



Australian Energy Market Commission

DRAFT RULE DETERMINATION

NATIONAL ELECTRICITY AMENDMENT (SETTLEMENT UNDER LOW OPERATIONAL DEMAND) RULE 2021

PROPONENT

Infigen Energy Pty Ltd

17 JUNE 2021

RULE

INQUIRIES

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ABOUT THE AEMC

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

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SUMMARY

1 On 15 February 2021, Infigen Energy (Infigen) submitted its *Settlement under low operational demand* rule change request seeking to amend the formulas used to recover non-energy costs from market customers. Infigen proposed to solve the issues that surround settlement of the national electricity market (NEM) and the distribution of non-energy costs during periods of low operational demand.

2 The Australian Energy Market Commission (AEMC or Commission) has decided not to make a draft rule as it considers that the flooring mechanism proposed by Infigen and the issues raised by Infigen are dealt with through the final determination on the Australian Energy Market Operator's (AEMO) *NEM settlement in low, zero and negative demand conditions* urgent rule change and any additional rule does not contribute to the achievement of the national electricity objective (NEO).

Background

3 In February 2021, the Commission received two rule change requests that relate to the formulas used to recover non-energy costs from market customers in rule 3.15:

- On 8 February 2021, AEMO submitted the *NEM settlement in low, zero and negative demand conditions* rule change to amend parts of rule 3.15 of the NER to allow for a substitution of adjusted gross energy (AGE) values (the substitution method), when necessary, to create numerators and denominators for non-energy cost allocation formulas that will work in AEMO's settlement systems. The Commission adopted an expedited process in considering this rule change request as it considered that the proposed rule was an urgent rule.
- On 15 February 2021, Infigen submitted its rule change request to address the issues it identified with the current formulas in rule 3.15. In its rule change Infigen proposed a flooring mechanism where any market customers that are net-exporting would have their AGE values floored to zero, which would remove the possibility for a market customer to receive a payment for non-energy costs. However, Infigen also noted in its rule change request that there was an alternative solution to its proposed flooring mechanism. This alternative solution was to raise the threshold of when AEMO's substitution method was triggered from 1 MWh to 150 MWh.

4 When the AEMC commenced the two rule changes, AEMO had advised that it was unable to implement the flooring mechanism before spring 2021 given the significant implementation work it was already progressing. On that basis the Commission did not consider the mechanism as a potential solution and instead considered the merits of the 150 MWh and 1 MWh substitution solutions.

5 However, AEMO has recently informed the Commission that it may have the capacity to implement the flooring mechanism before the end of the year. Given this information was provided late in the process, has not been consulted on, and there is a need to address the settlement issues in particular before spring 2021, the Commission has not considered the flooring mechanism in detail.

6 In its initial assessment the Commission considered that the flooring mechanism and increasing the trigger for the substitution method to 150 MWh solution as relatively similar in that both address the competitive equity issues to an extent, and both are considered interim measures until a more permanent solution is progressed, potentially through the *Integrating energy storage systems into the NEM (Integrating storage)* rule change.

7 **Commission's draft determination**

8 On 17 June 2021, the Commission released its final determination and rule on AEMO's *NEM settlement in low, zero and negative demand conditions* rule change. In that determination, the Commission made a more preferable rule to implement AEMO's substitution method at a threshold of 150 MWh. A detailed explanation of the reasons for the Commission's decision are available in the Commission's final determination on the AEMO rule change.

9 The solution provided in the Commission's final determination for *NEM Settlement in low, zero and negative demand conditions* rule change responds to the issues raised by Infigen. Therefore, having regard to the issues raised in the rule change request and during consultation, and considering the solution being implemented in the AEMO rule change addresses the competitive equity issues to an extent, the Commission is not satisfied that Infigen's proposed rule will, or is likely to, contribute to the achievement of the NEO for the following reasons:

- A threshold of 150 MWh, as suggested by Infigen, allows the continued settlement of the NEM in low operational demand scenarios. This is because the aggregate AGE of the region, which is the denominator in the cost recovery formulas, will no longer be able to fall below 1 MWh during a trading interval.
- Having only one solution that addresses both Infigen's and AEMO's rule changes allows for an efficient administrative implementation for both AEMO and the required market customers. An additional rule made within this draft determination, with the assumption that it would be made final, would be published as final on 26 August 2021. Given the spring 2021 deadline for forecast low operational demand, the Commission considers this would be insufficient time for market customers to implement the mechanism.
- Implementing a second interim solution in addition to the 150 MWh threshold solution at an additional cost and for limited benefits is not considered effective or proportionate.
- AEMO can implement the threshold approach by spring 2021 allowing it to be in place for the forecast low or negative operational demand conditions.

10 The Commission recognises the materiality of the issues identified by Infigen and the need for a solution before the current forecast of low operational demand conditions in September 2021. However, the Commission considers any additional rule made above that already made in the AEMO rule change final determination would pose additional costs on participants and have limited benefits.

11 Therefore, because the AEMO rule change solves the issues raised by Infigen and implements one of the solutions proposed by Infigen in its rule change request, the Commission has determined not to make the rule proposed by Infigen.

