeholders generally supported the draft rule. AEMO, however, raised an important issue within its submission to the draft determination which warranted a re-assessment of the target based approach in the draft rule (as per point four above).

5 In light of this, the Commission extended the time for making the final determination for the Compensation rule change such that additional stakeholder feedback could be sought on a revised approach. As a result of the submissions to the draft rule, the Commission is minded to alter the draft rule primarily with respect to the target based approach to calculating compensation, as set out in this directions paper. The Commission is not minded to materially alter other aspects of the draft rule.

6 This directions paper proposes three options to finalise the approach to calculating compensation, including the Commission's preferred option. These are:

1. A target based approach to calculating compensation, as set out in the draft rule

2. An approach to calculating compensation based on actual consumption/generation, similar to the existing approach in clause 3.12.2 with some additional clarifications. This is the preferred option of the Commission, and
3. A bespoke claims approach to calculating compensation, where all affected participants and market customers with scheduled loads would have to lodge a claim in order to receive compensation.

7 Stakeholders are invited to provide feedback on each of the three options proposed.

8 In addition, the paper seeks stakeholder feedback on a proposal to clarify the objective of the compensation framework for all affected participants and market customers with scheduled loads. This is in response to a minor issue raised by AEMO in its submission to the draft determination.

9 The extension of the rule change request is designed to allow the approach to compensation to be coordinated with decisions made under the *Integrating energy storage systems into the NEM* rule change request (Integrating storage rule change).[1] [2] That rule change request proposed creating a new market participant category for bi-directional resource providers (including large-scale batteries - the focus of AEMO's submission to the draft determination for the Compensation rule change).

10 The bi-directional nature of units becomes relevant when considering which compensation framework (affected participant or market customer with scheduled load) to apply to units which can operate as both a generator and a load in a given trading interval. As such, this directions paper has been released concurrently with the draft determination for the Integrating storage rule change, and includes a discussion of how bi-directional units are compensated and a proposal to clarify in the Rules the classification of bi-directional units for the purpose of compensation. Stakeholders are also invited to provide feedback on this discussion.

11 Written submissions to this directions paper are due on **26 August 2021**. These will inform the final determination and final rule for the Compensation rule change, which is scheduled to be published along with the final rule for the Integrating storage rule change by November 2021.

1 See: https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem.

2 A second extension to the Compensation rule change was also sought on 3 June 2021 in light of an extension to the Integrating storage rule change to continue to align the approach to both rule change requests.

CONTENTS

APPENDICES

TABLES

FIGURES

1 INTRODUCTION

On 19 September 2019, the Australian Energy Market Operator (AEMO) submitted two rule change requests to the Australian Energy Market Commission (AEMC or Commission) which concern the amount of compensation payable to or by affected participants[3] and market customers with scheduled loads under clause 3.12.2 of the National Electricity Rules (NER or the Rules). Such participants may be eligible for compensation, or may be required to repay revenue to AEMO, if they are dispatched differently due to intervention events (for example, dispatching the reliability and emergency reserve trader (RERT)) which trigger intervention pricing.[4]

The first request sought to allow participants to lodge a claim where they suffer losses related to frequency control ancillary services (FCAS) enablement. The second request concerned the formula for compensation payable to market customers with scheduled loads, which could result in these participants being under-compensated after intervention events which trigger intervention pricing.

The Commission determined that these two rule change requests should be consolidated as they relate to the same clause (clause 3.12.2) in the NER.[5]

A consultation paper on *Compensation for market participants affected by intervention events* (Compensation rule change) was published in June 2020 in relation to the consolidated rule change request, and a draft determination and more preferable draft rule were published in September 2020.[6]

Stakeholders generally supported the draft rule proposed. AEMO, however, raised an important issue within its submission which warranted a re-assessment of the approach in the draft rule for calculating compensation. AEMO also raised three other issues concerning clarification of the definitions and objectives in the draft rule and extending the time to implement the draft rule. One of these is addressed in chapter 4, while the remainder are referenced in appendix A.

In light of the issues raised by AEMO in its submission, the Commission extended the time for making the final determination for the Compensation rule change so that stakeholder feedback could be sought on a revised approach. The Commission is minded to alter the draft rule primarily with respect to the target based calculation of compensation. The Commission is not minded to materially alter other aspects of the draft rule (for further detail on the draft rule and the proposed revisions, refer to section 2.4).

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3 Affected participants are defined in chapter 10 of the NER. These participants include scheduled generators and scheduled network service providers who are not the subject of a direction or providing services under a RERT contract activated during the intervention.

4 Intervention pricing is implemented in AEMO intervention events used to address a shortage of energy or FCAS. Its objective is to set energy and FCAS prices at the level at which AEMO considers they would have been but for the intervention to avoid market distortion.

5 Clause 3.12.2 of the NER relates to how to compensate certain market customers who are dispatched differently as a result of intervention events which trigger intervention pricing. These participants may be compensated with respect to the methods outlined in the clause.

6 See: https://www.aemc.gov.au/rule-changes/compensation-market-participants-affected-intervention-events

The extension is designed to allow the approach to compensation to be coordinated with decisions made under the *Integrating energy storage systems into the NEM* rule change request (Integrating storage rule change).[7] [8] That rule change request proposed creating a new market participant category for bi-directional resource providers (including large-scale batteries - the focus of AEMO's submission to the draft determination for the Compensation rule change). As such, this directions paper has been released concurrently with the draft determination for the Integrating storage rule change.

This directions paper:

- Sets out a summary of the draft determination for the Compensation rule change and the issues raised by AEMO in its submission to the draft determination
- Identifies and discusses a number of options to address these issues and related issues, and
- Outlines the process for making submissions.

1.1 Consultation on this directions paper

The Commission invites written submissions on this directions paper by **26 August 2021**. Submissions will inform the approach to the final determination, which is scheduled to be published by November 2021.[9]

Submissions must be lodged with the Commission online via the Commission's website, www.aemc.gov.au, using the "lodge a submission" function and selecting the project reference code ERC0284.

The submission must be on a letterhead (if submitted on behalf of an organisation), signed and dated.

Where practicable, submissions should be prepared in accordance with the Commission's guidelines for making written submissions on rule change requests.[10] The Commission publishes all submissions on its website, subject to a claim of confidentiality.

The Commission also invites interested stakeholders to contact the project team if they would like to meet to discuss this directions paper or any related issues. All enquiries should be directed to Emily Banks by email at emily.banks@aemc.gov.au or by phone on (02) 8296 0677.

7 See: https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem.

8 A second extension to the Compensation rule change was also sought on 3 June 2021 in light of an extension to the Integrating storage rule change to continue to align the approach to both rule change requests.

9 Note, given the scheduled date for the final rule and the five-month implementation time for AEMO to make the changes in the final rule, the Compensation rule change will not be implemented until after five-minute settlement is implemented in October 2021.

10 This guideline is available on the Commission's website www.aemc.gov.au.

2 BACKGROUND

This chapter outlines:

- The compensation framework for affected participants and market customers with scheduled loads under NER clause 3.12.2
- The Compensation rule changes received by AEMO
- The assessment framework used by the Commission to assess the rule changes and form a policy position
- A summary of the Commission's draft determination and draft rule on the Compensation rule change
- A summary of the issues raised in AEMO's submission to the draft determination, and
- A brief discussion of the operation of batteries in the NEM and interactions with the AEMC's Integrating storage rule change.

2.1 Compensation framework

Under clause 3.12.2 of the NER, certain market participants which are dispatched differently as a result of an AEMO intervention event which triggers intervention pricing may be entitled to automatic compensation.[11]

In a review of directions undertaken in 2000, NEMMCO and NECA[12] concluded that "third parties whose market dispatch is affected by a direction should also be compensated so that their financial position is unaffected by the direction".[13] Consistent with this, the objective of the compensation framework (as articulated with respect to affected participants in the NER but not market customers with scheduled loads) is to put affected participants in the position they would have been in but for the intervention.[14]

- For affected participants, this involves a two-way process. AEMO pays compensation to these participants when they are worse off as a result of the intervention event, and such participants repay additional revenue earned (net of costs incurred) if they are better off.
- For scheduled loads, the process is one-way rather than two-way. This reflects the different way that loads are dispatched in the NEM.[15] The load will be compensated if it is worse off as a result of the intervention but is not required to repay 'gains' to AEMO.

An "AEMO intervention event" is defined in chapter 10 of the NER as an event where AEMO intervenes in the market by issuing a direction in accordance with clause 4.8.9 or exercises

11 These participants are affected participants (which includes scheduled generators and scheduled network service providers as per Chapter 10 of the NER) and market customers with scheduled loads (as covered by Clause 3.12.2(a)(2) of the NER). Broadly, these participants are not the subject of the direction or providing services under a RERT contract activated during the intervention.

