

FIVE MINUTE SETTLEMENT – NEM SETTLEMENT ESTIMATES POLICY CHANGES

FINAL REPORT AND DETERMINATION

Published: **April 2019**





EXECUTIVE SUMMARY

The publication of this Final Report and Determination (Final Report) concludes the Rules consultation process conducted by the Australian Energy Market Operator (AEMO) to consider amendments to the NEM Settlement Estimates Policy (Policy) under the National Electricity Rules (NER) for the implementation of Five-Minute Settlement (5MS) and Global Settlement (GS).

On 26 November 2018, AEMO published the Notice of First Stage Consultation and the Issues Paper for the Policy.

The Issues Paper detailed key proposals involving updates to estimates for:

- settlement amounts (estimation only required in case of the sustained failure of AEMO systems).
- prudential purposes (part of daily prudential calculation process), including replacement of references to 30-minute intervals with five minutes, and provision to incorporate UFE estimates.

AEMO received two first stage submissions from Ergon Energy Queensland (EEQ) and Origin Energy.

On 19 February 2019, AEMO published the Notice of Second Stage Consultation and Draft Determination for the Policy. One submission from Origin Energy was received in the second stage consultation.

Considering the submissions and evaluating comments against the requirements of the NER and the amending rules for 5MS and GS, AEMO's final determination is to amend the NEM Settlement Estimates Policy in the form published with this Final Report, reflecting the following outcomes:

- Update section 2 of the Policy to reference other defined procedures that document the protocol in the event of systems or communications failure.
- Update the settlement estimation calculations to five-minute resolution while maintaining the underlying methodology.
- Include unaccounted for energy (UFE) in settlement estimation and estimate UFE as zero when meter data is not available.



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1. STAKEHOLDER CONSULTATION PROCESS

AEMO has consulted on the NEM Settlement Estimates Policy (Policy) in accordance with clause 3.15.12 of the NER and the Rules consultation process in rule 8.9.

AEMO's timeline for this consultation is outlined below.

Deliverable	Date
Notice of first stage consultation and Issues Paper published	26 November 2018
First stage submissions closed	21 January 2019
Draft Report & Notice of second stage consultation published	19 February 2019
Submissions due on Draft Report	6 March 2019
Final Report published	4 April 2019

The publication of this Final Report marks the conclusion of this consultation.

In addition to public consultation, AEMO consulted on the Policy through various SMS program engagement channels¹ including:

- Procedures Working Group (PWG)
- Systems Working Group (SWG)
- Settlements Focus Group (SFG)

Note that there is a glossary of terms used in this Final Report at Appendix A.

2. BACKGROUND

2.1. NER requirements

There are two distinct applications for estimated settlement amounts outlined in the NER, and covered under the Policy:

- Clause 3.15.12(c) of the NER requires AEMO to develop the principles and the process to be applied in calculating the estimated settlement amount when normal processing is not available under clause 3.15.12(b). As AEMO maintains back-up capability for settlement data, this type of settlement estimation is only necessary under the sustained failure of AEMO systems that are required for settlements. It has never been invoked to date.
- Clause 3.3.9 of the NER requires AEMO to calculate settlement amounts for inclusion in a Market Participant's 'outstandings' to determine its prudential settings. The outstandings of a Market Participant is a net dollar amount payable by or to AEMO based on settlement amounts, including estimated settlement amounts for billing periods pending final statements. Market Participants are obliged under clause 3.3.11 of the Rules to maintain their outstandings below their trading limit. Failure to do so can result in AEMO issuing a call notice. This estimation is undertaken daily for each Market Participant.

¹ For more details on the forums and groups specific to the SMS program: <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement>



2.2. Context for this consultation

2.2.1. Five-Minute Settlement and Global Settlement

In November 2017, the Australian Energy Market Commission (AEMC) made the 5MS rule. The rule reduces the trading interval for financial settlement in the National Electricity Market (NEM) from 30 minutes to five minutes, aligning with NEM dispatch.

