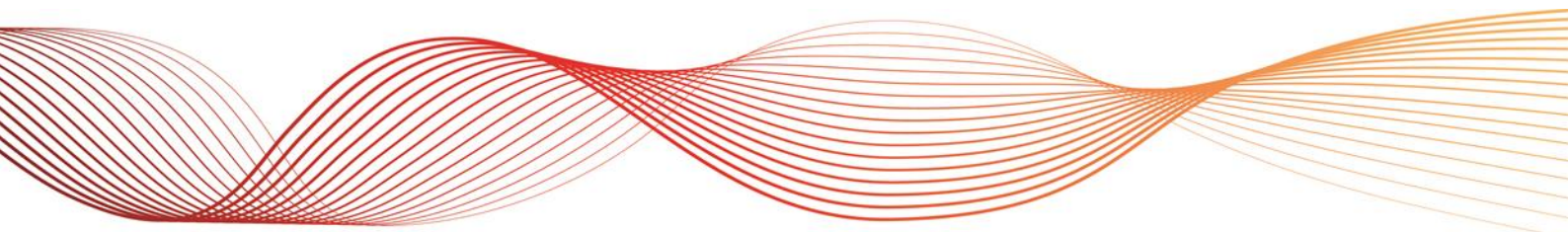




CAUSER PAYS PROCEDURE - FACTORS FOR ASYNCHRONOUS OPERATION

FINAL REPORT AND DETERMINATION

Published: **March 2017**





© 2017 Australian Energy Market Operator Limited. The material in this publication may be used in accordance with the [copyright permissions on AEMO's website](#).

EXECUTIVE SUMMARY

This Final Report and Determination (Final Report) concludes an AEMO consultation that considered limited amendments to the Procedure for Determining Contribution Factors (Causer Pays Procedure or CPP).

The objective of this consultation was to address a decision of the Dispute Resolution Panel (DRP) in October 2016. The decision required that, by 3 March 2017, AEMO must determine a procedure for calculating contribution factors when National Electricity Market (NEM) regions operate asynchronously.

A broader consultation on the CPP is currently under way, and will consider in detail a range of issues around cost recovery for Regulation FCAS. For that reason, AEMO has determined that the outcomes of the current limited consultation – referred to in this Final Report as the ‘asynchronous operation consultation’ – should not require material changes to systems or resourcing for implementation or ongoing operation, and should preserve the flexibility to adopt a range of outcomes from the broader consultation.

As part of the consultation process AEMO presented 3 options for consideration:

- Option 1 - Apply the existing methodology used for local Regulation FCAS requirements to determine contribution factors when NEM regions operate asynchronously (giving rise to local requirements).
- Option 2 - Determine contribution factors after each period of asynchronous operation based on performance relative to frequency during that period, other than for Tasmania.
- Option 3 - Substitute factors based on the historical performance of metered facilities only within the asynchronous region(s).

AEMO’s final determination is to adopt Option 1. AEMO has concluded that Option 1 is both consistent with the NER and the only option able to be implemented in a timely manner without risking unintended consequences that could be inconsistent with the national electricity objective (NEO).¹

AEMO considers that, in addition to material system changes, Option 2 raises questions about consistency and compliance with some aspects of the current NER, and may incentivise undesirable outcomes which require detailed analysis and evaluation.

AEMO asked for further feedback from stakeholders on the potential implications of Option 3. Based on submissions received, AEMO considers that further review and extended consultation is required, therefore it would not be prudent to implement Option 3 at this stage.

AEMO’s determination for this asynchronous operation consultation is not indicative of any particular direction in the broader causer pays consultation. AEMO will canvass and evaluate all views, options and implications as part of that process, in the interests of finding a solution that is consistent with the NEO. The best solution may require amendments to the NER.

The amended CPP for asynchronous operation is published with this Final Report.

¹ The NEO is set out in section 7 of the National Electricity Law (the Schedule to the *National Electricity (South Australia) Act 1996*)



CONTENTS

EXECUTIVE SUMMARY	3
1. STAKEHOLDER CONSULTATION PROCESS	5
2. BACKGROUND	6
2.1 NER requirements	6
2.2 Context for asynchronous operation consultation	7
2.3 Limited consultation criteria	8
2.4 Summary of options from Issues Paper	8
2.5 Draft determination	8
3. SUMMARY OF MATERIAL ISSUES ON DRAFT REPORT	9
4. DISCUSSION OF MATERIAL ISSUES	10
4.1 Consultation 'biased towards existing practice'	10
4.2 Consistency of Option 1 with the NER	11
4.3 Consistency of Option 2 with the NER	11
4.4 Consistency of Option 3 with the NER	12
4.5 Resources required for implementation of Option 2 and 3	13
4.6 Price signals and incentives of causer pays methodology	14
5. FINAL DETERMINATION	15
APPENDIX A. GLOSSARY	16
APPENDIX B. SUMMARY OF SUBMISSIONS AND AEMO RESPONSES	17
ATTACHMENT 1 – PROCEDURE FOR DETERMINING CONTRIBUTION FACTORS	22



1. STAKEHOLDER CONSULTATION PROCESS

As required by clause 3.15.6A(m) of the NER, AEMO has consulted on proposed amendments to the Procedure for Determining Contribution Factors for the recovery of Regulation FCAS costs, commonly referred to as the Causer Pays Procedure (CPP). This consultation was conducted under the Rules consultation process in rule 8.9 of the NER, with the following stages.

Deliverable	Date
Notice of first stage consultation and Issues Paper published	28 October 2016
First stage submissions closed	5 December 2016
Draft Report & Determination / Notice of second stage consultation published	6 January 2017
Submissions due on Draft Report	27 January 2017
Final Report & Determination published	1 March 2017

All consultation documents, including AEMO's Issues Paper, Draft Report and submissions, have been published in the stakeholder consultation section of AEMO's website, at <http://aemo.com.au/Stakeholder-Consultation/Consultations/Causer-Pays-Procedure-Consultation---Factors-For-Asynchronous-Operation>.

This consultation was limited to the determination of contribution factors during periods when one or more regions of the NEM operate asynchronously with other regions (asynchronous operation consultation).

AEMO's Issues Paper described three possible options for the determination of contribution factors in these circumstances, summarised in section 2.4 below.

