AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Level 12
171 Collins Street
Melbourne VIC 3000

Postal address
GPO Box 2008
Melbourne VIC 3001

T 1300 858 724
F 03 9609 8010
E info@aemo.com.au

30 January 2025

Anna Collyer
Chair
Australian Energy Market Commission

Reference: ERC0386

Dear Ms Collyer,

Draft determination – interregional settlement residues for transmission loops

AEMO welcomes the opportunity to comment on the draft determination for the AEMO rule change proposal for interregional settlement residues for transmission loops. AEMO appreciates the AEMC progressing this rule change to ensure settlement residue arrangements are confirmed prior to the market integration of Project Energy Connect (PEC) stage two. AEMO confirms that the draft rule allows enough time to be implemented into AEMO's settlement processes and market procedures.

The AEMC has made a more preferable draft rule for allocating negative interregional settlement residues (IRSR) in transmission loops in proportion to annual regional demand. Although this is different from AEMO's rule change proposed allocation, which was in proportion to positive IRSR accrued, AEMO does not object to this approach.

The attached submission provides feedback on the theoretical basis for draft rule and highlights differences and drawbacks when compared to the proposed approach. Ultimately AEMO considers the key benefit of the preferrable draft rule is the administrative simplicity and the sharing of negative residues most broadly across the three regions. However, in doing so, this removes the link between positive residues and the negative residues caused by transmission loop flows within efficient dispatch. In contrast to the preferrable draft rule, AEMO considers the benefit of the rule change proposal was aligning the cost of these efficient negative residues with regions who have additional surplus and thus the capacity to pay.

AEMO notes the draft determination also discusses potential issues with interregional hedging arrangements in the NEM, including the Settlement Residue Auction (SRA) and questions the value being delivered to consumers both now and under a looped regional model. AEMO supports the AEMC proposal to conduct a broader review of the SRA in 2026 but suggest this should be deferred allowing further time to review outcomes following the implementation of PEC.

The attached submission also provides detailed feedback on the drafting of rule amendments. As changes largely affect AEMO required processes, AEMO is concerned that the drafting of the Rule amendments introduces some confusion and uncertainty due to the way it has been drafted. AEMO would welcome further opportunity to discuss this with the AEMC to ensure that rule will be interpreted as per the policy intent.

Should you wish to discuss any aspect of our submission, please contact Hannah Heath, Group Manager, Strategic Market Reform (Hannah.Heath@aemo.com.au).

Yours sincerely,

Violette Mouchaileh
Executive General Manager, Reform Delivery

ATTACHMENT – Detailed submission

PART 1 – Response to draft rule and draft determination

1.1 Draft Rule allows AEMO to progress the market implementation of PEC

AEMO supports the AEMC in making the draft rule and appreciates the timeliness of the decision. Although the methodology for the allocation of negative interregional settlement residues (IRSR) is different to the rule change proposal, AEMO confirms the methodology can be implemented in time for the commencement of PEC stage 2 (PEC-2), providing enough time for AEMO to undertake required systems and procedure changes.

The primary driver of AEMO's market integration consultation[1] was to inform and consult with industry on the occurrence of loop counter-priced flows and the need to ensure negative residue management ('clamping') will not inhibit the efficient operation of the loop. Although AEMO continues to support the theoretical rationale behind the allocation methodology in original rule change proposal (discussed in Section 1.4 below), AEMO has no objection to the AEMC's preferrable draft rule if it is ultimately supported by stakeholders, and confirms the draft rule likewise addresses the fundamental need to enable maximum efficient dispatch and operations of the loop.

1.2 Negative residue management

AEMO is also supportive of the AEMC's decision (described in Section 2.3.3 of the draft determination) not to recommend further amendments to the Rules that mandate AEMO to develop additional or specific negative residue management (NRM) processes and procedures. The governance of NRM within AEMO's procedures remains fit-for-purpose: as the process is detailed AEMO needs the flexibility to update and consult with stakeholders as required without the need for a rule change.