12 These were the predecessors of AEMO and the AEMC respectively.

13 NEMMCO and NECA, *Final report - Power system directions in the national electricity market,* 2000, p.i.

14 Clause 3.12.2(a)(1) of the NER.

15 With respect to energy, generators are dispatched in ascending order (lowest cost first) while scheduled loads are dispatched in descending order (loads with the highest willingness to pay for energy are dispatched first).

the RERT in accordance with Rule 3.20. Interventions are intended to be used as a last resort.

When the purpose of an AEMO intervention event is to address a shortage of energy or FCAS, AEMO is required to implement "intervention pricing". This sets energy and FCAS prices at the level at which AEMO considers they would have been but for the intervention.[16] Intervention pricing is designed to preserve scarcity price signals that would otherwise be muted as a result of the intervention, and so reduce market distortion.

To implement intervention pricing, AEMO performs two dispatch iterations in the national electricity market dispatch engine (NEMDE) – one to dispatch the physical market (the "dispatch run") and one to set the market clearing price (the "intervention pricing run") at the level which AEMO reasonably determines would have applied but for the intervention event.[17] AEMO then calculates the amount of compensation payable to or by a participant by scaling actual generation output or consumption of energy (based on metering data) with reference to the dispatch targets for a given unit in the dispatch run and the intervention pricing run.[18]

For affected participants, compensation is determined by estimating the (energy) trading amount that the participant would have received but for the intervention event and then deducting the trading amount actually received (based on the participant's final settlement statement).[19] For scheduled loads, compensation is calculated using a formula which includes the following key inputs:[20]

1. QD (MWh): the difference between the amount of electricity consumed (based on metering data) and the amount of electricity which AEMO reasonably determines would have been consumed by the scheduled load if the AEMO intervention event had not occurred
2. RRP (in dollars per MWh): the regional reference price in the relevant intervention price trading interval, and
3. BidP (in dollars per MWh): the price of the highest priced price band specified in a dispatch bid for the scheduled load in the relevant intervention price trading interval.

Compensation payments are subject to a $5,000 threshold meaning that no payments are made to or by affected participants, or to market customers with scheduled loads, if the quantum of compensation is less than $5,000 per intervention event. A participant may seek additional compensation or dispute its liability to repay revenue to AEMO.[21]

16 Clause 3.9.3(b) of the NER.
17 The intervention pricing run will exclude the effects of the RERT on demand or exclude any units operating under direction.
18 The rationale for scaling actual generation or consumption is elaborated in section 3.2.
19 Clause 3.12.2(c)(1) of the NER.
20 Clause 3.12.2(a)(2) of the NER.
21 Clause 3.12.2(f) of the NER.

2.2 The Compensation rule change requests

AEMO lodged two rule change requests concerning this compensation framework in September 2019.

The first request concerned the compensation payable to affected participants. Currently, these participants may be eligible for compensation (or required to repay gains) in relation to changes in energy revenue but not changes in FCAS revenue. AEMO's rule change request sought to address this by allowing affected participants to lodge a claim for additional compensation if they incur FCAS losses due to an intervention event.

The second request concerned the compensation payable to market customers in relation to their scheduled loads if they are dispatched differently (with respect to energy) due to an intervention event which triggers intervention pricing. AEMO's request sought to change the definition of BidP to address a concern that the current formula could result in market customers being under compensated in relation to their scheduled loads following intervention events.

As both requests concerned clause 3.12.2 of the NER, the Commission consolidated the rule change requests and progressed them as described in chapter 1.

2.3 Assessment framework

In assessing the rule change request against the national electricity objective (NEO), the Commission has considered a number of principles. These were set out in the consultation paper for the Compensation rule change and have been replicated below for reference:

- **Transparency and predictability** – does the proposed approach provide clear and predictable arrangements for participants affected by interventions, thereby reducing uncertainty?
- **Efficiency** – is the proposed approach efficient in terms of administrative costs? Does it send clear operational and investment signals to participants?
- **Risk allocation** – risk allocation and the accountability for investment and operational decisions should rest with those parties best placed to manage them. Does the proposed approach appropriately allocate risk to those parties best able to manage them?
- **Consistency** – do the rules adopt a consistent approach?

These principles continue to inform the analysis and considerations set out in this directions paper.

2.4 Summary of draft determination

A draft determination and more preferable draft rule for the Compensation rule change were published in September 2020.[22] The draft rule increased consistency between the compensation framework applicable to affected participants and that applicable to market customers with scheduled loads. This section sets out the key features of the draft rule.

22 AEMC, *Compensation for market participants affected by intervention events*, Draft rule determination, 24 September 2020

2.4.1 Compensation with respect to FCAS enablement

The draft rule incorporated FCAS into the automatic process for calculating compensation for both affected participants and market customers with scheduled loads. Under this approach, participants would not need to lodge a claim to receive compensation for changes in FCAS enablement.

FCAS compensation (like energy) would be a two-way process, i.e. participants would both receive compensation when they are worse off with respect to FCAS revenue and be required to repay gains when they are better off with respect to FCAS revenue. This approach is consistent with the objective of the compensation framework – which is to put the participant in the position it would have been in had the intervention event not occurred.[23]

2.4.2 Volume-weighted compensation for scheduled loads

The draft rule also amended the formula (including the definition of BidP) used to calculate compensation payable to market customers with scheduled loads dispatched differently due to an intervention event which triggers intervention pricing. This is to address the potential for these customers to be under or over-compensated through the current compensation framework. The revised formula adopted a volume-weighted approach so that the amount of compensation payable would not be inappropriately impacted by a scheduled load's bidding strategy.

2.4.3 One-way compensation for scheduled loads

The draft rule retained the current one-way approach to compensating market customers with scheduled loads with respect to energy costs. Adopting a two-way approach, consistent with the approach to affected participant compensation, would not be appropriate for a market customer's energy costs given that scheduled loads are dispatched differently to scheduled generators in the national electricity market (NEM).

By contrast, generators and loads are dispatched in the same way with respect to FCAS. As such, a two-way approach to FCAS compensation was considered appropriate for both affected participants and market customers with scheduled loads.

2.4.4 Compensation calculated based on targets rather than actual consumption/generation

For both energy and FCAS, the draft rule proposed that compensation be calculated by comparing a participant's dispatch targets in the two runs of NEMDE used to implement intervention pricing. For energy, this contrasts with the present framework which also has regard for actual energy output (as reflected in the affected participant's final statement) or consumption (based on the scheduled load's metering data - also that used for the final statement).

As AGL noted in its submission to the Compensation rule change consultation paper, having regard for actual consumption/output can reward a participant for not following its dispatch

23 Clause 3.12.2(a)(1) of the NER. At present the objective is only expressed as applying to affected participants. However, the draft rule extended the application of this objective to encompass market customers with scheduled loads: see draft rule clause 3.12.2(a)(2).

targets if doing so will increase the compensation it receives.[24] The draft rule's focus on dispatch targets aimed to reduce the incentive for a participant to operate its plant in a way that increased the amount of automatic compensation received.

This part of the draft rule is the focus of this directions paper (in light of the issues raised by AEMO in its submission to the draft determination which are expanded upon below). The Commission is not minded to materially alter other aspects of the draft rule as a result of the submissions received. Additional minor amendments to the draft rule under consideration are outlined in chapter 4, chapter 5 and appendix A for reference.

2.5 Summary of stakeholder feedback to draft determination

Four stakeholders[25] provided feedback to the draft determination for the Compensation rule change. AGL, EnergyAustralia and PIAC supported the approach in the draft rule.

AEMO supported the intent of the draft rule, however, raised an important issue regarding the approach to calculating compensation for affected participants and market customers with scheduled loads as outlined in section 2.4.4.

2.5.1 AEMO's submission to the draft determination

The issue raised in AEMO's submission to the draft determination was that it had concerns around the risks of over-compensating a scheduled load which does not follow its five-minute energy dispatch targets.