Submissions in the first stage of consultation were received from:

- Origin Energy (Origin).
- ERM Power (ERM).
- Australian Energy Council (AEC).
- A 'Coalition' of four wind farm operators – Infigen Energy, Pacific Hydro, Tilt Renewables and Waterloo Wind Farm (Coalition).

AEMO discussed the issues raised by the first stage submissions in its Draft Report, which was published with a draft of the amended CPP. Submissions on the Draft Report were received from²:

- The Coalition.
- ENGIE.
- ERM (late submission).
- AGL (late submission).³

Material issues raised in second stage submissions in relation to the options for amendment are summarised in section 4, and AEMO's detailed responses to submissions are in Appendix B.

The publication of this Final Report and final determination of the CPP marks the end of the asynchronous operation consultation.

A glossary of terms used in this Final Report is available at Appendix A.

² Uniting Communities also made a submission in the asynchronous operation consultation process, but has confirmed to AEMO that it should be considered for the broader consultation.

³ AGL's submission largely responded to the broader causer pays consultation, and was within the time for submissions on that consultation.

2. BACKGROUND

2.1 NER requirements

The CPP sets out how AEMO determines contribution factors in accordance with clause 3.15.6A(j) of the NER, to calculate Market Participants' trading amounts under clause 3.15.6A(i) to recover the costs of Regulation FCAS. Relevant provisions of the NER are reproduced below.

Clause 3.15.6A(j) provides:

- (j) AEMO must determine for the purpose of paragraph (i):
 - (1) a contribution factor for each Market Participant; and
 - (2) notwithstanding the estimate provided in paragraph (nb), if a region has or regions have operated asynchronously during the relevant trading interval, the contribution factors relevant to the allocation of regulating raise service or regulating lower service to that region or regions,
 - in accordance with the procedure prepared under paragraph (k).

Clause 3.15.6A(k) provides:

- (k) AEMO must prepare a procedure for determining contribution factors for use in paragraph (j) and, where AEMO considers it appropriate, for use in paragraph (nb), taking into account the following principles:
 - (1) the contribution factor for a Market Participant should reflect the extent to which the Market Participant contributed to the need for regulation services;
 - (2) the contribution factor for all Market Customers that do not have metering to allow their individual contribution to the aggregate need for regulation services to be assessed must be equal;
 - (3) for the purpose of paragraph (j)(2), the contribution factor determined for a group of regions for all Market Customers that do not have metering to allow the individual contribution of that Market Customer to the aggregate need for regulation services to be assessed, must be divided between regions in proportion to the total customer energy for the regions;
 - (4) the individual Market Participant's contribution to the aggregate need for regulation services will be determined over a period of time to be determined by AEMO;
 - (5) a Registered Participant which has classified a scheduled generating unit, scheduled load, ancillary service generating unit or ancillary service load (called a Scheduled Participant) will not be assessed as contributing to the deviation in the frequency of the power system if within a dispatch interval:
 - (i) the Scheduled Participant achieves its dispatch target at a uniform rate;
 - (ii) the Scheduled Participant is enabled to provide a market ancillary service and responds to a control signal from AEMO to AEMO's satisfaction; or
 - (iii) the Scheduled Participant is not enabled to provide a market ancillary service, but responds to a need for regulation services in a way which tends to reduce the aggregate deviation;
 - (6) where contributions are aggregated for regions that are operating asynchronously during the calculation period under paragraph (i), the contribution factors should be normalised so that the total contributions from any non-synchronised region or regions is in the same proportion as the total customer energy for that region or regions; and



- (7) a Semi-Scheduled Generator will not be assessed as contributing to the deviation in the frequency of the power system if within a dispatch interval, the semi-scheduled generating unit:
- (i) achieves its dispatch level at a uniform rate;
 - (ii) is enabled to provide a market ancillary service and responds to a control signal from AEMO to AEMO's satisfaction; or
 - (iii) is not enabled to provide a market ancillary service, but responds to a need for regulation services.

2.2 Context for asynchronous operation consultation

2.2.1 Cost recovery of localised regulation services rule change

The last major revision of the CPP was in 2008, following the *National Electricity Amendment (Cost Recovery of Localised Regulation Services) Rule 2007* (2007 Rule Change). The 2007 Rule Change and the revised CPP took effect on 1 January 2009, and made the following key changes to the principles and process for recovering the cost of Regulation FCAS:

- Marginal prices for Regulation FCAS were to be calculated for each local market ancillary service requirement (local requirement) for those services, as well as for the whole-of-NEM global requirement.
- The costs of a local requirement for Regulation FCAS were to be recovered only from Market Participants in the region or regions affected.

2.2.2 DRP determination

In October and November 2015, during a series of planned single line outages of the Heywood Interconnector between Victoria and South Australia, there was a local requirement for Regulation FCAS from within the South Australia region of the NEM, the costs of which were significant. AEMO's allocation of those costs under the NER and the CPP was subsequently disputed under rule 8.2 of the NER.

The DRP found that:

- AEMO's determination of contribution factors under the CPP and their application to the costs of local requirements for Regulation FCAS was consistent with the NER for periods when South Australia was synchronous with the rest of the NEM, but
- AEMO had not made a procedure that addressed the requirement in clause 3.15.6A(j)(2) for NEM regions operating asynchronously.

As noted above, clause 3.15.6A(j)(2) requires AEMO to determine contribution factors relevant to allocating Regulation FCAS requirement costs when a region or regions operate asynchronously during a trading interval.

The DRP determination required AEMO to make procedures, or amend the CPP, to address the circumstances in clause 3.15.6A(j)(2) within 5 months – by 3 March 2017.⁴

⁴ DRP Final Determination available at: <http://www.resolveadvisors.com.au/files/DRP%20FCAS%20dispute%20final%20determination%20and%20supp%20reasons%203%20October%202016%281%29.pdf>

2.2.3 Broader causer pays consultation

On 5 December 2016, AEMO published an Issues Paper to commence a comprehensive review of the CPP in consultation with Market Participants, including the principles for allocating local requirement costs. This review was first initiated in late 2015, but was suspended while the dispute process was ongoing.

The outcomes of the review could necessitate a rule change proposal. Following the DRP determination, AEMO considers it is highly desirable for the NER to be amended anyway, to clarify some inconsistencies highlighted in the DRP process, including in relation to clause 3.15.6A(j)(2).