AEMO's PEC Market Integration Draft High-Level Impact Assessment[2] published in December 2024 sets out the proposed changes to NRM in the PEC transmission loop with consultation to commence following completion of this rule change. Clamping will be removed for counter-priced flows in the loop where aggregate loop IRSR is positive (settlements in surplus) and counter-priced flows are caused by spring washer transmission loop flows as part of efficient dispatch. NRM will be maintained in the loop for scenarios where the aggregate loop IRSR is negative (settlements in deficit). That is, minimising the accumulation of negative IRSR where counter-priced flows are caused by radial intra-regional congestion and generator mispricing.

Despite the use of NRM to limit the accumulation of negative IRSR, counter-priced flows are still prevalent in radial interconnection in the NEM today with a material number of negative residues (discussed further in Section 1.5 below). This is particularly prevalent for counter-priced flow into VIC driven by intraregional congestion, generator bidding and binding voltage stability constraints in south-west NSW. Despite the additional network capacity coming from PEC-2, it is not necessarily true that these conditions that drive negative IRSR today will be removed. Counter-priced flows from intraregional congestion are still likely to occur between the loop regions and clamping process may still be required frequently to limit the accumulation of negative IRSR where the aggregate loop is in deficit. This process will be further developed in AEMO's NRM consultation[3].

1.3 Sharing negative IRSR by region demand

The AEMC has made a preferrable draft Rule to share negative IRSR between all looped regions in proportion to region demand. The primary rationale is that this approach will 'address the risk to consumers of extreme negative IRSR'. The

[1] https://aemo.com.au/en/consultations/current-and-closed-consultations/project-energy-connect-market-integration-paper
[2] AEMO, PEC Market Integration Draft High-Level Impact Assessment - https://aemo.com.au/-/media/files/initiatives/project-energyconnect/pec-mi--hlia_draft-v1.pdf?la=en
[3] Consultation and revision of **SO_OP_3705 Dispatch Procedure** and **Automation of Negative Residue Management** documents.

draft determination also suggests that sharing by region demand is more cost-reflective than other options, including the rule change proposal.

AEMO agrees that allocating negative IRSR by region demand will minimise the risk that any one region would pay for all or most negative residues for any given billing period. In doing so, the region (NSW) with the highest MWh region demand, will always have the greatest allocated share of negative IRSR regardless of the where within the loop the negative IRSR is occurring and the direction of counter-priced flow. AEMO has calculated snapshots of proportional region share below demonstrating limited variability in share over time.[4]

Calculated at	1-Jan-23	1-Jan-24	1-Jan-25
VIC	0.341	0.344	0.348
NSW	0.55	0.55	0.544
SA	0.109	0.107	0.108

AEMO agrees that this approach spreads the risk across regions and may reduce the volatility of negative cash flows paid to each region, as the ratio between regions remains relatively stable. This stability is, however, subject to variation in aggregate negative residues accrued both when the loop is net negative and net positive. Figure 1.1 below has calculated the regional allocation of negative IRSR using the ACIL Allen modelling data provided from AEMO's market integration consultation. The purpose of the modelling was to investigate flows, and settlement impacts around the PEC transmission loop. The results are therefore demonstrative and should not be considered as a forecast of actual flows and magnitude of settlement outcomes.[5] Having said that Figure 1.1 demonstrates the effect of the reallocation approach using this modelled data. Under the AEMC approach despite the proportional allocation remaining the same, there is still (2x) variation in negative residues accrued year on year.

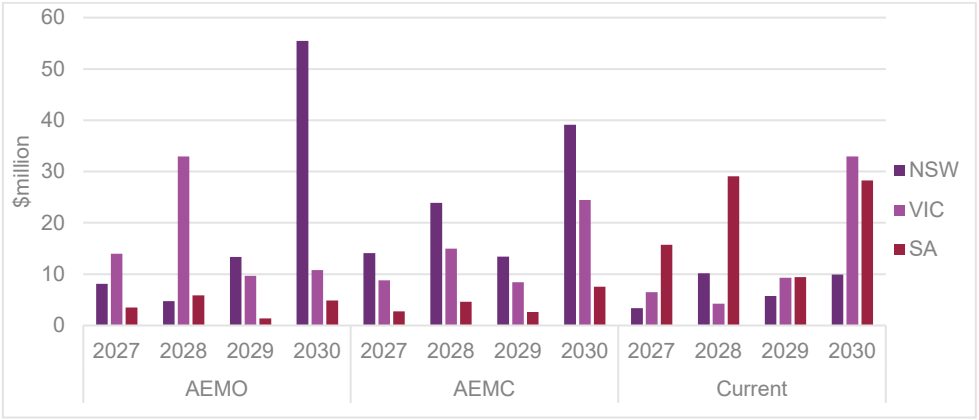

Figure 1.1: Negative residue cost allocation by year and region under each approach