12 The Commission invites submissions on this draft rule determination by **29 July 2021**.

CONTENTS

1	Infigen's rule change request	1
1.1	What are non-energy costs?	1
1.2	Issue the rule change request seeks to address and current arrangements	2
1.3	Rationale for the rule change request	4
1.4	AEMO's rule change request	5
1.5	The longer-term solution being considered in Integrating storage	6
1.6	The rule making process	6
1.7	Consultation on draft rule determination	6
2	Draft rule determination	7
2.1	The Commission's draft rule determination	7
2.2	Rule making test	7
2.3	Assessment framework	8
2.4	Summary of reasons	9
3	Infigen's flooring mechanism	10
3.1	The proposed flooring mechanism	10
3.2	Stakeholder views	10
3.3	Commission's analysis	11
3.4	Conclusion	15
	Abbreviations	16
	APPENDICES	
A	Summary of other issues raised in submissions	17
B	Legal requirements under the NEL	18
B.1	Draft rule determination	18
B.2	Commission's considerations	18
	TABLES	
Table A.1:	Summary of other issues raised in submissions	17
	FIGURES	
Figure 1.1:	Infigen's example of settlement distortion	2
Figure 3.1:	Generalised formula for non-energy costs	12
Figure 3.2:	Modelled cost recoveries from net-demand market customers	13

1 INFIGEN'S RULE CHANGE REQUEST

On 15 February 2021, Infigen Energy (Infigen) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission) to amend the National Electricity Rules (NER). The rule change proposal seeks to amend the NER to change the formulas that the Australian Energy Market Operator (AEMO) uses to calculate how non-energy costs are allocated to market customers in the national electricity market (NEM).

This chapter discusses:

- non-energy costs
- issues raised in the rule change request
- rationale for the rule change request
- other relevant rules changes
- the rule making process
- consultation leading to this draft determination.

1.1 What are non-energy costs?

In the NEM, non-energy costs generally refer to payments for market and non-market ancillary services, compensation for directions, market suspension or administered pricing, and reserve contract payments.¹

Non-energy costs are recovered by AEMO from market participants based on their registration category and the aggregate adjusted gross energy (AGE) from each participant over a trading interval.² The formulas used to allocate costs rely on numerators and denominators that include the AGE. The AGE for each market customer is defined under clause 3.15.4 and 3.15.5 of the NER as the flow of electricity at a participant's connection point(s), in the relevant category for recovery either as load or generation. Infigen describes a market customer's AGE as "the net consumption of that market customer for the relevant trading interval".³ The denominator, being the sum of all AGE, is effectively the regional operational demand.

For this rule change, the lower contingency Frequency Control Ancillary Services (FCAS)⁴ costs are particularly relevant as they are only recovered from market customers within a region.⁵

1 AEMO, *NEM settlement under low, zero and negative demand conditions*, rule change request. p. 3.

2 Ibid.

3 Ibid, p. 4. Net consumption being the market customer's energy at each connection point which the market customer is financially responsible.

4 These consist of the fast lower (six second), slow lower (60 seconds) and delayed lower (five minute) FCAS services.

5 AEMO, *Settlements guide to ancillary services payment and recovery*, February 2020, p. 9.

1.2 Issue the rule change request seeks to address and current arrangements

Historically, market loads were almost always net consumers of energy. Therefore, the NER generally allocates non-energy costs between market customers according to the proportion of *net* energy used by each customer.⁶ However, the increasing penetration of rooftop solar has meant that these loads can now also be generators. This can have consequences that were not previously foreseen, particularly for the settlement of non-energy costs, which are usually calculated based on *net* energy flows.

The current cost recovery formulas in the NER do not account for significant bi-directional resources, which can lower a market customers AGE to the point where it becomes a net exporter of electricity. This can allow for the potential over-procurement of costs from market customers with a positive load, and market customers with a negative load can receive a negative settlement, i.e. a payment. An example of this settlement distortion was provided by Infigen in its rule change request, as shown in Figure 1.1 below.

Figure 1.1: Infigen's example of settlement distortion



Source: Infigen, Settlement under low operational demand, rule change request, 2021.

1.2.1 Solution proposed in the rule change request

Low operational demand impacts the formulas used to allocate non-energy costs under rule 3.15 of the NER. In order to solve the issues that can result from the current formula, Infigen proposed a rule change (the proposed rule) to amend part of rule 3.15 of the NER to set a

6 See rule 3.15, NER.

lower limit of zero on market customer AGE values within the non-energy cost recovery formula.⁷ This 'flooring mechanism' would remove the possibility of market customers having negative AGEs and help allocate costs more fairly between participants. Unlike the current formula, the flooring mechanism would also prevent AEMO from over-procuring non-energy costs and it would limit the recovery of costs to the total cost of the service.