Development of a comprehensive preferred option could take several months of evaluation and analysis, after which it is likely that proposed NER changes and further CPP changes will be put forward for consultation. These steps cannot be completed within the timeframe required by the DRP determination for the clause 3.15.6A(j)(2) amendment.

2.3 Limited consultation criteria

In view of the limited time available to AEMO to make the changes required by the DRP determination, and the prospect of significant changes arising from the broader review now under way, AEMO specified three key criteria for the asynchronous operation consultation:

- This consultation must be limited in scope to the changes necessary to incorporate provisions in the CPP that address clause 3.15.6A(j)(2).
- The methodology for determining contribution factors for this purpose should not require any material change to systems or resourcing for AEMO or Market Participants.
- This consultation should preserve the flexibility to adopt a range of options in the broader causer pays consultation, without seeking to anticipate potential outcomes.

2.4 Summary of options from Issues Paper

Three options were discussed in the Issues Paper:

- **Option 1:** A process that reflects the methodology currently used to determine contribution factors for the recovery of the costs of all local ancillary service requirements, as set out in AEMO's Efficient Dispatch and Localised Recovery of Regulation Services Business Specification (Business Specification).⁵
- **Option 2:** A process under which AEMO determines contribution factors for an asynchronous period ex post, based on the performance of individual units during the asynchronous period itself. Those factors would be determined in the same way as they are during the historic reference period, to the extent possible in the circumstances. Under this option, Tasmania would be treated differently from other regions because it is permanently asynchronous.
- **Option 3:** A process for the substitution of NEM-wide contribution factors with factors that use historical performance factors for appropriately metered facilities within the asynchronous region(s) only, and a recalculated residual factor.

AEMO's preliminary view was that only Option 1 is practical for the purposes of the current consultation.

2.5 Draft determination

Of the four submissions on the Issues Paper, three (from ERM, AEC and the Coalition) supported Option 2, with slight variations in rationale. The fourth (from Origin) supported Option 3 for practical

⁵ Available at: <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Ancillary-services/Ancillary-services-causer-pays-contribution-factors>

reasons, but also indicated that Option 2 best complied with the NER by providing a calculation methodology based on unit performance during an asynchronous period.

AEMO’s Draft Report set out the reasons why AEMO considered that Option 2 should not be implemented at this stage, and explained AEMO’s draft determination to amend the CPP in line with Option 1. AEMO also indicated that it would further consider Option 3 in the final stage of consultation, and requested stakeholder feedback on any risks and implementation issues.

3. SUMMARY OF MATERIAL ISSUES ON DRAFT REPORT

Of the submissions received on the Draft Report, support for the three options canvassed by AEMO can be summarised as follows:

- ENGIE supported Option 1.
- ERM and the Coalition continued to support Option 2.
- AGL’s submission was provided largely in response to the broader causer pays consultation, but supported Option 3 for the asynchronous operation consultation.

No.	Issue	Raised by
1.	Whether AEMO’s draft determination to adopt Option 1 despite not being supported by any first stage submissions was appropriate. Option 2 received support in all first stage submissions, but AEMO’s decision to continue existing practice appears to be a foregone conclusion.	ERM, Coalition
2.	Whether Option 1 (representing the status quo) is consistent with the NER (including in light of the DRP determination), and the guiding principles and intent of the 2007 Rule Change.	ERM, ENGIE
3.	Whether Option 3 represents a NER-compliant and reasonable way of allocating Regulation FCAS costs	AGL, Coalition
4.	Whether Option 2 (representing assessment of performance at the time of enablement) is consistent with the NER, and the principles and intent of the 2007 Rule Change.	ERM, ENGIE,
5.	Whether AEMO’s assessment that the implementation of Option 2 would be more resource-intensive is accurate, and whether the same considerations apply to Option 3.	ERM, Coalition
6.	Whether and how the causer pays methodology can produce appropriate useful price signals, or behavioural incentives.	ERM, Coalition, ENGIE

There is some overlap with issues that AEMO responded to in detail in the Draft Report, and where applicable this Final Report references the discussion in the Draft Report. A detailed summary of the issues raised by Consulted Persons in the latest submissions, together with AEMO’s responses, is contained in **Appendix B**. A high level discussion of the material issues, with AEMO’s conclusions and reasons on each, is set out in section 4.

4. DISCUSSION OF MATERIAL ISSUES

4.1 Consultation ‘biased towards existing practice’

4.1.1 Issue summary and submissions

The Coalition and ERM both noted that none of the four submissions⁶ in the first stage of consultation supported Option 1. All suggested that Option 2 best complied with the NER, but one participant preferred Option 3 for the practical reasons identified by AEMO in the Issues Paper.

The Coalition said that ‘a determination to adopt Option 1 appears to have been a foregone conclusion on the basis of the application of the criteria for the consultation’. It also said that AEMO’s stated commitment to determining a methodology for contribution factors for periods of asynchronous operation to meet current NER requirements and the NEO, cannot be delivered through ‘a consultation process biased towards existing practice’.

In second stage submissions, ENGIE expressed support for AEMO’s draft decision to adopt Option 1, with the opportunity to further consider Option 3 at a later stage.

4.1.2 AEMO’s assessment

The asynchronous operation consultation is to inform AEMO’s decision to make a procedure that addresses the determination of contribution factors for use in clause 3.15.6A(j)(2) of the NER, as the current CPP does not explicitly do so. This is a limited issue consultation to be undertaken in a limited timeframe.

The determination of procedures under the NER is part of AEMO’s NEM statutory functions, which AEMO must perform with regard to the national electricity objective (NEO) and the relevant requirements of the NER.

AEMO takes stakeholder views and submissions into account in its decision-making, together with its own independent analysis and all other information it considers relevant. The resulting decision may not necessarily reflect the majority view, or any view, expressed in submissions.

AEMO’s determination reflects its conclusion that the long term interests of consumers would not be served by changing the causer pays methodology without fully understanding the potential implications, and within a NER framework where the cost of Regulation FCAS is not determined by the amount actually being used.