The AEMC made the GS rule in December 2018 to introduce a 'global settlement' framework for settlement of the demand side of the wholesale electricity market.

The final 5MS and GS rules require AEMO to update and publish a number of specified relevant procedures by 1 December 2019. While the Policy is not one of the specified procedures, AEMO has identified it as one of the publicly consulted documents that require amendment for 5MS and GS implementation.

2.2.2. Implementing Five-Minute Settlement

5MS will commence in the NEM on 1 July 2021. It will change many NEM processes, including energy and ancillary service bidding, online dispatch, intervention pricing, the calculation of trading amounts, the calculation of the cumulative price threshold, and periodic energy metering. Settlement estimates calculations are affected by 5MS because from 1 July 2021 settlement will be based on five-minute trading intervals and spot prices instead of the current 30-minute trading intervals and spot prices.

2.2.3. Global Settlement

Implementing GS will remove the current 'settlement by differencing' framework that has been in place since the start of NEM. Under 'settlement by differencing' the local retailer is responsible for settling the value of any residual electricity supplied to a distribution area after deducting the loss-adjusted metered electricity consumed by market loads within that area. This means that the local retailer bears the cost and risk of all residual electricity losses in that area, known as UFE.

Under the GS framework, every retailer is billed for the loss-adjusted and UFE-adjusted metered electricity consumed by their customers within that area. This will come into effect on 6 February 2022. The GS rule requires AEMO to commence publication of UFE on 1 July 2021, coinciding with the start of 5MS.

Settlement estimates for prudential purposes are affected by GS because they will need to account for UFE amounts.

2.3. First stage consultation

On 26 November 2018, AEMO issued a Notice of First Stage Consultation, and published an Issues Paper and Draft Procedures for the Policy.

The Issues Paper included details on AEMO's stakeholder engagement in developing the initial draft procedures and a summary of the specific amendments proposed in the initial consultation pack.

AEMO received two submissions in response to the first stage consultation, including one late submission. Copies of all written submissions, minutes of meetings and issues raised in forums (excluding any confidential information) have been published on AEMO's website.²

² For more details on the first stage consultation please see: <http://www.aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---NEM-Settlement-Estimates-Policy>



2.4. Second stage consultation

On 19 February 2018, AEMO issued a Notice of Second Stage Consultation, and published a Draft Report and Determination (Draft Report) and Draft Procedures for the Policy.

The Draft Report included a summary of the specific amendments proposed in the draft consultation pack.

AEMO received one submission to the second stage consultation.³ Copies of all written submissions, minutes of meetings and issues raised in forums (excluding any confidential information) have been published on AEMO’s website.⁴

3. SUMMARY OF MATERIAL ISSUES

The key material issues arising from the proposal and raised by Consulted Persons in the course of the consultation are summarised in the following table:

No.	Issue	Raised by
1.	Estimates to calculate net settlement amount	AEMO
2.	Estimates for prudential purposes	AEMO
3.	Potential effect of Global Settlement	AEMO

Section 4 discusses each of these material issues, including a summary of the views expressed in submissions at each consultation stage, AEMO’s draft and final assessment of the issues and AEMO’s final determination on each of them.

A detailed summary of issues raised by Consulted Persons in submissions together with AEMO’s responses, is contained in Appendix B.

4. DISCUSSION OF MATERIAL ISSUES

4.1. Estimates to calculate net settlement amount

4.1.1. Issue summary

Section 2 of the current Policy sets out the estimation approach when AEMO cannot produce settlement statements due to systems or communications failure. This process has never been used in NEM settlement history and is no longer consistent with AEMO’s IT capability and market processes to manage system and communication outages.

AEMO proposed to update this section of the Policy to reference other defined procedures that document the protocol in the event of systems or communications failure.