Infigen's proposed flooring mechanism formula is set out below.

$$\text{Allocated cost} = \text{Service cost} \times \frac{\max(0, \text{Market Customer's AGE})}{\sum \max(0, \text{AGE})}$$

According to Infigen, the flooring mechanism would have the following impacts on the non-energy cost recovery process:

- A market customer cannot have a negative AGE for a trading interval. This would prevent that customer receiving a payment for their negative net flows in a trading interval. It would also prevent customers with net negative flows from paying any cost recovery.⁸ This has the added benefit of limiting the total cost recoverable to the total service cost.
- The total regional operational demand can no longer fall below 0 MWh. This is because all market customs would have their minimum AGE set to zero and therefore the sum of these values (which is the denominator used in the cost recovery formula) can no longer be a number less than zero.⁹ However, if all market customers within a region had a load that is net negative or zero for a trading interval, the equation would not solve and AEMO would not be able to settlement the NEM. Infigen notes that while technically possible, it is unlikely that scenario would occur for at least the next 12-24 months.¹⁰

Infigen noted that the issues described above are particularly relevant to South Australia. However, as settlement is a NEM-wide process, the rule change would solve these issues if they were to arise in any other state. Infigen also outlined that the issues resulting from the current calculation of non-energy costs at low operation demand are un-hedgeable costs and therefore there are limited options outside of a rule change to mitigate a participant's risk.¹¹

Infigen also outlined in its rule change request that the Commission is considering potential longer-term solutions to the issues through the *Integrating energy storage systems into the NEM* (Integrating Storage) rule change (see section 1.5). Therefore, Infigen considers the flooring mechanism insulates market customers in the short-term, while these more fundamental reforms are being considered.¹²

⁷ Infigen, *Settlement under low operational demand*, rule change request, p. 12.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Infigen, *Settlement under low operational demand*, rule change request. p. 14.

¹² Ibid.

1.2.2 Alternative solutions proposed in the rule change request

Infigen outlined a number of alternative solutions if the flooring mechanism could not be implemented in a timely or cost effective way.¹³ These alternative solutions were:

1. Modifying the solution proposed by AEMO in the *NEM settlement under low, zero and negative demand conditions* rule change (see section 1.4) solution to have the threshold when the substitution method is triggered to be raised to 150 MWh. Infigen considers this solution workable but does note that it would have the impact of more frequent disruption to settlement, and is only preferable if Infigen's solution was unable to be implemented. Infigen also suggested the threshold value could be informed by AEMO modelling the largest expected net market customer load in South Australia during low operational demand. The threshold would then be set to trigger if net demand approaches a multiple of this net market customer load.
2. Applying a settlement cap for non-energy cost recovery, so that a market customer could not be charged more than the total costs, effectively removing the possibility of over procurement. Infigen considers that no 'spurious' payments could be made to negative load market customers. Infigen notes that this would likely be complex to administer but limits the worst outcomes for market customers.
3. Changing the NER to allow AEMO to redistribute excess recovered costs by returning excess cost recoveries, ie. negative payments, to affected market customers. Infigen states that this solution would be challenging to implement, manage and operate. It also does not address the issue of the cost recovery being unable to solve at zero demand.
4. Moving cost recovery from a single trading interval across multiple periods, such as a week, month or year, at all times. Infigen describes this as a very material change and requires more consideration.

1.3 Rationale for the rule change request

In the rule change request Infigen considered that the continued growth of bi-directional resources in the NEM is driving lower levels of operational demand and posing significant risks to NEM settlement and distribution of non-energy costs. It considers the impact of this scenario to have significant impacts on:

- **Disruption of settlement** — as operational demand falls below 1 MWh, the current NEM settlement systems will fail to calculate.
- **Disruption to South Australian industry** — if significant non-energy costs are to be recovered during low operational demand, it would be imposed on a small subset of customers, likely large industrial customers.
- **Risk of cascading defaults and disruption of the administration of the NEM** — if significant over procurement was to occur, which is non-recoverable, this could lead to retailers defaulting on their settlements.

¹³ Infigen, *Settlement under low operational demand*, rule change request, p. 13.

- **System security risks** — the possibility of negative payments can incentivise market behaviour that has the ability to impact the security and reliability of the NEM.¹⁴

Infigen argues that its rule change request would provide market stability and enable the continued fair allocation of non-energy costs during periods of low operational demand. Infigen noted that these risks are not consistent with the intent of the NER and these are material and are not hedgable risks. The immediate risk is to customers within South Australia, however, over time this risk increases in other regions.¹⁵

1.4 AEMO's rule change request

On 8 February 2021, AEMO submitted the *NEM settlement under low, zero and negative demand conditions* rule change request (the AEMO rule change). This rule change was in relation to the formulas that are used to calculate how certain non-energy costs are allocated and the interaction between these formulas and the settlement of other markets within the NEM. AEMO identified that the current configuration of its settlement systems cannot function if regional demand in a trading interval, or other cost recovery period, falls below 1 MWh.

Like Infigen's rule change request, AEMO proposed to amend parts of rule 3.15 of the NER. However, it proposed a different approach to allow for the substitution of AGE values (the substitution method), when necessary, to create numerators and denominators for non-energy cost allocation formulas that will work in AEMO's settlement systems.¹⁶ As the non-energy cost recovery settlement calculations will fail when the denominator of a relevant formula is less than 1 MWh, AEMO proposed to only substitute values when aggregate AGE falls below 1 MWh.¹⁷

In such situations, AEMO will determine the value for substitution using an average of the AGE amounts in the last four billing periods for each affected market customer and will substitute aggregate AGE for a region with the sum of the substituted market customer average AGEs in the region.¹⁸

On 17 June 2021, the Commission made a final determination on the AEMO rule change. This final determination made a more preferable rule to use the substitution method with the threshold at which it is triggered raised to 150 MWh. The Commission made this more preferable rule to address: the risk of the NEM being unable to settle when net regional demand is less than 1 MWh; the incidence of market customers being paid as part of lower contingency FCAS recovery; and, the risk to market customers of paying a disproportionate amount of non-energy costs due to low net regional demand.¹⁹

14 Infigen, *Settlement under low operational demand*, rule change request, p. 13.

15 Ibid.

16 AEMO, *NEM settlement in zero and negative demand conditions*, rule change request, p. 9.

17 Ibid.

18 Ibid. Chapter 10 of the NER defines A *billing period* as the period of 7 days commencing at the start of the trading interval ending 12.30 am Sunday.