This does not imply any bias towards existing processes. AEMO has publicly recognised (initially in November 2015) that the causer pays methodology needs review in light of recent and continuing changes in the enablement and pricing of Regulation FCAS. The broader causer pays consultation will allow more extensive analysis of potential solutions to be undertaken, and stakeholders have an opportunity to put forward alternative suggestions for consideration.

The causer pays recovery process is inextricably linked to the underlying ancillary services market and enablement process; its effectiveness also depends on metering technology, monitoring capability and forecasting accuracy. The direct and indirect costs and benefits of any change will impact different sectors of the market in different ways and to varying degrees. Ultimately, a fit-for-purpose solution may require amendments to the NER.

Refer also to section 4.1 of the Draft Report.

⁶ Each of the members of the Coalition made an identical submission, which they had developed jointly. AEMO has considered these as a single submission.

4.1.3 AEMO's conclusion

AEMO's determination of the methodology to be applied for asynchronous operation reflects its independent assessment of the solution that meets both the current requirements of the NER and the NEO. In reaching its determination, AEMO gave detailed consideration to all submissions made in both stages of the asynchronous operation consultation, and this is reflected in the Draft Report and this Final Report.

4.2 Consistency of Option 1 with the NER

4.2.1 Issue summary and submissions

ERM asserted that the current CPP was found by the DRP to be 'deficient in meeting the ...NER'. On that basis ERM believes Option 1, representing no change to the current CPP, 'continues to fail to meet the requirements of the NER and the original intent of the 2007 rule change' with regard to the recovery of local Regulation FCAS requirement costs.

4.2.2 AEMO's assessment

After considering extensive submissions and evidence on the intent of the 2007 Rule Change and the proper interpretation of the NER, the DRP found that the CPP was consistent with the NER in relation to the determination of contribution factors for local Regulation FCAS requirements in circumstances other than asynchronous operation. The DRP found the CPP to be defective only in that it does not specifically address the circumstances in clause 3.15.6A(j)(2). Although the CPP purports to address the entirety of paragraph (j), it does not reflect that AEMO has a positive duty to calculate contribution factors for periods of asynchronous operation.

The purpose of this asynchronous operation consultation is to remedy that omission.

Refer also to section 3.1 of the Issues Paper and section 4.2 of the Draft Report for discussion of how AEMO considers that the principles in clause 3.15.6A(k) apply for the purposes of paragraph (j)(2).

4.2.3 AEMO's conclusion

Option 1 meets the requirements of the NER.

4.3 Consistency of Option 2 with the NER

4.3.1 Issue summary and submissions

ERM restated its view that Option 2 is the solution that best complies with the NER. ERM indicated that the original principles and intent of the 2007 Rule Change can only be met if 'allocation of costs for the recovery of all local regulating services requirements are based on the calculation of causer pays factors using the current trading interval values' when a local requirement is invoked.

ENGIE considered that Option 2 would not be appropriate. In its view, real time assessment of causer pays factors represents 'a fundamental change' to the current approach to enabling regulation FCAS and 'should only be contemplated after extensive consideration of the costs and benefits'.

4.3.2 AEMO's assessment

The NER in their current form allow for the possibility of AEMO determining a procedure for contribution factors based on performance data at the time a local Regulation FCAS requirement applies, but only in cases where that local requirement arises during a period of asynchronous operation. Clause 3.15.6A(na) precludes this outcome for both global and local requirements in all other circumstances.

As ERM has stated, and AEMO agrees, there is no logical rationale to allocate the cost of local requirements differently based on whether regions are operating asynchronously.

Although in theory 'real time' contribution factors could be determined for the purposes of clause 3.15.6A(j)(2) of the NER, there are difficulties in reconciling this option with other provisions of the NER, and the broader principles and long-standing operational process for determining Regulation FCAS requirements. The Issues Paper identified that Option 2 would result in practical non-compliance with the requirement to provide estimated contribution factors under clause 3.15.6A(nb), as well as inconsistencies in the treatment of the Tasmania region. However, AEMO's further analysis in the course of this consultation has identified the more fundamental issues highlighted in ENGIE's submission. Because the cost of Regulation FCAS is currently determined by a requirement for capacity to be enabled, and not by the extent to which it is actually used, the conduct of Market Participants during the asynchronous period does not influence the requirement for which the cost is to be recovered.

Refer also to section 4.4 of the Draft Report.

4.3.3 AEMO's conclusion

Option 2 cannot be implemented in the short term in a way that ensures AEMO can comply with clause 3.15.6A(nb) of the NER. It is also important to recognise that, for local Regulation FCAS requirements not involving asynchronous operation, the current NER mandate the application of contribution factors determined on the basis of historical performance and published at least 10 business days in advance.

Perhaps more fundamentally, in the current NER framework the 'real time' contribution factors envisaged under Option 2 cannot achieve a more accurate allocation of the costs of a requirement to the 'causers' of that requirement compared with the existing methodology. The performance of any facility at the time a local regulation FCAS requirement applies does not influence the amount of regulation FCAS being procured at that time.

The practical implications, incentives, costs and benefits of Option 2 warrant further detailed consideration, as efficient implementation may require reforms extending beyond the causer pays procedure itself. These issues will be canvassed in the broader causer pays consultation.

4.4 Consistency of Option 3 with the NER

4.4.1 Issue summary and submissions

AGL expressed support for Option 3, while ENGIE suggested it should be considered at a later stage, but neither specifically commented on how Option 3 meets the NER. AEMO's consideration of this issue was set out in section 3.3 of the Issues Paper and section 4.6 of the Draft Report.

The Coalition considered that Option 3 was likely to have negative regulatory consequences (discussed in section 4.6 below), but did not comment specifically on its compliance with the NER.

4.4.2 AEMO's assessment

Refer to section 3.3 of the Issues Paper and section 4.6 of the Draft Report.

4.4.3 AEMO's conclusion

Although the risks are likely to be materially lower than for Option 2, there remains a risk that AEMO may not be able to comply with 3.15.6A(nb) of the NER in all circumstances, if Option 3 were implemented in the short term supported by manual processes. Otherwise, AEMO considers that Option 3 would comply with the NER.

4.5 Resources required for implementation of Option 2 and 3

4.5.1 Issue summary and submissions

ERM challenged AEMO's draft conclusion that the implementation of Option 2 would require a significant increase in resource allocation. According to ERM, the number of dispatch intervals to be analysed would remain the same, with the only difference being that some of those dispatch intervals would be analysed under a parallel process as required, when market outcomes result in local Regulation FCAS requirements.