From page 4 of AEMO's submission to the draft determination,

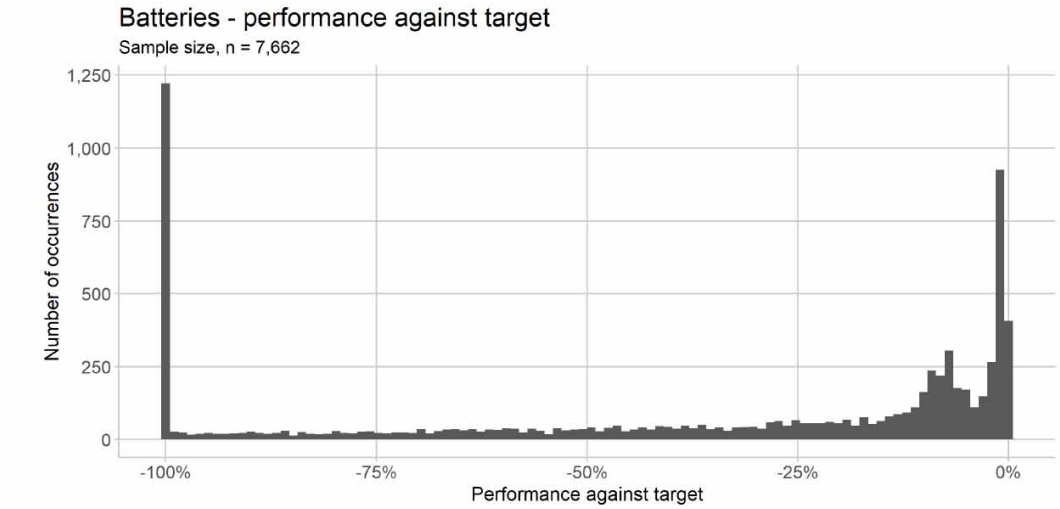
> AEMO considers that a situation may arise where an intervention occurs and a scheduled load does not follow its dispatch instructions. This is most likely to occur where the intervention price is significantly above the price at which the scheduled load expected to be dispatched. In this situation a scheduled load (particularly a battery which does not actually need the energy for an end use) could decide not to consume energy so would incur no actual pool purchase costs and yet it would still receive automatic compensation via this formula. In effect, it can make a profit out of not following dispatch instructions.
>
> However, the assessment of whether or not a scheduled load has followed its dispatch instructions is highly problematic, particularly for a battery which is also likely to be dispatched to provide regulation FCAS services. AEMO has provided a comparison of batteries' performance against their target in Appendix A of this submission which shows that there can be significant variations from the energy target. Further investigation of some of the largest deviations reveals that they were providing regulation FCAS at this time. In some instances the regulation FCAS requirement was greater than their load dispatch such that they ended up generating rather than consuming.

24 AGL, Submission to the consultation paper, p.4.

25 AEMO, AGL, EnergyAustralia and PIAC

AEMO conducted analysis of 2019 data to show how batteries as scheduled loads performed against their five-minute energy targets. This is reproduced in Figure 2.1.

Figure 2.1: Batteries - performance against target



Source: AEMO, Submission to the draft determination, p.6.

Note: This figure shows the distribution of outcomes for batteries that were below their load dispatch target when the regional dispatch price was greater than $100/MWh. The points performing at 0% indicate times when batteries met their five-minute dispatch targets while the points appearing at -100% show a total deviation from the dispatch target – i.e. they were not consuming at all (and were possibly generating).

In light of this data and the discussion in its submission, AEMO concluded that:[26]

> Given that there is a risk of over-compensation when the load fails to follow dispatch targets and given that it is very hard to identify this behaviour it would seem more appropriate to only pay compensation where a party can demonstrate that it has incurred a cost that it would not have incurred but for the intervention.

2.5.2 Implications of this issue

AEMO's conclusion would mean replacing the current approach to compensating scheduled loads in clause 3.12.2 (whereby compensation is calculated automatically in accordance with a formula) with a bespoke claims process.

The Commission considers that making this change for market customers with scheduled loads alone would create an inconsistent framework whereby a bi-directional unit would be entitled to automatic compensation if *generating* during an intervention but would need to make a claim if it was *consuming* during an intervention and incurred loss. It also sets up a disconnect in the framework between scheduled loads and scheduled generators, regardless of whether or not these are bi-directional units.

26 AEMO, Submission to the draft determination, p.4.

Introducing inconsistency between the two sides of the compensation framework could lead to market distortion. This may occur if, during an intervention event, a participant chooses to bid in a manner designed to optimise its compensation. For example, the participant may arrange its offers so that it can only be dispatched to generate in order to access automatic compensation (rather than be required to lodge a bespoke claim due to operating as a load).

To avoid market distortion, it is therefore necessary to consider the approach to compensating scheduled generators (affected participants) in addition to scheduled loads.

The implications of AEMO's submission raised the following question relating to the draft rule for calculating compensation: Is it appropriate to calculate compensation based on actual performance/meter data (as per the current approach in clause 3.12.2) rather than solely based on energy targets (as per the draft rule)?

This is explored in more detail in the options set out in chapter 3.

2.5.3 Minor issues raised by AEMO

As discussed above, AEMO also raised three minor issues relating to the draft determination and draft rule for the Compensation rule change. One of these is addressed in detail in chapter 4 while the remainder are referenced in appendix A.

2.6 How batteries operate in the NEM

Understanding the way that batteries operate in the market is relevant when considering the implications of AEMO's submission to the draft determination, explored in section 2.5.2.

In the NEM currently, a battery must be registered under two dispatchable unit identifiers (DUIDs) as both a market generator (scheduled generator) and a market customer (scheduled load). It will therefore participate in the central dispatch process via an offer to generate electricity and a bid to consume electricity. The unit may also register as a market ancillary service provider. A battery provides energy and FCAS offers for the generation side and the load side, with 10 price-quantity pairs set out for each offer.[27]

If a battery has made a dispatch offer for sent out energy in relation to its plant and also made an ancillary service offer in relation to the same plant for FCAS, NEMDE will first co-optimise the two types of offers. A dispatch instruction will then be issued which takes into account both the energy and FCAS offers and creates the energy target and the FCAS enablement band. The unit may or may not be dispatched for regulation or contingency FCAS within that enablement band in the corresponding dispatch interval.[28]

Batteries can respond to price signals and change from discharging (generating) to charging (consuming) in very short timeframes. As such, batteries have the ability to perform arbitrage in the energy market – quickly switching to discharge during high wholesale price events and charge during low price events – to take advantage of periods of high price volatility.

27 AEMC, *Integrating energy storage systems into the NEM: Consultation paper*, August 2020, p.50.

28 AEMO, *Guide to ancillary services in the national electricity market,* April 2015, p.10.

Batteries are also well suited to provide frequency response services by increasing generation or load in response to supply-demand imbalances.

Batteries are a significant provider of regulation FCAS, which is delivered via a control system called the automatic generation control (AGC). The AGC calculates how much additional generation or consumption is required, or how much generation or consumption needs to be reduced, to correct deviations in frequency. It will automatically adjust the electricity production target for the generator or load enabled for regulation FCAS to correct the frequency deviation through signals issued every four seconds.[29]

For batteries in particular, the unit may be enabled for more regulation FCAS than its energy dispatch bid. For example, a unit may be dispatched at 0MW but enabled for 10MW of raise regulation FCAS. Once enabled, a battery will respond automatically to frequency deviations, even if that response takes the unit away from meeting its five-minute dispatch target. The provision of contingency FCAS and primary frequency response can also cause a battery to deviate from its five-minute dispatch target.

2.6.1 Interactions with the Integrating storage rule change

To address the issues raised by AEMO in its submission to the draft determination, it is relevant to consider another AEMO rule change request - the Integrating storage rule change.[30] Due to the interactions with the Integrating storage rule change, the timelines for both the Compensation and Integrating storage rule changes were aligned so that the final determination and final rules for both can be published by November 2021.

The Integrating storage rule change was commenced in response to a rule change request received on 23 August 2019 from AEMO. The aim of the rule change request was to better facilitate the integration of energy storage and hybrid facilities into the NEM. To achieve this, AEMO proposed defining storage in the Rules and introducing a new registered participant category called the bi-directional resource provider.

The draft rule, released alongside this directions paper on 15 July 2021,[31] is a more preferable draft rule that introduces a new participant category, the Integrated Resource Provider (IRP). This category would accommodate storage and hybrid facilities in a way that does not require the introduction of a storage-specific definition in the Rules.

The Commission's draft rule for the Integrating storage rule change would require new storage assets and hybrid facilities to register in the proposed IRP category. It would also transition the existing large-scale batteries in the NEM into the IRP category as single DUID integrated resource units (IRUs). In theory, this could provide an opportunity to create an IRP specific approach to compensating these participants if they are dispatched differently due to intervention events which trigger intervention pricing.

However, as discussed in the draft determination for the Integrating storage rule change, the Energy Security Board's (ESB's) proposed design for a two-sided market is proposing to

29 AEMO, *Power system requirements,* July 2020, p. 21.
30 See: https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem
31 AEMC, *Integrating energy storage systems into the NEM,* Draft rule determination, 15 July 2021.

simplify the existing registration process by transitioning all participant categories into one, a single trader category that could evolve from the IRP. As such, introducing a battery or hybrid specific approach to compensation through the IRP category would not align with the proposed direction of these broader changes.[32]

The interactions between the Compensation rule change and the Integrating storage rule change are explored in more detail in chapter 5, noting that the changes under the Integrating storage final rule would come into effect 18 months after the final determination is published (compared with the five months required to implement the final Compensation rule change).[33]

32 The only changes the draft Integrating storage rule makes to the intervention compensation frameworks is to integrate the IRP and IRU into the existing frameworks.