19 The final ruling can be found on the AEMC [website](#).

1.5 The longer-term solution being considered in Integrating storage

The Commission considers that the *Integrating Storage* rule change, if made, may provide a permanent solution to the issues that Infigen raises. In the *Integrating Storage* rule change proposal, AEMO acknowledged that the existing NEM framework, processes and systems for non-energy cost recovery have been calculated on net metering data.²⁰

The solutions the Commission are considering would solve the non-energy settlement issues by allocating costs based on gross energy flows, rather than net energy flows. In order to do this and correctly apportion costs, any longer-term solution will require the implementation of the *Global settlements and market reconciliation rule change (Global settlement)* to ensure that AEMO has gross data on energy flows. Implementation of the *Global Settlement* rule change is due to go-live on 1 May 2022 with *Integrating storage* potentially being implemented by September 2023.²¹

1.6 The rule making process

On 22 April 2021, the Commission published a notice advising that it had commenced the rule making process and consultation in respect of the rule change request.²² A consultation paper identifying specific issues for consultation was also published. Submissions closed on 20 May 2021 and the Commission received 5 submissions. These submissions are available on our [website](#). All the issues relevant to this rule change request that were raised in submissions are discussed and responded to throughout this draft rule determination.

1.7 Consultation on draft rule determination

The Commission invites submissions on this draft determination and draft rule, by **29 July 2021**.

Any person or body may request that the Commission hold a hearing in relation to the draft rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than 12pm, 24 June 2021.

Submissions and requests for a hearing should quote project number **ERC0327** and may be lodged online at www.aemc.gov.au.

Where practicable, submissions should be prepared in accordance with the Commission's guidelines for making written submissions.²³ The Commission publishes all submissions on its website, subject to a claim of confidentiality. Please clearly mark any sections of your submission which you consider to contain confidential material.

If you have any questions on this project, please contact:

- Harrison Gibbs on (02) 8296 0626 or harrison.gibbs@aemc.gov.au
- Kate Wild on (02) 8296 0622 or kate.wild@aemc.gov.au.

²⁰ AEMO, *Integrating energy storage systems in the NEM*, rule change request, p. 1.

²¹ AEMO, *Regulatory roadmap v4*, 18 March 2021.

²² This notice was published under s.95 of the NEL.

²³ This guideline is available on the Commission's website www.aemc.gov.au.

2 DRAFT RULE DETERMINATION

This chapter outlines:

- the Commission's draft determination
- the rule making test for changes to the NER
- the assessment framework for considering the rule change request
- the Commission's consideration against the national electricity objective (NEO).

2.1 The Commission's draft rule determination

The Commission's draft rule determination is not to make the proposed rule.

The Commission has given consideration to the rule change request proposed by Infigen and recognises the importance of appropriately distributing non-energy costs between market customers and ensuring that outcomes are aligned with the intent of the NER.

However, based on the Commission's consideration, including analysis of the previous low operational demand periods and stakeholder feedback to the consultation paper, the Commission considers that the issues outlined by Infigen are adequately resolved for an interim period in the final determination on the *NEM settlement under low, zero and negative demand conditions* rule change. The solution implemented as part of that final determination was an alternative solution proposed by Infigen within its rule change request. The Commission considers that there are not sufficient additional benefits in implementing the flooring mechanism over what is being implemented in AEMO's final determination.

The Commission's reasons for making this draft determination are set out in chapter 3.

Further information on the legal requirements for making this draft rule determination is set out in Appendix B.

2.2 Rule making test

2.2.1 Achieving the NEO

Under the NEL the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.²⁴ This is the decision making framework that the Commission must apply.

The NEO is:²⁵

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.

²⁴ Section 88 of the NEL.

²⁵ Section 7 of thence.

The Commission has identified that the relevant aspects of the NEO are *the efficient investment in, and efficient operation of, electricity services with respect to the reliability, safety and security of the national security system.*

2.3 Assessment framework

In assessing the rule change request against the NEO, the Commission has considered the following principles:

- **Effective and proportionate risk management:** does the proposed solution enable market participants and AEMO to manage risks? This is in the long-term interests of consumers as it promotes the efficient and secure operation of the NEM, allowing stable supply of electricity and putting downward pressure on electricity prices.
- **Minimising uncertainty and market changes:** does the proposed solution minimise uncertainty for market participants and AEMO and promote confidence in the market? Similarly, the points above for effective and proportionate risk management are also related to the impacts of minimising uncertainty and market changes.
- **Regulatory and administrative burden:** are the costs to market participants and market bodies of implementing the solution minimised and proportional to the benefits? Regulatory and administrative burdens are passed onto consumers through inefficient costs. As such it is in the interests of consumers to minimise these pass through costs where possible.
- **Providing efficient market signals:** does the solution provide market participants with efficient market signals to guide their decisions? Efficient market signals are required to provide the necessary incentives for the market to operate efficiently including ensuring that any distortions to incentives are minimised.