The Coalition suggested that Option 3 involves the same issues of manual processes and impracticality for short periods that AEMO has suggested would apply to Option 2.

4.5.2 AEMO's assessment

In discussing resource requirements in the context of this asynchronous operation consultation, it must be understood that AEMO would need to undertake any new processes manually, because system changes and automation require significant time to evaluate, scope, develop, test and implement.

The number of dispatch intervals to be screened for the purpose of Option 2 would not be the same as the current process. A comparison is not possible because Option 2 involves the addition of a new ad hoc process, to be conducted at different times, within different timeframes and for a different purpose than the current process. To explain this more clearly:

- Option 2 would use the same performance data and extrapolation methodology reflected in the current CPP, but on an ex post basis once asynchronous operation has occurred.
- Performance factors for all dispatch intervals are analysed and screened (automatically and manually as required) as part of the methodology for determining calculation factors to apply in all other circumstances, for future successive 28-day periods. This process occurs over an established timeframe; resources are scheduled and allocated appropriately to complete these tasks before the publication deadline. Data is currently excluded from the calculation for dispatch intervals in the sample period where asynchronous operation occurs.
- Following asynchronous operation under Option 2, the performance of appropriately metered units and demand against the modified frequency index (FI) in each set of asynchronous regions would have to be acquired, processed and screened separately.
- Under Option 1, no additional resource intensive process is required following asynchronous operation, because no new performance analysis is required. Contribution factors are instead determined on the basis of a mathematical allocation to the Market Participants relevant to the region or set of regions within each local requirement.

If contribution factors for Market Participants in Tasmania are calculated on the same basis whenever local requirements apply in that region, as ERM advocated in its first stage submission, the number of instances of recalculation become very significant.

Even if the Option 2 process were only rarely applied, AEMO still needs to ensure that staff can implement the methodology when necessary. This requires the development of detailed procedural material, duplicated systems and regular training.

The additional processes required for Option 3 do not require new data to be collected, but involve existing stored data being re-cut at a greater degree of granularity to produce regional contribution factors. To some extent, this process can be performed at the same time as contribution factors are determined under the current CPP, although this would only be practical for a limited set of potential asynchronous region scenarios. Option 3 could readily be applied to a single dispatch interval.

Refer also to section 4.6 of the Draft Report.

4.5.3 AEMO's conclusion

AEMO remains of the view that substantial resources would be required to implement Option 2. While there are also resourcing implications for Option 3, they would be less significant.

4.6 Price signals and incentives of causer pays methodology

4.6.1 Issue summary and submissions

ERM responded to AEMO's suggestion that Option 2 might incentivise market participant responses that adversely impact power system security. ERM contended this risk was no different to existing risk that high local FCAS contingency raise service prices will cause generators to reduce or withdraw generation from the market. ERM also indicated that AEMO can manage system security or reliability concerns by the issue of directions or instructions to generators.

In response to AEMO's request for feedback on the potential implications of Option 3, the Coalition considered that preserving the use of historic data while varying the 'portfolio' approach generally used to determine contribution factors, creates disparity within the regulatory framework. The Coalition suggested it would be a perverse regulatory outcome if market participants with a portfolio of generating units across different regions received the upside of the portfolio approach, but could then limit their costs exposure for periods of asynchronous operation to generating units within the asynchronous region.

4.6.2 AEMO's assessment

Refer to section 4.5 of the Draft Report for discussion of AEMO's views on potential system security implications. In relation to the issues raised by ERM:

- There is a similar risk when generators are responding to high contingency raise FCAS prices. AEMO has observed this in some historical events.
- Although these risks can be mitigated by directions, managing a portfolio of directions to multiple units during a separation event is highly undesirable due the number of complexities and inter-related considerations (for generating units and the power system as a whole) that must be manually profiled and updated on a minute-by-minute basis for immediate decision-making. AEMO considers it would be extremely unwise to introduce any change that might incentivise behaviour that AEMO would have to manage through directions.

AEMO has considered the Coalition's submission on the interaction of causer pays factors for cross-region portfolio generators with a region-specific factor during asynchronous operation. However, it is difficult to see what parameters a portfolio generator could change in order to "game" the system. Region-specific factors would be determined for an individual market participant based only on the performance of its units located within the relevant region(s). These will vary between participants and possibly from month to month. By nature, any temporary asynchronous operation would occur randomly, whereas the location of units is fixed.

It might be expected that a portfolio generator would be allocated a better 'global' contribution factor simply due to diversity. On a regional basis it seems equally likely that a portfolio generator would receive a worse factor than a better one. Limiting that assessment to a regional subset of units should reduce diversity, and decrease the potential 'advantage' of portfolio generators in this respect. It seems equally likely that a portfolio generator would receive a worse region-specific contribution factor than its portfolio factor. AEMO considers that any causer pays methodology should encourage participants to improve the performance of its appropriately metered facilities (or at least not discourage this outcome).

Any opportunities for gaming should be addressed in the broader causer pays consultation, for any proposed option.



4.6.3 AEMO's conclusion

AEMO acknowledges the complexity of the recovery mechanism and the associated difficulty of determining the potential impacts of any changes on market participant incentives. AEMO also recognises the possibility that any change could create significant and unexpected additional costs for individual market participants, who may have limited means of mitigating their exposure. This illustrates the importance of a holistic review of the causer pays methodology, taking into account the interrelated incentives, costs and benefits for all market participants and ultimately consumers. These issues cannot be fully evaluated in the timeframe allowed for the asynchronous operation consultation, therefore it is premature for AEMO to determine any significant variations to the methodology at this stage.

5. FINAL DETERMINATION

After considering the submissions received, AEMO's final determination is to amend the Causer Pays Procedure in line with Option 1 – to include a process for the determination of contribution factors for the purposes of clause 3.15.6A(j)(2) based on the steps set out in clause 4.2.2.4 and parts of 4.2.2.5 of the Business Specification. As noted in section 5 of the Draft Report, some additional minor drafting and formatting amendments have also been made.

No additional changes were made to the CPP between the draft and final versions.

The amended CPP is published with this Final Report, in final and change-marked versions, and will take effect on 3 March 2017.