33 The final determination for the Integrating storage rule is scheduled to be published along with the final determination for the Compensation rule change by November 2021.

3 OPTIONS FOR CALCULATING COMPENSATION

To address the issues raised by AEMO in its submission to the draft determination in relation to the potential for actual energy output or consumption to vary relative to the MW targets issued to a given unit, the Commission has developed three potential options that adopt different approaches to calculating compensation for changes in energy revenue.[34]

This chapter:

- Outlines the three potential options for calculating compensation payable to or by affected participants and market customers with scheduled loads
- Discusses the pros and cons of these options and the Commission's preliminary views on each of these options, including its preferred option
- Invites stakeholder feedback on the options presented and any other options or issues which stakeholders wish to raise, and
- Discusses the value of the compensation framework more broadly.

3.1 Option 1 - compensation based on targets (draft rule)

The draft determination and draft rule for the Compensation rule change set out an approach to calculating energy revenue compensation based solely on the difference between a participant's energy targets in the dispatch run and intervention pricing run of NEMDE, as described above in section 2.4.

For energy, this contrasts with the present framework which also has regard for actual energy output or consumption (based on settlement quality metering data).

As noted in the draft determination,[35] this approach:

> provides for compensation to be calculated based on consistent metrics, makes clear that a participant is not 'affected' and no compensation is payable where the dispatch targets in the two runs are identical, and removes the potential for a participant to receive compensation because it has not followed dispatch targets.

This was deemed appropriate given the concerns raised by AGL in its submission to the Compensation rule change consultation paper. Where compensation has regard for actual metering data, a participant may be rewarded for not following its dispatch targets if doing so will increase the automatic compensation it receives.[36] The draft rule's focus on dispatch targets aimed to reduce the incentive for a participant to operate its plant in such a way to

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34 The issue raised by AEMO in its submission focuses on the potential for actual energy output or consumption to vary relative to the MW targets issued to a given unit. The same concern does not apply with respect to FCAS because NEMDE issues FCAS enablement targets that identify the range within which a unit may be called upon to provide frequency control services. Individual units will then provide FCAS, within the enablement target range, in response to signals provided by the AGC system or in response to local deviations in frequency. AEMO's submission does not have implications for the manner in which FCAS compensation is proposed to be calculated.

35 AEMC, *Compensation for market participants affected by intervention events,* Draft determination, September 2021, p. 24.

36 This point was discussed specifically in relation to where a unit has matching targets in the dispatch run and intervention pricing run of NEMDE in AGL's submission to the consultation paper (p. 4). However, the incentive to deviate from targets to increase compensation could also exist in other instances.

increase the amount of compensation received. This is consistent with the principle of efficiency and assists with ensuring that undue costs are not allocated to those unable to manage the risks of those costs. In addition, this option was deemed simple to implement within AEMO's systems, with relatively small implementation costs.

However, the Commission's preliminary view is that this approach is no longer considered to be appropriate in light of the information and data provided by AEMO in its submission to the draft determination. AEMO's submission showed that batteries can move away from their five-minute MW targets, particularly in their capacity as providers of regulation FCAS.

The Commission agrees with AEMO that a participant may be over-compensated as a result of a target based approach (as adopted in the draft rule) if the movements that they make away from their five-minute targets due to the provision of FCAS and other services are not accounted for. Over-compensation would be contrary to the NEO by imposing unwarranted costs on consumers.

As such, while a target based approach is straight-forward and predictable, the data provided by AEMO demonstrated that having no regard for actual generation or consumption may in fact run counter to the intent of the compensation framework and the NEO.

3.2 Option 2 - compensation with regard to actual consumption/generation (preferred)

The Commission's preferred option proposes that compensation for affected participants and scheduled loads be calculated having regard for actual consumption or generation (rather than focusing solely on the targets in the dispatch and intervention pricing runs, as per the draft rule).

This would be drafted in the final rule such that references to the "dispatch targets determined through the central dispatch process used to dispatch Market Participants" would be removed from the draft clauses 3.12.2(c)(1)(ii), 3.12.2(c)(3)(iii)(C) and the definition of QDb in draft clause 3.12.2(d). These clauses in the final rule would then incorporate wording from current clause 3.12.2(c)(1)(ii), in particular references to the trading amount in the "final statement provided pursuant to clause 3.15.14 for the billing period in which the intervention price trading interval occurs", and the current definition of QD in clause 3.12.2(a)(2), in particular references to "metering data".

Under the current rules:

- For affected participants, compensation is calculated by estimating the trading amount that the participant would have received had the AEMO intervention event not occurred (based on the estimated level of dispatch that the unit would have been dispatched at had the event not occurred),[37] and deducting the trading amount that the participant actually received (set out in its final billing statement).[38]

37 While the rules do not refer to the intervention pricing run, AEMO's practice is to use the intervention pricing run targets to estimate the trading amount that a participant would have received but for the intervention.

38 As per clause 3.12.2(c)(1)(ii).

- For scheduled loads, compensation is calculated using a prescriptive formula:

  DC = ((RRP x LF) - BidP) x QD

  where QD is "the difference between the amount of electricity consumed by the scheduled load during the relevant intervention price trading interval determined from the metering data and the amount of electricity which AEMO reasonably determines would have been consumed by the scheduled load if the AEMO intervention event had not occurred".[39]

In practice, AEMO calculates compensation for affected participants and scheduled loads with regard to actual generation output or consumption (determined from settlement quality metering data)[40] and a participant's dispatch targets from the intervention pricing run and the dispatch run of NEMDE. The targets from the intervention pricing run and dispatch run are used to "scale" the actual generation or consumption of the unit to assist AEMO to determine what would have occurred if the AEMO intervention event had not occurred.

The scaling technique accounts for the disconnect between the point at which a dispatch target is received by a generator (or load) and the point at which the generator (or load) is metered, accounting for auxiliary load. For example, a generating unit may receive from NEMDE an energy target of 100MW but only 90MW is sent out (and paid for via energy revenue) due to auxiliary load consumption behind the meter at a level of 10MW. Calculating compensation based on the 100MW target would result in over-compensation, hence the need to scale the generating unit's actual output.

In addition, this scaling has the practical effect of acknowledging some movements of units (such as batteries) away from their targets due to the provision of system services such as FCAS. This may avoid over-compensation of these units under the automatic framework, aligning with the NEO.

However, this scaling approach does not unnecessarily accommodate the full extent of movement of these units away from targets. In particular, where a unit's actual performance differs from its MW target so significantly that it switches from the mode of operation reflected in its five-minute energy target (e.g. to generate) to the alternate mode (e.g. consuming), the unit's actual consumption is effectively set to zero for the purpose of calculating its energy compensation. The Commission considers this appropriate based on the following reasoning.

As discussed in section 2.6, bi-directional units are required, at present, to register with two DUIDs. In the above example, the five-minute energy target is issued by NEMDE to the generator DUID of the unit (with a 0MW target issued to the load DUID). If the unit receives AGC signals for regulation FCAS such that it actually consumes during the dispatch interval,

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39 As per the current clause 3.12.2(a)(2).

40 AGL had queried AEMO's interpretation of "metering data" in its submission to the *Compensation* consultation paper, stating "Where a compensation scenario occurs, the "metering data" component of the QD value should use settlement quality data for the entire intervention price trading interval, rather than an inferred value calculated from a limited, unrepresentative data set. Clarification is also required regarding AEMO's use of five-minute "metered data" as a proxy for the "metering data" required by Clause 3.12.2(a)(2)". The AEMC has confirmed with AEMO that the metering data used in the calculation of QD is the adjusted gross energy from the settlement statement, which is indeed settlement quality metering data.

then the actual output of the unit at the generator DUID will be zero and accordingly no energy compensation will be payable.[41]

In this instance, the primary service being provided by the unit is FCAS rather than energy. Market participants are paid for FCAS through their enablement revenue and no additional energy compensation is warranted in the above example. To do so would likely constitute over-compensation, which would be contrary to the NEO (this is explored in further detail in chapter 5).

An alternative approach to account for this could be that, in those intervals where a unit is providing FCAS, the unit is not entitled to any compensation for changes in energy revenue. However, separating the energy and FCAS components of actual generation or consumption is a computationally intense exercise using four-second data and the significant costs of implementing this in the automatic compensation calculations would not be warranted. In contrast, the calculation approach as set out in Option 2 would require no changes to AEMO's existing calculation processes so will have no associated implementation costs.[42]

In light of this, the Commission considers that having regard for actual performance would likely provide an appropriate balance between accuracy and administrative cost. It is therefore considered that Option 2 would not pass undue costs onto consumers, aligning more closely with the principle of efficiency and the NEO than Option 1 or Option 3. Accordingly, it is the Commission's preferred approach for finalising the rule change.