2.3.1 Commission response to feedback on the assessment framework

SA Water was the only stakeholder to comment on the proposed assessment framework. It noted there were the differences between the assessment frameworks in both Infigen's and AEMO's rule changes:²⁶

- the AEMO rule change included administrative certainty in its assessment criteria
- Infigen's rule change exchanged this for providing efficient market signals in its assessment criteria.

SA Water was of the view that both of these assessment criteria should be included across both rule changes given the highly related nature of both rule changes.

The Commission considers that its current assessment criteria for Infigen's rule change covers the issues raised by SA Water within its *Minimising uncertainty and market changes* criteria. Therefore, the Commission has decided to keep the original assessment framework as outlined in the consultation paper.

²⁶ SA Water submission p. 2.

2.4 Summary of reasons

Following the close of consultation, AEMO informed the Commission that it may have the capacity to implement the flooring mechanism before the end of the year. As this information was provided late in the process, it has not been consulted on. While the flooring mechanism does prevent over-recovery, there is still a risk to settlement if all market customers are net-generating or have zero demand. The mechanism can also lead to competitive distortions where only net-demand market customers face non-energy costs. Given this, and the need to the settlement issues before spring 2021 the Commission has not considered the flooring mechanism in detail.

The solution provided in the Commission's final determination for *NEM Settlement in low, zero and negative demand conditions* rule change request by AEMO, where the threshold for the proposed substitution method is raised to 150 MWh, responds to the issues raised by Infigen. Therefore, having regard to the issues raised in the rule change request and during consultation, and considering that the solution being implemented in the AEMO rule change, the Commission is not satisfied that the proposed rule will, or is likely to, contribute to the achievement of the NEO for the following reasons:

- The 150 MWh threshold and the proposed solution are both interim solutions to deal with the immediate risk of low or negative operational demand, and as such are not as efficient as the approach being developed and tested within *Integrating storage*.²⁷
- A threshold of 150 MWh, as suggested by Infigen, allows the continued settlement of the NEM in low operational demand scenarios as the denominator in the cost recovery formulas will no longer be able to fall below 1 MWh during a trading interval.
- Non-exporting market customers have protection from significant over-recovery as identified by Infigen in periods of low operational demand, with the costs of recovery shared across all market participants.
- Not making an additional rule within this rule change request provides greater market certainty of the solution to be implemented by spring 2021
- Only having one solution to solve the issues raised in both Infigen's and AEMO's rule changes allows for an efficient administrative implementation for both AEMO and the required market customers. An additional rule, with the assumption that it would be made final, would be published as a final determination on 26 August 2021. Given the spring 2021 deadline for forecast low operational demand events this would be insufficient time for market customers for implementation, which was a key consideration from stakeholder submissions.
- Implementing a second interim solution above 150 MWh threshold solution at an additional cost and for limited benefits is not effective or proportionate.
- AEMO can implement the threshold approach by spring 2021 allowing it to be in place for the forecast low or negative operational demand conditions.

²⁷ *Integrating energy storage systems into the NEM*, is exploring longer-term solutions for the recovery of non-energy costs from participants based on gross energy flows rather than net.

3 INFIGEN'S FLOORING MECHANISM

This chapter outlines:

- Infigen's view of the flooring mechanism
- stakeholder feedback
- the Commission's analysis of the flooring mechanism
- the Commission's decision to make no rule.

3.1 The proposed flooring mechanism

As explained in section 1.2, Infigen recognised that the problem with the current cost recovery formula over the short-term is some market customers having negative AGE values, pushing net regional demand low or negative and distorting the non-energy cost recoveries. Infigen's flooring mechanism sets the lower limit for any market customers AGE values within the non-energy cost recovery formulas of zero. Infigen argued that this removes the possibility of negative AGE values within the cost recovery formula and as such, removing the possibility for market customers to receive a payment for non-energy costs. This helps to allocate costs more fairly between the remaining net-demand market customers and limiting the total costs recovered to the total service cost.

3.2 Stakeholder views

Stakeholders accepted that there is a real risk that AEMO will not be able to settle the NEM under the current non-energy cost recovery formulas. Further, stakeholders broadly accepted that low operational demand can distort the non-energy cost allocations between market customers.²⁸ Infigen's flooring mechanism was not discussed in great detail within stakeholder feedback as the Commission noted in the consultation paper that AEMO indicated it was not able to implement the solution before spring 2021. However, SA Water noted that the flooring solution still does not accurately represent the current market conditions, with the solution proposed in *Integrating Storage* being the most appropriate.²⁹

Any additional rule before *Integrating Storage* is implemented was not supported by stakeholders as this would add additional administrative burden in what is already a busy period with other requires system changes.³⁰ Stakeholders also noted that longer lead times are preferable to make the required internal systems changes, which would be achieved by only making one rule.³¹ If an additional rule was made within this determination and made final on 26 August 2021, there would be insufficient time for market customers to implement the appropriate changes before the spring 2021 deadline of forecast low operational demand.

28 Submissions to the consultation paper: SACOME, Neoen, AGL, SA Water, Origin Submissions to the AEMO rule change consultation paper: Engie.