APPENDIX A. GLOSSARY

Term or acronym	Meaning
2007 Rule Change	The <i>National Electricity Amendment (Cost Recovery of Localised Regulation Services) Rule 2007</i> .
AEC	Australian Energy Council
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator Limited
Appropriate metering	Metering (of generating plant or load) sufficient to allow the individual contribution of the relevant Market Participant to the aggregate deviation in frequency of the power system to be addressed.
Asynchronous	Not connected to another part of the NEM transmission grid by an operational alternating current (AC) link.
Asynchronous operation consultation	The limited consultation process that concludes with the publication of this Final Report, to determine a procedure for calculating contribution factors for the purpose of paragraph (j)(2) of the NER, during periods when a NEM region or regions operates asynchronously.
Business Specification	The Efficient Dispatch and Localised Recovery of Regulation Services Business Specification as published by AEMO.
Causer Pays Procedure or CPP	The “Causer Pays: Procedure for Determining Contribution Factors” prepared under clause 3.15.6A(k) of the NER.
Coalition	Infigen Energy (comprising Renewable Power Ventures Pty Ltd, Lake Bonney Wind Power Pty Ltd and Woodlawn Wind Pty Ltd), Pacific Hydro Clements Gap Pty Ltd, Tilt Renewables Australia Pty Ltd and Waterloo Wind Farm Pty Ltd.
Draft Report	AEMO’s Draft Report and Determination in the asynchronous operation consultation, published on 6 January 2017.
DRP	Dispute Resolution Panel constituted for a decision under rule 8.2 of the NER.
DRP determination	Determination of the DRP (PRD Gray QC, GH Thorpe and LM McMillan) dated 3 October 2016 and Reasons dated 2 September 2016 in relation to a dispute between Origin Energy Electricity Ltd, AEMO, a group of South Australian wind farm operators, and others.
ERM	ERM Power Limited
FCAS	Frequency control ancillary services
Final Report	This document.
Global, global requirement	Global ancillary service requirement as defined in the NER
Issues Paper	AEMO’s Issues Paper for the asynchronous operation consultation, published on 28 October 2016.
Local, local requirement	Local ancillary service requirement as defined in the NER (this arises from a constraint imposed by AEMO that requires FCAS to be sourced from an identified NEM region or regions).
NEM	National Electricity Market
NER	National Electricity Rules
Origin	Origin Energy Limited
Regulation FCAS	A regulating raise service or regulating lower service as defined in the NER.
SA	The South Australia region of the NEM.



APPENDIX B. SUMMARY OF SUBMISSIONS AND AEMO RESPONSES

No.	Name	Issue	AEMO response
CONSULTATION 'BIASED TOWARDS EXISTING PRACTICE'			
1.	Coalition	<p>The Draft Determination confirms the preferred position of AEMO to implement Option 1 (status quo) despite all but one submission to the Issues Paper supporting the implementation of Option 2. A determination to adopt Option 1 appears to have been a foregone conclusion on the basis of the application of the criteria for the consultation.</p> <p>Assertions made in the Draft Determination assume that the current approach is the most appropriate and that current practice will continue. For example, a justification for rejecting Option 2 relies upon the existing methodology utilised in respect of asynchronous periods. ...</p> <p>This is simply saying that because real time data is not being used to determine the need for regulation FCAS, there is no imperative to use real time data in the future. The Coalition does not consider that AEMO's stated commitment to determining a methodology for the asynchronous operation which is based on identifying the solution that meets the current requirements of the National Electricity Rules and national electricity objective, can be delivered through a consultation process biased towards existing practice.</p>	<p>The criteria for the consultation were set out in the issues paper and AEMO considered them necessary given the requirements of the DRP determination, which must be complied with.</p> <p>AEMO's final determination to adopt Option 1 is made because AEMO considers it to be the only option that:</p> <ul style="list-style-type: none"> • Is compliant with the current NER, in particular the principles in clause 3.15.6A(k). • Can be implemented by the deadline imposed by the DRP. • Does not present the risk of a material adverse impact in terms of either undesirable physical outcomes or changes in the financial position of individual market participants or classes of market participants. <p>AEMO has not at any time excluded an option from future consideration.</p>
2.	Coalition	<p>To the extent, if any that this bias can be attributed to the timing constraint in the DRP Determination (3 October 2017), the Coalition looks forward to participating in the broader consultation on the methodology for allocating FCAS cost recovery where this constraint will not apply and there should consequently be no bias in the consultation process towards a particular outcome (including the status quo). The Coalition in particular welcomes the indication by AEMO that the practicalities of utilising real-time data to determine liability for FCAS costs will be investigated in more detail in the broader FCAS consultation.</p>	<p>There is no bias on AEMO's part. See response to item 1.</p>
3.	Coalition	<p>Option 2 ... was supported by six of the seven submissions received in response to the Issues Paper and is consequently worthy of further investigation.</p>	<p>Only four distinct submissions were made in the first stage of consultation. As AEMO reconfirms in its final determination, options that could not be fully investigated in the asynchronous operation consultation will be further reviewed in the broader consultation.</p>
4.	ERM	<p>ERM Power is concerned by AEMO's decision as set out in the Draft Determination to implement AEMO's preferred Option 1 solution. This is despite no submission to the Issues Paper supporting AEMO's preferred solution and all except one submission strongly opposed to this option... The implementation of Option 2 was supported by all submissions to the Issues Paper. ERM's submission subsequently described Option 2 as 'Market participants preferred option'</p>	<p>AEMO has considered all submissions made in this consultation. While Option 2 was the option supported in the stage 1 submissions, there is no indication that it is the preferred option of the many Market Participants who did not make a submission in the first stage. In this regard AEMO notes that some individual AEC members expressed views that differed from the AEC's first stage submission. In any event, AEMO is obliged to make its decisions based on its independent evaluation of the matter to be determined, taking into account all relevant information available to it, guided by the NEO and bound by the NER.</p>