AEMO queries however the draft determination's position that the by-region-demand approach is more cost reflective, and thus economically efficient, than other options. This position seems based on the rationale that regional demand is a reasonable approximation for underlying use of the system and the benefits derived from the existence of the loop.[6] While AEMO acknowledges the intent of aligning costs (negative IRSR) with the benefits, it is not clear that regional

[4] Defined in draft Rule 3.18.1A, p.6, regional share = annual regional demand (ARD)/ total regional demand for the looped regions (TRD), https://www.aemc.gov.au/sites/default/files/2024-12/Draft%20rule.pdf

[5] Further detail on data and modelling approach are included in ACIL Allen's market modelling report – ACIL Allen, 2023, Modelling the settlement effects of PEC - https://wa.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/pec-market-integration-paper/directions-paper-for-consultation/modelling-the-settlement-effects-of-pec---final-report.pdf?la=en

[6] AEMC, Draft Determination p.33.

demand is a reasonable or preferrable approximation of the benefits of increased interconnection. Without interconnection, in regions with excess supply, prices will decrease further and regions with supply shortage will see higher prices, thus the beneficiary of interconnection is directly related to the use of the asset itself.

Having said that, AEMO agrees that by region demand will share the cost of negative IRSR most broadly and that the draft Rule is a simpler approach as it is applied to all negative IRSR occurring within the loop, regardless of if the loop is net positive (aggregate loop residues are in surplus) or net negative (aggregate loop residues are in deficit). [7] AEMO confirms this can be implemented into AEMO's systems and procedures prior to PEC commissioning and agrees with the use of a rolling 52-week annual region share ratio using Adjusted Consumed Energy (ACE).

1.4 Relationship between positive and negative residues – efficient dispatch

Notwithstanding the above support, AEMO considers it important to note the differences with the rule change proposal and clarify that the primary rationale for choosing the by region demand approach – i.e., minimising the risk of extreme negative IRSR to one region – is different from the basis for the allocation method proposed in the rule change.

As set out in the rule change proposal and further clarified in AEMO's submission to the consultation paper[8], the proposed allocation method applied for efficient spring washer transmission loop negative residues (where the loop is net positive) only and is premised on the relationship between positive residues and the efficient spring washer negative residues in the loop. Efficient spring washer negative IRSR occur in the loop where the power transfer (and resulting price impacts) across any positive line is being facilitated by the extent of negative flow on other lines, meaning the value of power received by importing regions is greater than the economic surplus of the positive line itself. Therefore, regions with positive residues can pay for these efficient spring washer negative residues. This is different from negative residues caused by counter-priced flows due to intra-regional constraints, generator bidding or congestion on the network (where in aggregate, loop is net negative).

While AEMO agrees that allocating all negative residues in the same manner is the administratively simpler approach, it is important to note that this approach does not: (1) acknowledge the role efficient spring washer negative residues are having in facilitating maximum efficient loop flow; nor (2) ensure the regions, which pay for negative IRSR, are those that have a greater positive IRSR allocation and thus can pay for it. This also creates a mismatch between the treatment of positive residues (paid to the importing regions via sold SRA proceeds) and negative residues.

In coming to the view that negative residues around the loop should be funded in proportion to demand, by extension SRA proceeds should also be allocated according to regional demand. A consistent treatment of proceeds and liabilities was not discussed in the draft determination. This would ensure that all regions would be in the same relative net cash flow position after the allocation of negative IRSR[9].

Figure 1.2 below uses the ACIL Allen data to show the ratio of positive IRSR allocated to each region to negative IRSR under the different approaches. Under the AEMO approach the ratio of positive to negative is most stable and uniform across the three regions and positive residues are always well in surplus (10x) of negative residues. Applying the AEMC's by region demand model to both negative IRSR and SRA proceeds would likewise provide for a stable and uniform ratio across the regions.