29 SA Water, Submission to the consultation paper, p. 3.
The approach being considered in the *Integrating Storage* rule change for the longer-term solutions for the recovery of non-energy costs requires the *Global settlement* rule change to be implemented to ensure AEMO has access to the gross data on energy flows.

30 Submissions to the consultation paper: AGL, Origin, SA Water

31 Submissions to the consultation paper: SACOME, Neoen, AGL, SA Water, Origin

There was mixed consensus on a threshold value of 150 MWh, with some stakeholders offering support for this threshold to mitigate the significant risks of non-energy cost distribution in low operational demand.³² Other stakeholders were concerned that 150 MWh would distort the market and would require additional coding, testing and implementation.³³

No stakeholders provided a costing estimate for implementing the system and administrative changes necessary to accommodate Infigen's proposed rule or an alternative solution.

3.3 Commission's analysis

In making the decision to make no rule, the Commission considered several additional matters including the:

- limitations of the flooring mechanism
- reasons why the solution being implemented in the AEMO rule change adequately deals for an interim period with the issues raised by Infigen
- implementation timeframes and the impact on stakeholders
- interim nature of the solution.

3.3.1 Limitations of the flooring mechanism

In the Commission's view, while the flooring mechanism removes the possibility of payments to net-exporting market customers, there remain downsides to implementing it as an interim solution before any longer-term solution is implemented.

Where any net exporting market customer has their AGE floored to zero they are removed from any non-energy cost recovery, insulating them against any high price events and forcing these costs onto the net-consuming market customers. Due to the classifications of connection points the net-exporting market customers would still be defined as a load, where they should be defined a generator and included in the raise contingency FCAS costs.

Additionally, with a flooring mechanism there is still a possibility that NEM settlement would fail. This would occur where all market customers within a region have an AGE that is negative or zero. Under this scenario the negative AGE market customers would have their AGE floored to zero, creating a situation where the denominator for non-energy cost recovery is zero. This would cause the calculation to fail. Infigen noted this possibility in their rule change request but, that it is unlikely to occur within the next 12-24 months.

The Commission notes that the current proposed implementation of the longer-term solution, based on AEMO's *Regulatory roadmap*, is in the next 12 to 24 months.³⁴ Therefore, the risk highlighted by Infigen may occur in the period when the flooring mechanism would be operational. Given this, the Commission does not consider the flooring mechanism adequately addresses the risk to settlements from periods of low, zero or negative operational demand. Therefore, the substitution method would still need to be implemented

32 Submissions to the consultation paper: SACOME, Neoen

33 Submissions to the consultation paper: AGL, Origin

34 AEMO, *Regulatory roadmap v4*, 18 March 2021

alongside the flooring mechanism, to remove the possibility of settlement failure that would occur under just a flooring mechanism. This would come at a higher cost as the two solutions would have to be coded, tested and implemented together by AEMO and market customers.

3.3.2

Why a threshold of 150 MWh solves the issues raised by Infigen

Infigen also proposed an alternative solution that modified AEMO's substitution method by raising the threshold at which it is triggered to 150 MWh.³⁵ Infigen considered this a workable solution as it would limit the downside impacts of inequitable cost recovery, noting that it would come at the cost of more interventions in the market.³⁶ Infigen included the suggestion of setting the threshold at the level of the largest net-demand customer for the South Australian region, during periods of low operational demand.³⁷ This methodology aims to effectively limit the total costs recovered from any market customer be limited to 100 per cent of the total costs to be recovered during the trading interval.

AEMO provided data on the individual market customer data for South Australia. As the market customer data is commercial in confidence, and the South Australian market has few market customers within it, the Commission is not able to publicly share the data. It could reveal confidential market insights or give a competitive advantage to other market customers.

Using the generalised formula for allocating non-energy costs the Commission was able to calculate the distribution of the lower contingency FCAS costs. The lower contingency FCAS cost data was taken from the regional recovery data within AEMO's MMS database.

Figure 3.1: Generalised formula for non-energy costs

$$\text{Allocated cost to a Market Customer} = \text{Regional service cost} \times \frac{\text{Market Customer's AGE}}{\sum_{\text{region}} \text{AGE}}$$

Source: Infigen, *Settlement under low operational demand*, rule change request, p. 3.

The Commission modelled the impact of lower levels of net regional demand on non-energy cost recoveries for lower contingency FCAS costs. The lowest recorded operational demand period was used, which occurred on 11 October 2020 during the 12:30pm trading interval, where operational demand was 300MW. Keeping the same levels of customer load and increasing the relevant market customers generation by an equal factor to reduce the net regional demand to a new desired level, the AEMC tested new levels of net regional demand down to 1 MWh.