3.2.1 No compensation where a unit has matching dispatch and intervention run targets

In its submission to the consultation paper, AGL stated that, "If the targets are identical in the two NEMDE runs[43] then any compensation paid though the application of metering data may be rewarding the participant for not following targets".[44] This was a factor that informed the Commission's approach in the draft determination (i.e. calculating compensation based on targets alone, without regard for actual generation output or consumption).

To address AGL's concern (and assuming that the target-based approach in the draft determination is changed in the final determination), the Commission considers a new clause could be added such that, where a participant's targets in both runs of NEMDE are identical, no compensation will be payable under clause 3.12.2 of the NER. This removes the potential for perverse incentives (as highlighted in the AGL submission) and inefficient costs associated with processing unfounded claims for compensation. It is also consistent with AEMO's current practice and the inclusion of this clause would therefore increase clarity and predictability in the Rules.[45]

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41 The Commission's preliminary thinking is that a similar approach may be applied by AEMO under Option 2 to bi-directional units with one DUID (as introduced in the Integrating storage draft rule) and that this remains appropriate for the same reasons outlined here. For further discussion on single DUID bi-directional units, refer to section 5.3.

42 This does not include the costs associated with implementing the other changes deemed necessary as per the draft rule.

43 These being the intervention pricing run target and dispatch run target.

44 AGL, Submission to the consultation paper, July 2021, p.4.

45 Synergies Economic Consulting, in its *Independent expert determination on claim for additional compensation from directions of 29 August 2018* report (published January 2019) stated that "there is no explicit step prescribed in Chapter 3 or Chapter 10 that specifies how AEMO is to identify Affected Participants, rather it is implied that this status will be apparent to AEMO". The inclusion of this clause may help address these ambiguities.

3.2.2 Compliance with dispatch instructions

Even with the addition of the new provision outlined above, the Commission notes that the risk identified by AGL may still exist. That is, there remains a risk - when compensation is calculated by reference to actual output or consumption - that compensation can effectively reward a participant for not following its target. AEMO also reiterated this risk in its response to the draft determination, when it stated:

> AEMO considers that a situation may arise where an intervention occurs and a scheduled load does not follow its dispatch instructions... In effect, it can make a profit out of not following dispatch instructions.

The Commission notes that failing to comply with a dispatch instruction could constitute a breach of clause 4.9.8.[46] [47] However, in this regard, the Commission notes that a participant may validly move away from its MW dispatch target to the extent necessary to provide primary frequency response or FCAS.

To deter non-compliance with dispatch instructions, the Commission proposes that an additional paragraph within clause 3.12.2 would be included that mirrors clause 3.15.10C(c) for directed participants. The intent of the additional paragraph in clause 3.12.2 would be to discourage any behaviour by affected participants or scheduled loads such as that identified in the hypothetical situations put forward by AGL and AEMO.

Clause 3.15.10C(c) of the NER provides that if, on application by the Australian Energy Regulator (AER), a court determines that a directed participant has breached clause 4.8.9(c2) (relating to a participant's contribution to creating the circumstances causing an intervention event) then they shall not be entitled to, and must repay, any compensation plus interest pursuant to clauses 3.15.7, 3.15.7A and 3.15.7B, in relation to that direction.

The additional paragraph in clause 3.12.2 would take a similar form, although would refer to clause 4.9.8 not clause 4.8.9(c2).

3.3 Option 3 - bespoke claims process

A third option would be to remove the automatic compensation framework in clause 3.12.2 and replace it with a bespoke claims process. Under this approach, affected participants and market customers with scheduled loads could lodge a bespoke claim and receive compensation if they can demonstrate that they are worse off as a result of an AEMO intervention event that triggers intervention pricing. This could retain the current provision whereby compensation is only payable to affected participants and market customers with scheduled loads if the value of the compensation is greater than $5,000 per intervention event.[48]

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46 Clause 4.9.8. of the NER states "a Registered Participant must comply with a dispatch instruction given to it by AEMO unless to do so would, in the Registered Participant's reasonable opinion, be a hazard to public safety or materially risk damaging equipment".

47 The term "dispatch instruction" is defined in Chapter 10 of the NER as an instruction given to a registered participant under clauses 4.9.2 (scheduled and semi-scheduled generators), 4.9.2A (scheduled network service providers), 4.9.3 (scheduled loads), and 4.9.3A (ancillary service providers in relation to ancillary service generating units or ancillary service loads).

48 Clause 3.12.2(b) of the NER.

A key difference between this approach and the current framework is that affected participants would only lodge claims if they were worse off (a one-way approach). Affected participants are not expected to lodge a claim such that they would repay revenue to AEMO if an intervention leaves them better off. As such, the cost of compensation under this approach could be expected to be higher than under the current two-way approach to compensating affected participants with respect to energy revenue, and the draft rule's two-way approach to compensating affected participants and scheduled loads with respect to changes in FCAS enablement revenue. A bespoke claims approach therefore would appear to be contrary to the NEO.

In addition, a bespoke claims process may lack transparency and predictability, both of which are desirable and are principles set out in section 2.3.

It is also necessary to consider the cost of administering a bespoke claims framework.

- Bespoke claims would have to be assessed by AEMO (or independent experts). The cost of this has been estimated at $10,000 per claim.[49] AEMO would also be required to release a guideline document[50] to give affected participants and market customers with scheduled loads an indication of the criteria used to assess bespoke compensation claims, another administrative cost.
- In addition, affected participants and scheduled loads do not currently incur any administrative costs unless they choose to dispute a compensation payment or seek additional compensation. By contrast, participants would incur internal resourcing costs to lodge bespoke claims.[51] In its submission to the *Investigation into intervention mechanisms and system strength in the NEM*, AEMO noted:[52]

  > The smallest directed and affected participant [additional] compensation claims received by AEMO since the beginning of 2017 have been approximately $20,000. It could be inferred that this represents an upper bound on the minimum cost of submitting an additional compensation claim.

Considered in isolation, this might suggest that, if participants do not lodge claims for amounts less than $20,000, the cost of compensation may be somewhat lower under a bespoke claims approach. However, any resultant reduction in compensation costs would likely be offset, or more than offset, by the higher administrative costs associated with processing claims, and the fact that no amounts (small or large) are being repaid to AEMO by those affected participants that are better off as a result of the intervention event.

Accordingly, this option is considered to be contrary to both the objective of the compensation framework (being to put participants in the position they would have been in but for the intervention) and to the NEO and so is not preferred.

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49 As per internal communication between AEMO and the AEMC.

50 The Guidelines for administering Option 3 would likely be similar to the AEMC's *Final compensation guidelines under clause 3.14.6 of the national electricity rules*.

51 In regard to the bespoke process for administered price period compensation claims, only one claim has been lodged since market start. This may reflect the cost to participants of pursuing compensation claims.

52 AEMO submission to the *Investigation into intervention mechanisms and system strength in the NEM* consultation paper, p. 8.

3.4 Summary of options

Set out in Table 3.1 is a summary of the options presented above and the Commission's initial assessment.

Table 3.1: Summary of options

	OPTION	INITIAL ASSESSMENT
1	**Retain the approach in the draft rule** - calculate compensation for affected participants and affected market customers with scheduled loads based solely on the difference between their targets in the intervention pricing run and dispatch run of NEMDE.	This approach removes the incentive for some participants to optimise their position with respect to energy revenue/costs and compensation. It is also highly transparent. However, there is a risk of over-compensating participants who do not meet their five-minute dispatch targets due to the provision of other services.
2	**Retain the approach in the current NER, including additional paragraphs (preferred)** - calculate compensation for affected participants and affected market customers with scheduled loads having respect to their targets in the intervention pricing run and dispatch run of NEMDE and also their actual consumption in each trading interval. Include a paragraph mirroring Clause 3.15.10C(c) and specify that where targets in the dispatch run and intervention pricing run of NEMDE are identical, no compensation is payable to affected participants.	The Commission's preliminary view is that this approach most efficiently allows AEMO to place participants in the position they would have been in but for the intervention - in line with the NEO and the objective of the compensation framework. The additional paragraphs minimise the incentive for market participants to stray from their dispatch targets to earn additional compensation (addressing concerns raised by AGL in its submission to the consultation paper) while retaining the current calculation approach based on actual generation/consumption (addressing the concerns raised by AEMO in its submission to the draft determination). It is the preferred approach of the Commission to finalise the rule change.
3	**Bespoke claims required for all participants** - remove the automatic compensation framework in clause 3.12.2 and replace it with a bespoke claims process.	Participants are unlikely to lodge a claim such that they would repay revenue to AEMO if an intervention leaves them better off. This appears contrary to the NEO.

	OPTION	INITIAL ASSESSMENT
		The administrative costs of a bespoke claims process are likely to be high.

Source: AEMC

3.5 Request for stakeholder feedback on options

The above three options have been developed in light of the issues raised by stakeholders throughout the course of the rule change process, particularly those identified by AEMO in its submission to the draft determination.