[7] Net positive – spring washer effect while maximise the trade between the three regions. Net negative – occurring due to the existence of intra-regional constraints, generator bidding and local mispricing.
[8] Appendix 2, explanation of AEMO's proposed reallocation - https://www.aemc.gov.au/sites/default/files/2024-09/20240904%20AEMO%20submission%20Inter-regional%20settlement%20residue%20arrangements%20for%20transmission%20loops%20%28002%29.pdf
[9] Assuming equitable treatment within the SRA

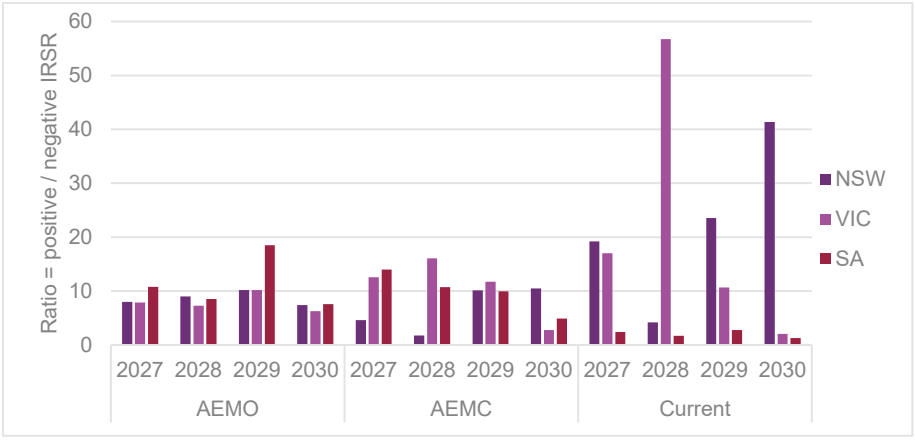

Figure 1.2: Ratio between positive and negative IRSR by year and region under each approach

1.5 Negative residues caused by intra-regional constraints (aggregate loop is in deficit)

AEMO cautions that while recommending the draft Rule to reallocate all negative IRSR accrued between VIC, NSW, and SA[10], the draft determination does not discuss that this will also reallocate non-spring washer negative IRSR, i.e., negative IRSR caused by radial intra-regional congestion, generator bidding and constraints. It may be beneficial for the AEMC to clarify whether this was by design or an unintended consequence of the draft rule.

As discussed in Section 1.2 above, negative residues caused by radial intra-regional congestion are material in the NEM today. They are unlikely to be removed with the introduction of PEC, noting that although AEMO seeks to clamp them, there are still a material number accruing particularly in VIC (shown in Figure 1.3 below).

The rule change proposal sought to align the costs of spring washer pricing effect negative IRSR with the dynamics of the transmission loop, thus the methodology would only be applied where the aggregate loop is in surplus (net positive). In contrast, the AEMC's preferred allocation approach by region demand applies to all negative IRSR accrued between the three regions. This means that negative IRSR due to radial intra-regional congestion, similar to those seen today, will likewise be distributed between the three regions based on regional demand. Given the current location of constraints and generator congestion in the network, this would result in a material shift of funding for radial intra-regional congestion negative IRSR away from VIC and towards NSW. This is shown in Figure 1.3 below, where the cost of VIC negative residues (light purple bar) would be spread to NSW and SA with the majority share to NSW.

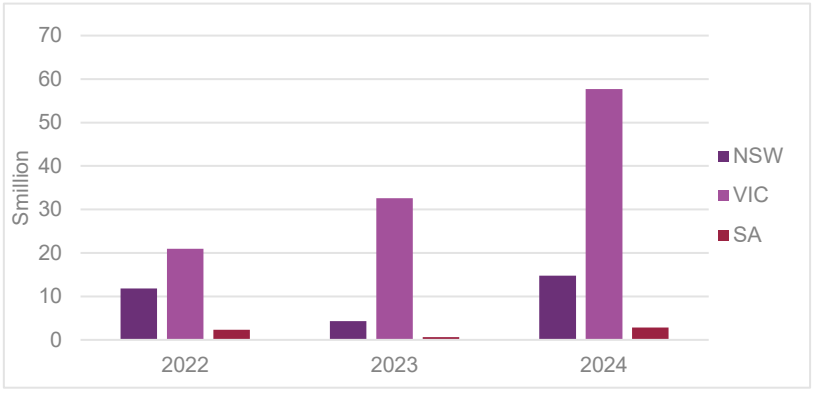

Figure 1.3: Negative residue cost allocation by region from 2022-24

While there may be benefits and drawbacks of this outcome, this is a key difference between the approaches, which AEMO considers may be an unintended consequence of the AEMC's preferred reallocation approach. Changing the