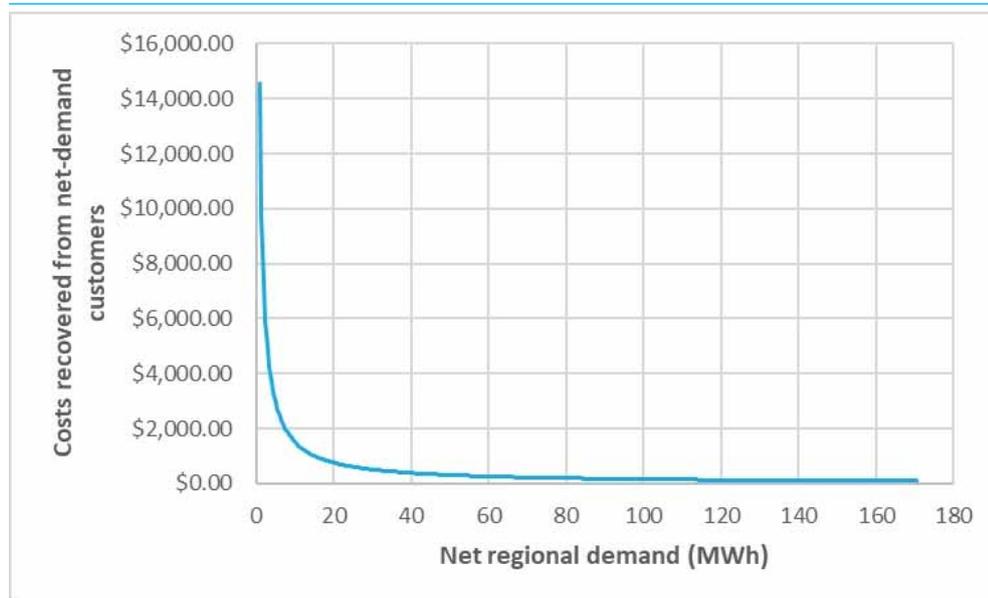
Within this trading interval there was \$63.42 of lower contingency costs to be recovered from market customers. As the net regional demand is decreased, the payments recovered from the net-demand market customers increases exponentially. This is seen in Figure 3.2 below.

³⁵ Infigen, *Settlement under low operational demand*, rule change request, p. 13

³⁶ Ibid.

³⁷ Ibid.

Figure 3.2: Modelled cost recoveries from net-demand market customers



Source: AEMC

Infigen identified the issue of exponential cost recoveries from market customers, noting that as demand approaches zero the cost allocation becomes infinite, limited only by the precision of AEMO's systems as the denominator approaches zero. It is important to note that while AEMO can measure net regional demand down to six decimal places, it has outlined that the formulas for calculating non-energy costs cannot be solved if the aggregate AGE within a region is less than 1 MWh for a trading interval.³⁸

BOX 1: IMPACT OF FIVE-MINUTE SETTLEMENTS

When the five-minute settlements rule change is implemented, it will align the trading intervals with the current dispatch intervals of five minutes. This will create more opportunities where a trading interval could fall below 1 MWh and risk the NEM being unable to settle before the implementation of a rule change. Additionally, with the time base over which aggregate AGE is calculated changing to five-minutes, 150 MWh as a threshold for a trading interval is no longer consistent with Infigen's proposal of 300MW average demand.

When trading intervals are matched with dispatch intervals at five-minutes the threshold at which the substitution is triggered will need to be changed to 25 MWh, maintaining the 300MW average demand across the trading interval.

³⁸ AEMO, EMMS Technical specification - SMS and GS - Settlements and Billing, October 2020. AEMO, *NEM settlement in zero and negative demand conditions*, rule change request, p.8.

3.3.3 **Costs of an additional rule for market customers**

Under both the substitution method and flooring mechanism, payments to net-exporting market customers for non-energy costs are effectively eliminated. The differences being, as explained previously, are the conditions where these mechanisms are enabled, how the costs are distributed between market customers and the impacts on competitive distortions. The flooring mechanism, if implemented, would still need the substitution approach to avoid the potential issues of NEM settlement if all market customers were net exporting or zero demand. From this, if the Commission was to make an additional rule through Infigen's rule change request, it would pose additional costs to market customers to implement within their systems, while providing limited benefits.

The Commission recognises that there are requirements from market customers as well as AEMO to make the necessary changes to their internal systems to adapt for changes to the non-energy cost recovery mechanisms.³⁹ From stakeholder feedback the Commission is aware that there are a number of other regulatory changes that will require systems changes from market customers within the same time as the AEMO final rule, notably five-minute settlements.⁴⁰ An additional rule, with the assumption that it would be made final, would be published as a final determination on 26 August 2021. Given the spring 2021 deadline for forecast low operational demand events the Commission considers this would be insufficient time for market customers to implement the mechanism.

From this and as mentioned above in section 2.4 having only one solution across Infigen's and AEMO's rule changes allows for an efficient administrative implementation for both AEMO and the required market customers and a longer timeline for the implementation, which was a key consideration from stakeholder submissions.⁴¹

3.3.4 **AEMO's implementation timeline**

As mentioned above in section 2.4 and within the consultation papers, AEMO had previously informed the Commission that it had limited time and resourcing available to implement Infigen's proposed flooring solution before spring 2021. This was due to the time required to code, test and certify any changes while being already committed to implementing the other rule changes during spring 2021 (including five-minute settlement, wholesale demand response and customer switching).

After the consultation period had concluded, the Commission was made aware that AEMO could potentially be able to implement Infigen's proposed solution before the end of the year. Notwithstanding this, there was no certainty that it could be implemented before spring 2021.

In the Commission's view, making no draft rule and implementing AEMO's rule change would provide greater certainty to the market of the solution to be implemented by spring 2021.