The Commission invites stakeholder feedback on the options presented in this chapter.

QUESTION 1: FEEDBACK ON OPTIONS FOR CALCULATING COMPENSATION

1. What are stakeholder views on the Commission's assessment of the options set out in this chapter?
2. Which option do stakeholders prefer and why?
3. Do stakeholders have any other suggested options which they consider would be preferable to the options put forward by the Commission?

3.6 The value of the compensation framework

When investigating the concerns highlighted by AEMO's submission to the draft determination, the Commission also considered whether the administrative costs of addressing these concerns and administering the compensation framework may eclipse the compensation ultimately paid to or by market participants such that there was little overall value in retaining the compensation framework.

As discussed in the draft determination for the Compensation rule change, the compensation amounts ultimately paid to or by market participants will be a function of netting off at several levels.[53] For example, in the draft rule, the inclusion of changes in revenue due to FCAS enablement in the compensation framework may increase the potential for countervailing factors to reduce the amount of compensation payable to a given participant. In particular, the amount of FCAS enablement that is possible in a given interval is a function of the amount of energy that a participant is dispatched to generate or consume. If a generator is dispatched down during an intervention event, it will have more headroom and hence ability to provide raise FCAS (reflected in higher FCAS enablement).

53 AEMC, *Compensation for market participants affected by intervention events,* Draft rule determination, p.45-46.

These two factors may therefore combine to reduce the net amount of compensation payable, as, while a unit's energy revenue may reduce, its FCAS enablement revenue may increase.[54] As there are costs associated with implementing the FCAS component of the rule and there may in fact be less compensation paid (due to the interplay of countervailing factors outlined above), the net benefit of the compensation framework may decrease.

This, coupled with the complexities associated with addressing compensation for bi-directional units (as explored in Option 2), resulted in the Commission considering the ultimate value of the compensation framework.[55]

3.6.1 The intervention pricing framework

It is also relevant that intervention pricing already mitigates the impact on market participants of those intervention events (responding to a shortage of energy or FCAS) which trigger the compensation framework in clause 3.12.2.[56] During such intervention events, intervention pricing is used to set the price at which the market clears. This price is typically higher than the price produced by the dispatch run (the NEMDE iteration used to dispatch the physical market).[57] This means that intervention pricing is not allowing the price to fall in response to the additional generation coming online (or the effect on demand of the RERT), preserving scarcity price signals by setting the regional reference price at the level that AEMO reasonably determines would have applied but for the intervention.

Hence, if the compensation framework was removed, the intervention pricing framework would continue to mitigate to some degree the impact of the intervention on participants.

3.6.2 The case to retain the framework

In December 2019, the Commission made a rule which significantly narrowed the circumstances in which compensation under clause 3.12.2 is payable.[58] Compensation is no longer payable to affected participants in connection with security interventions such as system strength directions (which comprise the vast majority of AEMO interventions in recent years).[59]

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54 The converse is also true: if a generator is dispatched at a higher level, the amount of energy revenue it earns will increase (triggering a requirement to repay this revenue, if it exceeds the $5,000 threshold, to AEMO). However, this requirement to repay revenue may be offset by a reduction in the FCAS enablement revenue that a generator can earn from raise FCAS services. The same applies to loads and the ability to provide lower FCAS services.

55 This statement is not intended as justification to not extend the compensation framework to encompass changes in FCAS revenue, as in the draft rule. Indeed, not including FCAS in the compensation framework creates a risk of over-compensation: for example, compensating a generator for a reduction in energy output, without having regard for any offsetting increase in FCAS revenue, could amount to over-compensation.

56 Clause 3.9.3(b) of the NER deals with intervention pricing.

57 This is because the intervention pricing run excludes any units operating under direction or the effect on demand of the RERT (while the dispatch run includes directed units and the impact of the RERT). In this way, the pricing run seeks to set the spot price at the level which AEMO reasonably determines would have applied but for the intervention event, thus preserving scarcity signals and reducing market distortion.

58 AEMC, *Application of compensation in relation to AEMO interventions,* Rule determination*,* 19 December 2019.

59 Since December 2019, intervention pricing is no longer used when AEMO intervenes in the market to address a system security issue such as inadequate system strength, inertia or voltage control. As such, compensation is no longer payable to participants dispatched differently due to such interventions (consistent with the fact that no compensation is payable where a participant is dispatched differently due to a system security constraint).

However, as part of that rule change, the Commission noted that intervention pricing is typically triggered in circumstances where the supply demand balance is tight and spot prices high. This was a factor in determining that it was appropriate to retain compensation when AEMO intervenes in the market to address a shortage of energy or FCAS. Such periods can be important revenue earning opportunities for market participants and the Commission therefore considered it appropriate to make participants "whole" if they are worse off as a result of an intervention event that triggers intervention pricing.[60]

The Commission considers that, while countervailing factors due to the inclusion of FCAS in the compensation framework may reduce the net quantum of compensation paid to or by a market participant, mitigating the effects on participants of intervention events which trigger intervention pricing through the compensation framework remains important.

In addition, removing the compensation framework could lead to unintended consequences. For example, an affected participant which has its generation output reduced due to an intervention may find itself financially exposed through its hedge contract arrangements. While the quantum of compensation typically paid under clause 3.12.2 is low, the potential for a participant to experience material financial harm cannot be ruled out.[61] As such, the Commission considers that there is value for now in retaining the compensation framework, with the additions proposed in the draft rule and this directions paper.

The Commission developed the three options above to respond to AEMO's submission to the draft determination. While complexities were identified in doing so (especially with regard to compensating bi-directional units), the approach proposed in Option 2 is considered to provide an appropriate balance between administrative costs and accurately compensating participants. This, in turn, is likely to meet the objective of the framework and the NEO.

Additionally, there are a number of new market systems being developed through the Energy Security Board's (ESB's) post-2025 market design work. These may change the materiality of the issues identified in this directions paper and bring to light additional issues which affect how the compensation framework may or may not contribute to the NEO. For example, while deliberations regarding two-sided markets are in the early stages, an issue to consider is how the compensation framework would operate if the level of scheduled loads in the market was to increase significantly. This could create a compensation cost feedback loop whereby consumers are effectively required to compensate themselves when an intervention event results in scheduled loads being dispatched differently.[62]

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60 AEMC, *Application of compensation in relation to AEMO interventions: Rule determination,* 19 December 2019, pp. iv-v.

61 The compensation framework is not intended to account for changes in revenue due to a change in a participant's contract position. The framework is limited to the matters set out in clause 3.12.2 and these do not include revenue streams associated with markets not established by the NER. This example is not suggesting that the compensation framework should account for these losses, only that there are interactions between a participant's position in the energy spot market and the contract market.

62 The cost of affected participant compensation is recovered from market participants and customers, depending on the nature of the service obtained as a result of the intervention event. Where the reason for the intervention event is to address a shortage of energy, compensation costs will be recovered from market customers and hence consumers in the region which benefited from the intervention. Where the reason for the intervention is to address a shortage of FCAS, compensation costs will be recovered in line with the normal process for recovering the cost of the FCAS service in question: i.e. from generators, small generation aggregators and /or market customers. Where the reason for a direction is to obtain a service other than energy or FCAS, intervention pricing will not apply and hence affected participant compensation is not payable.

Such issues will be considered through any implementation projects for these reforms. In addition, there are benefits in progressing the Compensation rule change now to include the necessary changes in the draft rule and this directions paper rather than waiting for the implementation of ESB outcomes over the coming years. Therefore, the Commission considers it is not appropriate to consider the holistic question of compensation at this time.

4 CLARIFICATION OF THE OBJECTIVE OF THE COMPENSATION FRAMEWORK

This section:

- Responds to a minor issue raised by AEMO in its submission to the draft determination
- Proposes an approach to clarify the objective of the compensation framework
- Explains the rationale for doing so, and
- Invites stakeholder feedback on the proposed approach.

4.1 Consistency between the objective of the framework and formula-based compensation

As discussed in section 2.1, the objective of the compensation framework is articulated in the current NER with respect to affected participants but not scheduled loads.

As such, in the draft rule, the Commission proposed to amend the wording of clause 3.12.2(a)(2) to include a description of the intent of the compensation framework when applied to market customers with scheduled loads. This mirrored the intent of the compensation framework applied to affected participants under the current clause 3.12.2(a)(1).

The draft wording of Clause 3.12.2(a)(2) in mark-up is as follows:

> "a Market Customer, other than a Market Customer which was the subject of any direction that constituted the AEMO intervention event, is entitled to receive from AEMO, or must pay to AEMO, in respect of one or more of its scheduled loads, an amount as determined in accordance with this clause 3.12.2 that will put the Market Customer in the position that the Market Customer would have been in regarding the scheduled load had the AEMO intervention event not occurred..."