[10] Negative IRSR on NSW-QLD is excluded and will continue to be allocated to the importing region.

arrangements for negative IRSR caused by radial intraregional congestion may also be considered as broadening the scope of the rule change which was to only structure arrangements to deal with new spring washer negative IRSR occurring due to the existence of the transmission loop. Consideration of the appropriate cost recovery for negative IRSR caused by radial intra-regional congestion is a different dynamic and could also open questions as to whether the arrangements should be applied to negative IRSR occurring on NSW-QLD.

1.6 Separate review of hedging options for positive and negative IRSR

Section 4 of the draft determination discusses arrangements for the hedging of positive and negative IRSR and recommends an AEMC review of SRA arrangements in 2026. AEMO is supportive of this review and agrees that the establishment of the transmission loop will have a significant impact of the nature of SRD distributions (positive IRSR). This warrants further consideration as to the continued usefulness of SRD units as an interregional price hedge and to deliver against the objectives of enhancing competition and efficiency by promoting interregional trade.[11]

The purchasing of SRA units is highly speculative due to a range of possible outcomes and market uncertainties that affect the price difference and magnitude of flows between regions. In developing the rule change, AEMO considered whether negative IRSR should be first deducted from IRSR for distribution to unit holders, however following consultation with stakeholders, ultimately prioritised not introducing an additional speculative variable, which could impact the unit hedging values.

Page 40-41 of the draft determination counters this recommendation to some extent by stating:

- the objective of a risk management instrument (such as the SRD) is to minimise profit volatility, not maximise revenue or profit; and
- this may be better achieved by deducting negative IRSR from SRA units because in addition to hedging interregional price risk for unit holders this approach also shifts exposure and removes IRSR risk for consumers[12].

It is important to note the role of SRD units in representing exposure to real physical flows and the resulting price differentials. Reducing the value of SRA payouts will not simply minimise profit volatility but also weaken the relationship between SRD units and wholesale market exposure. The resulting reduction in payouts available under the SRA may then decrease the opportunity for interregional hedging and participation in interregional trade.

The AEMC further questions this recommendation by describing a concern that there is no mechanism for consumers to manage or 'hedge' their exposure to negative IRSR payments or risk, and that there may be a need for the sale of a negative IRSR hedge product. AEMO's initial thoughts on some of the initial positions from the draft determination (bold below) are as follows:

- **Consumers are willing to be paid upfront payments to forego variable positive IRSR** – this is not assumed given the design of the SRA. The objective of the existing SRD units largely is focused on its value as a hedging product in a way that is consistent with the auctioning of financial transmission rights that is standard practice is nodal markets. The objective and design of the SRD was not as a function to smooth the cash flow to TNSPs and consumers.

[11] NER 3.18.3 (b)

[12] AEMC, Draft Determination, pp. 40-41

- **Consumers are willing to make fixed upfront payments to avoid variable negative IRSR** – this concept requires further investigation; however, it should be noted that consumers are not exposed to variable negative IRSR. TNSPs 'hedge' negative IRSR on behalf of consumer via smoothing through network tariffs.
- **Market participants may be willing to receive a fixed upfront payment to be exposed to negative IRSR** – it is not immediately clear why a participant may be willing to sell a hedging product in return for taking on negative IRSR exposure. Unless there is a significant premium attached to the product – which would in turn reduce the usefulness of this product for consumers – market participants.
- **It is not immediately clear that current hedging arrangements are not providing value to consumers** – the draft determination references SRA proceeds as lower than actual positive residues however it does not consider what consumer prices may have been enabled by the purchasing of SRA units. AEMO considers this worthwhile of further investigation in the proposed review.