4.1.2. First Stage Submissions Summary

EEQ agreed with the proposed changes and acknowledged that the existing processes have never been used and are no longer an accurate reflection of AEMO’s IT capability and market processes.⁵ Origin also agreed with AEMO’s proposed changes.⁶

³ For second stage submissions please see: <http://www.aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---NEM-Settlement-Estimates-Policy>

⁴ For more details on the first stage consultation please see: <http://www.aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---NEM-Settlement-Estimates-Policy>

⁵ Ergon Energy Queensland, Submission to first stage consultation, p.2

⁶ Origin Energy, Submission to first stage consultation, p. 2



4.1.3. AEMO's Draft Assessment

Stakeholder feedback supported AEMO's view that the proposed amendments will give participants a better understanding of how AEMO currently operates and will facilitate better interactions between AEMO and Market Participants. All first stage submissions supported this position and did not propose any alternative approaches.

4.1.4. AEMO's Draft Determination

AEMO maintained its proposed approach to reference other relevant defined procedures in the second stage of consultation. This was reflected in the draft Policy published with the Draft Report.

4.1.5. Second Stage Submissions Summary

Origin agreed with AEMO's proposed amendments and had no additional feedback. No other submissions were received.⁷

4.1.6. AEMO's Final Assessment

AEMO maintains its proposed approach to update this section of the Policy to reference other defined procedures that document the protocol in the event of systems or communications failure. This is reflected in the Final Procedure, published with this Final Report.

4.1.7. AEMO's Final Determination

After considering all submissions, AEMO has determined that referencing other relevant defined procedures that document the protocol in the event of system or communications failures is the most appropriate approach for updating the Policy in line with the commencement of 5MS.

4.2. Estimates for prudential purposes

4.2.1. Issue summary

The Policy sets out the hierarchy of data and estimation methodology used for calculating settlement estimates for monitoring Market Participants' outstandings when actual metering data is not available.

The current methodology behind the Policy performs the settlement estimation calculation at a 30-minute resolution. The 5MS rule updates the definition of a trading interval to five minutes, resulting in misalignment with the current methodology.

AEMO proposes to update this calculation to five-minute resolution on 1 July 2021 in line with 5MS, however the underlying methodology will be retained.

4.2.2. First Stage Submissions Summary

EEQ supported the proposal to retain the existing methodology with calculations at a five-minute level. On the current scaled 'like day' estimation methodology, EEQ noted that consideration should be given to the potential for new renewable energy projects to influence the likelihood of there being a sufficient number of 'like days' to support energy estimates. EEQ welcomed AEMO's proposal to continue monitoring the accuracy of the estimation through an internal review process and consider a thorough review process after 5MS is implemented in July 2021.⁸

Origin supported AEMO's proposed approach and did not propose any alternatives.⁹

⁷ Origin Energy, Submission second stage consultation, p.1

⁸ Ergon Energy Queensland, Submission to first stage consultation, p.3

⁹ Origin Energy, Submission to first stage consultation, p.3



4.2.3. AEMO's Draft Assessment

The proposed amendments will ensure that the settlement estimates procedure is in line with 5MS, with low implementation risks and costs.

AEMO agrees with EEQ's comment regarding the potential for changing generation profiles to influence the accuracy of settlement estimation. AEMO's current assessment is that the estimation methodology is valid in the current market environment. AEMO will continue to monitor the accuracy of the estimation methodology and will consult stakeholders if it believes any changes to the methodology are required.

4.2.4. AEMO's Draft Determination

AEMO will maintain its proposal to update the settlement estimation calculations to five-minute resolution while maintaining the underlying methodology. This is reflected in the draft Policy published with this Draft Report.

4.2.5. Second Stage Submissions Summary

Origin agreed with AEMO's proposed amendments and had no additional feedback. No other submissions were received.¹⁰

4.2.6. AEMO's Final Assessment

AEMO maintains its proposed approach to update this calculation to five-minute resolution on 1 July 2021 in line with 5MS, however the underlying methodology will be retained.