No.	Name	Issue	AEMO response
			Submissions inform AEMO's considerations, but do not dictate its decision.
CONSISTENCY OF OPTION 1 WITH NER			
5.	ENGIE	The regulation FCAS arrangements require AEMO to make a decision to enable an amount of regulation FCAS in advance of it actually being used... The amount of service enabled by AEMO is determined by assessment of the expected need for the service based on historical performance.	AEMO agrees with this description of the current process for determining the amount of regulation FCAS to be procured, whether globally or for a subset of one or more regions temporarily operating asynchronously. The amount of regulation FCAS to be enabled for asynchronous periods is determined significantly in advance of any separation event. Actual performance only influences that amount for future periods as part of AEMO's assessment of the need over time.
6.	ERM	The preferred Option 1 solution in fact represents no change to AEMO's current Causer Pays Procedure which was found to be deficient in meeting the National Electricity Rules (NER) by a NER Disputes Resolution Panel determination. We believe that AEMO's Option 1 solution continues to fail to meet the requirements of the NER and the original intent of the 2007 rule change with regard to recovery of local Frequency Control Ancillary Services (FCAS) regulating services requirements costs.	The DRP determined that the CPP did not contain a procedure for the determination of contribution factors for periods of asynchronous operation under clause 3.15.6A(j)(2) of the NER. That was the extent of the non-compliance with the NER. AEMO's final determination is to make a procedure that addresses this requirement. The DRP did not determine any particular procedure that AEMO must adopt for the purpose of clause 3.15.6A(j)(2). It also found that the current procedure did not breach the requirements of the NER in relation to local regulation FCAS requirements at times when mainland NEM regions are operating synchronously. AEMO's view is that the amendments to the CPP (to implement Option 1) are consistent with the principles in clause 3.15.6A(k) – as explained in section 4.2 of the Draft Report - and enable AEMO to comply with clause 3.15.6A(nb),
7.	ERM	AEMO appears to have misinterpreted ERM Power's submission with regard to the treatment of local requirements for asynchronous operation and local requirements for other reasons as possibly supportive of AEMO's preferred approach. To clarify ERM Power's position in this regard, we believe that the use of the Option 2 calculation methodology should apply to all Dispatch Intervals when local FCAS regulation services requirements are imposed by the Market Operator for any reason. This should in no way be viewed as supportive of AEMO's preferred option.	AEMO understands ERM's very clear view that the appropriate methodology should assess performance at the time a regulation FCAS requirement is invoked, rather than on a historical basis. ERM has also clearly stated in both its submissions that the costs of all local Regulation FCAS requirements should be recovered in the same way, irrespective of whether the local requirement results from asynchronous operation. As stated in item 18 of Appendix B to the Draft Report, the current rules preclude AEMO from determining real time factors for local requirements where there is no asynchronous operation, therefore it is not possible to apply Option 2 to local requirements in all dispatch intervals.
CONSISTENCY OF OPTION 2 WITH NER			
8.	ENGIE	For this reason [see item 5], ENGIE agrees with AEMO's conclusion that the option to allocate regulation FCAS costs during asynchronous operation based on actual frequency performance (option 2) would not be appropriate.	Noted. In AEMO's view, implementing Option 2 without also changing the way in which regulation FCAS needs are assessed would be inconsistent with principle in clause 3.15.6A(k)(1) of the NER. It therefore cannot be implemented without consideration of some fundamental operational issues, or changes to the NER.



No.	Name	Issue	AEMO response
9.	ERM	The methodology calculates contribution factors based on a market participant's conduct at the time local FCAS regulation services requirements are invoked and allows participants to implement efficient risk mitigation solutions in real time in the event of high local FCAS regulating services prices.	See previous responses. Performance at the time a local regulation FCAS requirement applies does not influence the amount of regulation FCAS being procured at that time.
10.	ERM	The methodology is in accordance with NEMMCo's stated preference during the original rule change request consultation upon which the rule proponent and the AEMC agreed to a compromise solution within the final rules. When implemented, Option 2 will meet the design concept of as and when required during the settlement calculation process using current trading interval values put forward by NEMMCo during the rule change process which was generally accepted at the time as the most practical methodology to be adopted by the Market.	AEMO has a different interpretation of NEMMCO's preference expressed at the time, and the intent of the 2007 Rule Change. These questions were examined at length in the DRP proceedings.
CONSISTENCY OF OPTION 3 WITH NER			
11.	AGL	Noting the overlap between the two consultation processes, and AGL's preferences [in its submission to the broader consultation], AGL supports Option 3, which proposes using historical performance factors for appropriately metered facilities within the asynchronous region(s) only.	Noted. AEMO understands that the implementation of Option 3 could have significant financial consequences for some participants. Given that most submissions to the issues paper focused on the merits of Option 2 only, AEMO will ensure stakeholder views on this option are fully canvassed in the broader consultation.
12.	Coalition	Option 3 proposes that causer pays factors would be determined for asynchronous dispatch intervals using historical performance data for appropriately metered facilities inside the asynchronous region. This preserves the use of historic data (an approach rejected by the majority of responses to the Issues Paper), but varies the allocation of FCAS costs from the portfolio approach generally used to determine causer pays factors.	Option 3 is consistent with the Coalition's summary, but AEMO notes the NER do not mandate a portfolio approach. The concept of portfolio factors was introduced in the CPP, intended to reflect the NER principles that require AEMO to assess contributions to an 'aggregate need' for regulation services. Where a requirement is limited to a subset of regions, the 'aggregate need' only reflects the need in those regions.
13.	ENGIE	ENGIE supports [Option 1], with the opportunity to consider Option 3 (substitution of NEM-wide contribution factors with factors that use historical performance factors for appropriately metered facilities within the asynchronous region) at a later stage.	Noted. Refer to above responses in this section.
RESOURCES REQUIRED TO IMPLEMENT OPTION 2 OR 3			
14.	ERM	AEMO argues that a major reason for not implementing Option 2 and instead preferring to maintain the Option 1 process is that Option 2 would be more resource intensive than simply continuing to use Option 1 as AEMO's processes would need to allow for a dual process instead of a singular process under some Market outcomes. ERM contends that the same number of Dispatch Intervals would still be subject to analysis and the only difference to the current AEMO process would be a separation of some Dispatch Intervals into a parallel process on an as required basis when Market outcomes result in local FCAS regulation services requirements. We are not convinced by AEMO's argument that this will require a significant increase in resource allocation.	The number of dispatch intervals to be screened under Option 2 would not be the same as the current process. A comparison is not possible because Option 2 involves the addition of a new ad hoc process, to be conducted at different times, within different timeframes and for a different purpose than the current process. The discussion in the Final Report explains the differences in detail. In addition, even if Option 2 were only rarely applied, it is still necessary to develop methodology documentation, underlying processes for the detailed calculation, and undertake initial and regular follow-up staff training so AEMO is prepared to implement it as and when necessary.