³⁹ Submissions to the consultation paper: SA Water, AGL

⁴⁰ Submissions to the consultation paper: AGL, Origin

⁴¹ Given that a final rule for this rule change request will not be finalised until August 2021.

The solution is also well understood by stakeholders as it was consulted on through both Infigen's and AEMO's rule changes.

3.3.5 Commissions view on a temporary solution

It is expected that any ruling made within AEMO's final determination and, if made, any additional rule within Infigen's rule change process would only be in place for 12-24 months, with low, zero or negative operational demand only having a high probability of occurrence in select conditions.

The Commission is unaware of any more efficient solutions that are able to be implemented in time by both AEMO and market customers to avoid any of the negative impacts outlined by Infigen in its rule change request.

The Commission also notes that it would be a higher cost for AEMO to implement both the substitution method needed to prevent issues with NEM settlement in zero and negative operational demand periods and the flooring mechanism. Given the limited benefits of introducing the flooring mechanism above the substitution method, the Commission does not consider the benefits would outweigh the costs. Given the reasoning mentioned above as well as in section 2.4, any further rule change is not likely to contribute to the achievement of the NEO.

3.4 Conclusion

The Commission has given careful consideration to the benefits of a flooring solution. However, and as outlined above, the Commission has decided not to make a rule as it does not consider there is benefit in implementing the flooring mechanism because of the:

- remaining risk of settlement failure with a flooring mechanism
- limitations surrounding competitively neutral outcomes
- administrative burden on market participants of implementing a second, interim solution that is more expensive
- uncertainty for the solution to be implemented in time.

Further, it cannot be implemented before spring 2021 as market participants were not consulted in depth on this solution and would not have certainty of its implementation until 26 August 2021. From this, the Commission has determined that the 150 MWh threshold is a preferable interim solution. The additional administrative and systems changes and costs involved if a flooring mechanism was introduced after the 150 MWh threshold and before Integrating Storage are not considered to have a net benefit and would not contribute to the NEO.

Given the reasons above the Commission has made the draft determination not to make the proposed rule.

ABBREVIATIONS

AGE	Adjusted gross energy
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AEMO rule change	<i>NEM settlement under low, zero and negative demand conditions</i>
Commission	See AEMC
FCAS	Frequency Control Ancillary Services
Flooring mechanism	Infigen proposed amendment to part of rule 3.15 of the NER to set a lower limit of zero on market customer AGE values within the non-energy cost recovery formula
<i>Integrating storage</i>	<i>Integrating energy storage systems into the NEM rule change</i>
MCE	Ministerial Council on Energy
MWh	Megawatt hours
NEL	National Electricity Law
NEO	National electricity objective
Substitution method	AEMO's proposed substitution of AGE values to create numerators and denominators for non-energy cost allocation formulas that will work in AEMO's settlement systems

A SUMMARY OF OTHER ISSUES RAISED IN SUBMISSIONS

This appendix sets out the issues raised in the first round of consultation on this rule change request and the AEMC's response to each issue.

Table A.1: Summary of other issues raised in submissions

STAKEHOLDER	ISSUE	AEMC RESPONSE
Neoen	<p>Neoen noted that using net metering was not appropriate for the recovery of FCAS costs, market charges or non-market services.</p> <p>It suggested an alternative to Infigen's suggestion which would involve estimating behind-the-meter production and back calculating the underlying consumption.</p>	<p>The AEMC has previously been made aware of estimating behind-the-meter production to back calculate underlying consumption as a means of allocating non-energy costs. The complexity required to accurately measure this underlying consumption makes this option infeasible given the timeline required for a solution before spring 2021.</p>
AGL	<p>AGL noted that a threshold of 150 MWh still required extensive coding, testing and implementation</p>	<p>The AEMC is aware that the value at which the threshold value is triggered and the number of weeks the values are averaged over are configurable. This is highlighted within AEMO's recent publication of their EMMS technical specifications.</p>

Source: 1. EMMS technical specifications available here: <https://www.aemo.com.au/-/media/files/market-it-systems/emms/2021/emms-release-schedule-and-technical-specification-oct-21.pdf?la=en>

B LEGAL REQUIREMENTS UNDER THE NEL

This appendix sets out the relevant legal requirements under the NEL the AEMC to make this draft rule determination.

B.1 Draft rule determination

In accordance with s. 99 of the NEL the Commission has made this draft rule determination in relation to the rule proposed by Infigen Energy.

The Commission has determined not to make a rule.

The Commission's reasons for making this draft rule determination are set out in section 2.4.

B.2 Commission's considerations

In assessing the rule change request the Commission considered:

- its powers under the NEL to make the rule
- the rule change request
- submissions received during first round consultation
- the Commission's analysis as to the ways in which the proposed rule will or is likely to, contribute to the NEO.

There is no relevant Ministerial Council on Energy (MCE) statement of policy principles for this rule change request.⁴²

⁴² Under s. 33 of the NEL the AEMC must have regard to any relevant MCE statement of policy principles in making a rule. The MCE is referenced in the AEMC's governing legislation and is a legally enduring body comprising the Federal, State and Territory Ministers responsible for energy. On 1 July 2011, the MCE was amalgamated with the Ministerial Council on Mineral and Petroleum Resources. The amalgamated council was formerly called the COAG Energy Council but is now called the Energy Ministers Meeting.