AEMO's submission to the draft determination stated:

> Whilst this is consistent with the intent of other intervention clauses, it is inconsistent with the formula-based compensation in 3.12.2(d) which does not deliver that outcome. Unlike other compensation approaches for directions, the compensation in the formula is one sided such that a scheduled load can only receive compensation and does not have to pay back any gains that resulted from the intervention.
>
> Secondly, the formula effectively prescribes that the compensation amount refunds any excess pool purchase costs that might have resulted from the intervention but only down to the scheduled load's bid price step. This means that the bid price step is seen as a proxy for the value of the energy that the scheduled load acquired as a consequence of the intervention. Whilst there is no easy answer to assigning a cost in this situation, the formula is inconsistent with the approach used for compensating generators where their SRMC [short run marginal cost] rather than their bid price is

> used as the basis of the calculation.
>
> To resolve this AEMO recommends that the purposive description of scheduled load compensation be removed in 3.12.2(a)(2) and simply replaced with a clause referring to an entitlement to compensation as determined by the formula in 3.12.2(d). This would avoid confusion and inconsistency in the interpretation of the rules.

The Commission considers that there are benefits to including such descriptions, which are elaborated further in the following sub-sections.

In regard to AEMO's comments (and the different way in which scheduled loads are dispatched in the NEM compared with scheduled generators), the Commission considers that the effect of the one-way approach to compensation is to put the market customer in broadly the same position that it would have been in regarding the scheduled load had the AEMO intervention event not occurred. [63] However, the Commission agrees with AEMO that simply mirroring the description of intent for affected participants is not entirely accurate for scheduled loads, given the different manner in which compensation is calculated for market customers.

Nonetheless, the Commission believes that specifying the intent of the compensation framework for both affected participants and scheduled loads remains important.

4.2 Proposed approach to clarify the objective of the compensation framework

To address the issue raised by AEMO and clarify the intent of the compensation framework, the Commission considers the following approach is preferable to the amendment proposed for scheduled loads in the draft rule.

The Commission is considering removing the description of intent in clause 3.12.2(a)(2) of the draft rule (as was suggested in AEMO's submission) and adding a new, overarching paragraph to clause 3.12.2. This would clarify the objective of the compensation framework as applied to both affected participants and scheduled loads.

The Commission proposes that this would take a form similar to the following indicative drafting, as modelled on the equivalent objective clauses in the market suspension and adjusted price period compensation frameworks:[64]

> The compensation framework established by this clause 3.12.2 applies to participants which are dispatched differently as a result of an *AEMO intervention event* in respect of which AEMO has set dispatch prices and ancillary service prices in accordance with clause 3.9.3(b). The objective of the framework is, as far as practicable, to put such participants in the position they would have been in had the *AEMO intervention event* not occurred. The approach to calculating compensation acknowledges the different

63 A detailed discussion of the rationale for the one-way approach to compensating scheduled loads is included on pp. 68-69 of the draft determination.

64 Clause 3.14.5A(a) and 3.14.6(c) respectively.

> manner in which scheduled generators and scheduled loads are dispatched.

This is consistent with the original intent of the Rule, as described by NEMMCO and NECA (see section 2.1) - that "third parties whose market dispatch is affected by direction should also be compensated so that their financial position is unaffected by the direction".[65]

4.3 Rationale for clarifying the intent

As discussed in the draft determination,[66] the issue of how to interpret clause 3.12.2 with respect to FCAS losses was discussed by Synergies Economic Consulting when it declined a claim for additional affected participant compensation to recoup FCAS losses.[67] This unsuccessful claim is referenced by AEMO in its rule change request.

While this report focused specifically on compensation for FCAS losses, Synergies also concluded with the following:[68]

> "...we are mindful that there are ambiguities in clause 3.12.2 that we have had to resolve. It is difficult to determine whether the purpose of clause 3.12.2 is to compensate more generally for foregone revenues or, consistent with some other compensation clauses in the NER, to ensure that revenues earned by an Affected Participant are not less than the costs that it incurs."

The Commission believes that including the objective as an overarching principle in the Rules improves the clarity of the intent of clause 3.12.2. It also promotes consistency. Whereas the current provisions apply the objective to one group of participants only (affected participants), the proposed approach applies the objective to all participants dispatched differently as a result of an intervention event which triggers intervention pricing.

This provides a more concrete guide to AEMO, independent experts and participants when determining and making compensation claims and assessing additional compensation claims.

4.4 Request for stakeholder feedback

The Commission invites stakeholder feedback on the proposed approach to clarifying the objective of the compensation framework in the Rules.

> QUESTION 2: FEEDBACK ON THE INCLUSION OF THE OBJECTIVE IN THE RULES
>
> 1. Do stakeholders agree that there is a need to clarify the objective of the compensation framework in clause 3.12.2?

65 NEMMCO and NECA, *Final report - Power system directions in the national electricity market,* 2000, p.i.

66 See p.36 of the draft determination.

67 Synergies Economic Consulting, *Final report on compensation related to directions that occurred on 1 December 2016,* June 2017.

68 ibid, p.37.

2. Do stakeholders agree that including a new paragraph stating the high level objective of the framework will achieve the level of clarification required?
3. Do stakeholders have any other suggestions to assist with clarifying the objective of the framework?

5 CONSIDERATIONS RELATING TO BI-DIRECTIONAL UNITS IN THE COMPENSATION FRAMEWORK

This section:

- Discusses the complexities arising when applying the compensation framework in clause 3.12.2 to bi-directional units
- Considers if and how these complexities may be captured in the Rules,
- Discusses the interactions between the Integrating storage and Compensation rule changes, and
- Invites stakeholder feedback on the discussion.

5.1 Classifying a bi-directional unit for compensation purposes

AEMO's submission to the draft determination raised an important consideration with respect to compensating units that can both generate and consume (particularly batteries). As such, the Commission's preliminary thinking is to include a new paragraph in clause 3.12.2 to clarify which compensation framework (affected participant or market customer with scheduled load) applies in certain scenarios.

While NEMDE may issue a dispatch target to consume, the unit may in fact generate energy (and vice versa). This may occur, for example, in the course of following AGC signals for regulation FCAS.

The bi-directional nature of units becomes relevant when considering which compensation framework (affected participant or market customer with scheduled load) to apply in each trading interval. Applying the appropriate framework is important given the two-way approach to compensating affected participants which contrasts with the one-way approach to compensating market customers with scheduled loads.

AEMO currently uses the two DUIDs (scheduled generator and scheduled load) under which a battery is registered for the purpose of classifying the unit as an affected participant or scheduled load for compensation purposes and determining the compensation amount. For example, if a bi-directional unit is dispatched to generate but actually consumes (i.e. its net performance over the five-minute interval is opposite to the target issued to it), the unit would be classified by AEMO as an affected participant for compensation purposes.

As discussed in section 3.2, this is appropriate as it is considered to best mimic the revenue streams that exist for energy and FCAS enablement.[69] It is therefore consistent with the objective of the compensation framework - to put the participant in the position it would have been in but for the intervention.

69 FCAS revenue is based primarily on enablement targets, rather than on the amount of FCAS actually provided by the unit. Where a unit is generating energy in the course of providing FCAS, it will also earn revenue from the generation of that energy. In contrast with FCAS, energy revenue in the NEM (leaving aside the contract market) is solely a function of the actual amount of energy generated. Similarly for loads, costs are based on the amount of energy consumed.

However, while the approach to classifying a unit as an affected participant or scheduled load is appropriate, the Commission notes that the Rules do not currently specify that this approach is used in this scenario. The Commission considers that there would be benefit in providing greater clarity as to the approach adopted in such cases. Increased clarity avoids unnecessary expense associated with unwarranted claims by market participants for additional compensation under clause 3.12.2(f).[70] [71]

The solely target-based approach to compensation in the draft rule (and in Option 1 explored in chapter 3) provided clarity in relation to such scenarios since the applicable framework (affected participant or market customer with scheduled load) would be distinguishable by the nature of the target issued to the unit. In proposing that the final rule preserve the use of actual generation and consumption for calculating compensation (as per the preferred Option 2), the Commission recognises that the question of which framework is applicable may not be clear.

The Commission's preliminary thinking is to include a new paragraph in clause 3.12.2 which would provide guidance on which framework applies in certain scenarios. This could provide that, where a unit is capable of operating as both a scheduled generator and a scheduled load, the choice of applicable compensation framework will be based on the MW target issued to the unit by NEMDE in a given intervention price trading interval, notwithstanding that unit's actual performance over the interval.[72]

5.2 Classifying a bi-directional unit dispatched at 0MW

Further considerations arise when a unit is dispatched at 0MW in the dispatch run. As such, the Commission considers that there would also be benefit in clarifying which compensation framework should apply in circumstances where the choice of framework is not immediately evident.