4.2.7. AEMO's Final Determination

After considering all submissions, AEMO has determined that updating the settlement estimates calculation for prudential purposes to 5 minute resolution on 1 July 2021 is the most appropriate methodology to update settlement estimates for 5MS.

4.3. Potential effect of Global Settlement

4.3.1. Issue summary

Under the final GS rule, all retailers will be billed for a proportion of the UFE in a local area, based on the electricity consumed by their customers within that area. This means that there will now be a UFE component included in settlement estimations for prudential purposes.

Where initial metering data and/or preliminary and final settlement data is available, AEMO proposed that the UFE component to be included in the settlement estimation for prudential purposes.

Where there is no meter data available, currently a scaled like-day estimate is used for settlement estimation for prudential purposes. AEMO proposed that the UFE component on these days will be assumed to be zero. This is because of the low materiality of UFE, and that the scaled like day estimation process only applies to a small part of prudential estimates (typically two out of 30 days, or 6%).

4.3.2. First Stage Submissions Summary

EEQ supported AEMO's proposed approach to estimate UFE and changes, agreeing that it would have a minimal effect on prudential estimates given the immateriality of the value to the total credit limit and that

¹⁰ Origin Energy, Submission second stage consultation, p.1



the estimation process only applies to a small part of prudential estimates.¹¹ Origin also noted that the proposed approach was logical.¹²

4.3.3. AEMO's Draft Assessment

As highlighted in the Issues Paper, AEMO expects UFE estimation to have minimal effect on prudential estimates. This is because UFE volumes are typically not significant, and the estimation process only comprises a small part of the total prudential estimate. Both submissions supported AEMO's proposal to estimate UFE as zero. Hence, AEMO's proposal of estimating UFE as zero proposal will carry minimal implementation risk and is also a low-cost approach.

4.3.4. AEMO's Draft Determination

AEMO maintained its proposed approach to include UFE in settlement estimation and estimate UFE as zero when meter or settlements data is not available. This is reflected in the draft Policy published with this Draft Report.

4.3.5. Second Stage Submissions Summary

Origin agreed with AEMO's proposed amendments and had no additional feedback. No other submissions were received.¹³

4.3.6. AEMO's Final Assessment

AEMO maintains its proposed approach to include UFE in settlement estimation and estimate UFE as zero when meter or settlements data is not available.

4.3.7. AEMO's Final Determination

After considering all submissions, AEMO has determined that UFE will be included in settlement estimation and estimated as zero when meter or settlements data is not available.

5. FINAL DETERMINATION

Having considered the matters raised in the submissions, AEMO's Final Determination is to amend the Policy in the form of the uploaded Policy document published with Final Report.

The key changes reflect the following outcomes:

- Update section 2 of the Policy to reference other defined procedures that document the protocol in the event of systems or communications failure.
- Update the settlement estimation calculations to five-minute resolution while maintaining the underlying methodology.
- Include UFE in settlement estimation and estimate UFE as zero when meter data is not available.

¹¹ Ergon Energy Queensland, Submission to first stage consultation, p.4

¹² Origin Energy, Submission to first stage consultation, p.4

¹³ Origin Energy, Submission second stage consultation, p.1

**APPENDIX A. GLOSSARY**

Term or acronym	Meaning
5MS	Five-Minute Settlement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
EEQ	Ergon Energy Queensland
GS	Global Settlement
IT	Information Technology
NEM	National Electricity Market
NER	National Electricity Rules
PCF	Program Consultative Forum
PWG	Procedures Working Group
SFG	Settlements Focus Group
SWG	Systems Working Group
UFE	Unaccounted for Energy



APPENDIX B. SUMMARY OF SECOND STAGE SUBMISSIONS AND AEMO RESPONSES

No.	Issue	Participant Comment	AEMO response
1.	NEM Settlement Estimate Policy - Second Stage Consultation	Origin agrees with AEMO's proposed amendments to the NEM Settlement Estimate Policy - Second Stage Consultation Documents and have no additional feedback.	AEMO notes the respondents support of the proposed change.