No.	Name	Issue	AEMO response
15.	ERM	We do not believe that the arguments put forward by AEMO against implementing Option 2 are sufficiently substantial to prevent its implementation as soon as reasonably practical.	AEMO has a different view for the reasons given in its consultation papers. See in particular the responses in items 7, 8 and 14 above.
16.	Coalition	AEMO dismisses the adoption of Option 2 on the basis that it is inconsistent with AEMO's criteria for the consultation in that there would need to be material change to systems or resourcing for AEMO in order to implement any option other than Option 1... AEMO indicates that Option 2 is unacceptable due to the manual processes involved, the practicality of applying the methodology for short periods of synchronous separation and that undesirable outcomes may be incentivised. These issues also apply to the adoption of Option 3. For consistency, Option 3 should be rejected in the same manner as Option 2 has been rejected.	The additional processes required for Option 3 do not require new data to be collected, but involve existing stored data being re-cut at a greater degree of granularity to produce regional contribution factors. To some extent, this process can be performed at the same time as contribution factors are determined under the current CPP, although this would only be practical for a limited set of potential asynchronous region scenarios. Option 3 could readily be applied to a single dispatch interval.
PRICE SIGNALS AND INCENTIVES OF CAUSER PAYS METHODOLOGY			
17.	AGL	[Option 3] would appropriately, and reasonably, allocate the costs amongst relevant generation assets for the period of time in which the region was operating asynchronously.	Noted. Refer to item 11.
18.	Coalition	Option 3 should not be implemented as the causer pays methodology for asynchronous periods.	Noted. This will be investigated further in the broader consultation
19.	Coalition	Option 3 is also likely to have negative regulatory consequences... this type of disparity [using historical factors but not the portfolio approach] within a regulatory framework can lead to 'gaming' of the system. Market participants with a portfolio of generating units crossing regional boundaries would be enabled to take the upside of a portfolio approach to the calculation of causer pays factors generally, but then limit their exposure to FCAS costs during period of asynchronous operation to generating units within the asynchronous region. This seems likely to inflate FCAS costs for market participants with generating units solely within the asynchronous region. Option 3 should not be adopted without further consideration of the likelihood of this type of perverse regulatory outcome.	It is difficult to see what parameters a portfolio generator could change in order to game the system. Region-specific factors would be determined for an individual market participant based only on the performance of its units located within the relevant region(s). These will vary between participants and possibly from month to month. By nature any temporary asynchronous operation would occur randomly, whereas the location of units is fixed. It might be expected that a portfolio generator would be allocated a better 'global' contribution factor simply due to diversity. On a regional basis it seems equally likely that a portfolio generator would receive a worse factor than a better one. Limiting that assessment to a regional subset of units should reduce diversity, and decrease the potential 'advantage' of portfolio generators in this respect. Any opportunities for gaming should be addressed in the broader causer pays consultation, for any proposed option. Refer also to item 11.
20.	ENGIE	If there is to be a move towards real time assessment of causer pays factors, then this would be a fundamental change to the current enablement approach. Such a move should only be contemplated after extensive consideration of the costs and benefits of such a fundamental change.	AEMO agrees with this observation.
21.	ERM	AEMO has raised the spectre that efficient risk management strategies by participants in response to high local FCAS regulation service requirements prices could impact negatively on system security, in the event a participant was to choose to reduce or remove generation from service if Market participants preferred option – Option 2 was implemented. ERM Power	AEMO acknowledges that there is a similar risk when generators respond to high contingency raise FCAS prices, and this has been observed in some historical events.



No.	Name	Issue	AEMO response
		<p>contends that this supposed risk to system security is no different to that which currently exists with regard to high local FCAS contingency raise services prices where historically generators have reduced or removed generation in response to high local FCAS contingency raise services prices.</p> <p>ERM believes the main reason this has not occurred recently in the South Australian context is that a Jurisdictional Directive prevents AEMO from implementing local FCAS contingency raise requirements preferring instead to rely solely on under frequency load shedding of consumer demand to mitigate the impact on secure system operation of credible contingency events. We note however that for similar system conditions, local FCAS contingency raise requirements continue to be activated by AEMO in other regions of the NEM.</p>	
22.	ERM	<p>Similarly, system security or reliability concerns which occur when a remote generator withdraws availability in response to being constrained on at a Regional Reference Price less than its cost of production are routinely managed by AEMO to prevent any insecure system operation.</p> <p>In all the cases above, any system security or reliability concerns can be and have been efficiently managed on a routine basis by AEMO by the issue of a Clause 4.8.9 Direction or Instruction under which the generator continues to generate on the basis that all its costs will be covered.</p>	<p>Although these risks can be mitigated by directions, managing a portfolio of directions to multiple units during a separation event is highly undesirable due the number of complexities and inter-related considerations (for generating units and the power system as a whole) that must be manually profiled and updated on a minute-by-minute basis for immediate decision-making. AEMO considers it would be extremely unwise to introduce any change that might incentivise behaviour that AEMO would have to manage through directions.</p>
23.	ERM	<p>ERM Power continues to support the principle that to meet the original principles and intent of the 2007 rule change any methodology must be based on the principle that the allocation of costs for the recovery of all local FCAS regulating services requirements are based on the calculation of causer pays factors using the current trading interval values that apply at the time that the local FCAS regulating services requirements are invoked by the Market Operator. It is only through the use of the current trading interval values that participants may implement efficient risk mitigation solutions.</p> <p>The proposed Option 1 methodology, which continues to use distant historical data, fails to allow basic risk mitigation solutions by participants and prevents economically efficient cost recovery based on a participant's conduct at the time local FCAS regulating requirements are invoked by the Market Operator.</p>	<p>Refer to previous responses and to section 4.5 of the Draft Report.</p>



ATTACHMENT 1 – PROCEDURE FOR DETERMINING CONTRIBUTION FACTORS

Refer to separate document published with this Final Report