Where the dispatch target is 0MW for a bi-directional unit (i.e. the unit is neither dispatched to generate or consume), the Commission's preliminary thinking is that the choice of compensation framework could be based on the target in the intervention pricing run. This is considered appropriate as it would focus on what the participant would have been doing (and what revenue it would have been earning or cost it would have been incurring) but for the intervention.

Thus, if a unit is dispatched at 0MW in the dispatch run and (hypothetically) dispatched to generate in the intervention pricing run, it would be compensated as an affected participant.

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70 Clause 3.12.2(f) states: "Subject to paragraphs (h) and (i), within 15 business days of receipt of the notice referred to in paragraph (c) an Affected Participant or Market Customer may make a written submission to AEMO in accordance with paragraph (g) claiming that the amount set out in the notice is greater than or less than its entitlement pursuant to paragraph (a)(1) as an Affected Participant or paragraph (a)(2) as a Market Customer, as the case may be".

71 In the past, independent experts (such as Synergies Economic Consulting, in its *Independent expert determination on claim for additional compensation from directions of 29 August 2018 report*, pp. 17-18) have noted that the rules do not stipulate how AEMO should calculate affected participant compensation under clause 3.12.2 and hence experts have adopted alternative approaches to calculating compensation. This does not create predictability or consistency and is not considered to be in the interests of participants or consumers.

72 Under Option 2, the Commission's preferred option, the quantum of compensation would still have regard for actual performance. It is solely the approach to classifying the unit within the affected participant or scheduled load compensation framework that would be based on the unit's targets.

Conversely, if the unit was dispatched at 0MW in the dispatch run and (hypothetically) dispatched to consume in the intervention pricing run, it would be compensated as a scheduled load. If the target in both runs is 0MW, the unit is not eligible for compensation under clause 3.12.2, as discussed in section 3.2.1.

As was the case above, this is the approach that applies in practice when considering the two DUIDs under which batteries are currently registered. However, for the sake of transparency, the Commission believes that this scenario could be captured in the Rules as part of the proposed paragraph outlined in section 5.1. For example, the principle could also specify that, where a unit's dispatch target in the dispatch run is 0MW, the choice of applicable compensation framework will have regard for the target in the intervention pricing run.

The Commission is mindful, however, that the number of complex issues arising in practice during intervention events may be broader than just those explored here. Intervention events and intervention pricing may involve complex scenarios. In light of this, the Commission does not propose to specify in the Rules how exactly AEMO applies the compensation framework and calculates compensation, beyond the level of prescription already included in the Rules and subject to the changes outlined in the draft determination and this directions paper. Doing so may prove too limiting and in fact counter the objective of the compensation framework in some cases.

However, the Commission considers that there would be benefit in clarifying which compensation framework should apply in circumstances where the choice of framework is not immediately evident. The additions suggested above in section 5.1 are considered to provide an appropriate balance, such that the Rules would provide more clarity without limiting AEMO's application of the applicable frameworks.

5.3 Implications of the draft Integrating storage rule change

The draft Integrating storage rule proposes to introduce a new IRP participant category, and a corresponding bi-directional classification of IRU at the unit level. New hybrid and battery technologies would be registered in this category, and existing batteries in the NEM would be transferred across to this category as IRU.[73]

Importantly, as per the draft Integrating storage rule, the IRU would have a single DUID (providing positive and negative generation), which would have some implications for how AEMO currently characterises a battery's generation and consumption for the purpose of compensation under clause 3.12.2.

Consistent with AEMO's current practice (with respect to bi-directional units with two DUIDs) and the proposed principle described above, the Commission considers that it remains appropriate to classify the IRU for the purpose of compensation based on the dispatch target issued to it by NEMDE. For example, if the unit is dispatched to consume (negative

73 The only changes that the draft Integrating storage rule makes to the compensation framework in clause 3.12.2 is to integrate the IRP and IRU into the existing frameworks such that these participants are entitled to compensation when operating as scheduled generators or scheduled loads.

generation) over the course of the trading interval, then it should be compensated under the framework applicable to scheduled loads.

Using the IRU's targets for the purpose of determining the applicable compensation framework is considered to reduce the risk of over-compensation that could arise if actual outcomes differ from targets (as discussed with respect to units with two DUIDs). The proposed approach to classifying single DUID IRUs for compensation purposes is also consistent with the approach outlined above for units with two DUIDs.

Therefore, there would be no need for the Integrating storage rule to make additional changes to the compensation framework under clause 3.12.2. The only change required to clause 3.12.2 would be to integrate the new terms relating to IRPs and IRUs, as is achieved by the draft Integrating storage rule. Single DUID IRUs would also be captured inherently in the additions proposed above in section 5.1 for added clarity.

5.4 Request for stakeholder feedback

The Commission invites stakeholder feedback on the complexities explored above with respect to compensating bi-directional units and the proposed additions to the rules.

QUESTION 3: FEEDBACK ON CHARACTERISATION OF BI-DIRECTIONAL UNITS

1. Do stakeholders have views on the approach to classify a bi-directional unit as an affected participant or scheduled load for the purpose of compensation by considering the targets issued to it?
2. Do stakeholders agree with the extent to which the Commission is proposing to specify the characterisation of bi-directional units in the Rules? If not, do stakeholders believe there should be greater or less prescription than the additions proposed in this chapter?
3. Do stakeholders have other views on the classification of single DUID bi-directional units for compensation purposes?

ABBREVIATIONS

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AGC	Automatic generation control
Commission	See AEMC
DUID	Dispatchable unit identifier
ESB	Energy Security Board
FCAS	Frequency control ancillary services
IRP	Integrated resource provider
IRU	Integrated resource unit
MCE	Ministerial Council on Energy
MW	Megawatt
NEL	National Electricity Law
NEM	National electricity market
NEMDE	National electricity market dispatch engine
NEO	National electricity objective
NER	National electricity rules
BidP	Refer to current clause 3.12.2(a)(2)
QD	Refer to current clause 3.12.2(a)(2)
QDb	Refer to draft clause 3.12.2(d) for the Compensation rule change
Rules	National electricity rules
RERT	Reliability and emergency reserve trader
SRMC	Short run marginal cost

A SUMMARY OF OTHER ISSUES RAISED IN SUBMISSIONS TO THE DRAFT DETERMINATION

Four stakeholders[74] provided feedback to the draft determination for the Compensation rule change. From these, AEMO raised one major issue (addressed in the body of this directions paper) and three other minor issues. The submissions from AGL, EnergyAustralia and PIAC raised no additional considerations.[75]

This appendix sets out the remaining issues raised in AEMO's submission to the draft determination not addressed in the body of the directions paper and the Commission's preliminary response to each.

Table A.1: **Summary of other issues raised in AEMO's submission**

ISSUE	AEMC RESPONSE
FCAS component of the draft rule (Submission to the draft determination, p.3): AEMO considers that the draft rule proposed by the AEMC with respect to (two-way) compensation for FCAS enablement will have greater upfront costs relative to the one-way approach originally proposed by AEMO.	The Commission notes that the costs associated with the compensation framework include upfront costs, ongoing administration costs, and compensation costs - all of which are passed through to participants and consumers (depending on the nature of the service obtained by the intervention). While the upfront implementation costs may be somewhat higher than for the approach proposed by AEMO, the Commission believes that a two-way approach to compensation for FCAS enablement (payment for losses and repayment of gains) is more likely to better contribute to the achievement of the NEO than the one-way approach proposed in AEMO's rule change request. Since making its submission, AEMO has provided advice as to the cost of

74 AEMO, AGL, EnergyAustralia and PIAC.

75 In response to the Commission's request for feedback on transitional issues in the draft determination, AGL did raise considerations relating to the introduction of five-minute settlement in October 2021. Given the extension of the final determination for the Compensation rule change and the five months required by AEMO to implement the changes suggested in the draft rule, this rule change will not be in place until after the introduction of five minute settlement and has been designed with this in mind.

ISSUE	AEMC RESPONSE
	processing individual claims, estimating this at approximately $10,000 per claim. This is an important factor to consider in weighing up the costs and benefits of various approaches to compensation.
Clarity of QDb formula (Submission to the draft determination, p.4): AEMO notes that the draft rule defines QDb as the "difference" between two quantities, which may create ambiguity. AEMO considers that "given the sign of the outcome is important, it would be better to be explicit as to what the intention of this formula is". AEMO also notes that QDb is defined in relation to a trading interval and it may be better to define this at a dispatch interval level.	The Commission notes that the word 'difference' forms part of the existing definition of QD. This term will be clarified in the final rule, pending the final form of the definition. In regard to the trading interval reference, the Commission notes that the final rule will be implemented after five-minute settlement commences in October 2021 and therefore this will eliminate the concern raised by AEMO (as the dispatch interval and trading interval will be aligned).