Overall, AEMO is supportive of the AEMC's proposal to review the SRA and assess the effectiveness of interregional hedging products in the NEM. However, given internetwork testing of PEC is due to commence in October 2026[13], AEMO suggests conducting the review later than proposed to allow time to assess the dynamics and IRSR outcomes of the PEC transmission loop flows.

Part 2 – Comments on the rule drafting

This section provides comments on the draft Rule amendments. These comments are provided with a view to make the policy intent of the draft Rule work in practice. AEMO is concerned that the current drafting is complex to follow and may be subject to interpretation that is different from the policy intent. AEMO considers a large part of the complexity is driven by the confusion between references to IRSR allocations in across clauses 3.6.5 and 3.18. AEMO welcomes the opportunity to work with the AEMC to ensure rules drafting is efficient and removes risk of misinterpretation.

Draft Rule	Purpose	Comment
3.6.5(a)	Define the importing region to apply within a loop.	This definition may be interpreted as aggregating all adjacent regions (i.e., the NEM) and nominating the single highest importing region, as there is no specific reference to an importing region with respect to the transfer of electricity between only two regions. The inclusion of "two" would eliminate the other potential interpretation.
3.6.5 (b)	Identify how CNSPs pay for negative settlement residues.	We are concerned about the interpretation and practical application of clauses 3.6.5 (b) and 3.18.1A. 3.6.5 (b) defines portions of interregional settlements residues then sends them to 3.18 for allocation, including the new allocation methodology for negative residues. 3.6.5(b)(4) is confusing in that it says that it deals with "the remaining settlements residue after applying the principles in subparagraphs (1), (2) and (3)". There is no remaining IRSR other than IRSR that has been sent to 3.18.1A that may be back in 3.6.5 for distribution and recovery from a CNSP. It is unclear

[13] Energy Connect Update accessed via https://www.transgrid.com.au/media-publications/news-articles/energyconnect-update/

Draft Rule	Purpose	Comment
		how the allocations work in this structure and risks alternative interpretations under the rules. We believe much of the confusions surrounding the allocation of residues across 3.6.5 and 3.18A may be resolved by retaining the distribution of settlement residues in 3.6.5 only. 3.18 would then remain exclusively for settlement residues distributed under the SRA. An example of drafting this was included in the drafting provided in AEMO's rule change proposal.
3.18.1A	Identify who pays for settlements residues. This clause provides the allocation of settlements residue for positive residues under the SRA and negative residues by the new allocation methodology.	As per the above, it is not clear why the "distribution and recovery of settlements residue allocated to directional interconnectors" is included in 3.18A which details the arrangements for the settlement residue auction. We think it is clearer if 3.18.1A remained in 3.6.5. By saying "AEMO must allocate settlements residue to directional interconnectors…" in 3.18.1A (b) this may suggest that AEMO must – and its methodology must reflect – the allocation of all settlements residue to directional interconnectors. This conflicts with the new methodology for the allocation of negative residues.
3.18.4(a2)	AEMO to deduct (by way of set off) relevant liability from amounts distributed to CNSPs.	This drafting works assuming the AEMC removes the existing references in the drafting to "principles" in 3.6.5(b) and (d) so the amounts set-off are those for which recovery is actually enabled under these two rules and not for recovery under the "principles" in these rules (one of which is amounts continue to recoverable under 5.7.7). AEMO cannot currently set-off 5.7.7 amounts under the rules and the drafting should not make this ambiguous. The AEMC may also need to consider whether the inclusion of (a2) changes the effect of 6A.23.3 (b) which refers to amounts 'payable' under (a2) which now includes this set-off clause.
6A.23.3(e)(2)	Define adjustments to the pre-adjusted non-locational component of the ASRR.	As per the above comments, this retains confusion around 3.18.1A and 3.6.5(b)(4) with reference to recovery across both clauses.
Glossary, regulated interconnector	Define regulated interconnector	By listing a proposed interconnector in a cost allocation agreement (defined as *specified interconnector* in (b)) it means such an agreement appears to automatically make the interconnector a regulated interconnector without any involvement from AEMO and with the asset even existing to transfer power.

Draft Rule	Purpose	Comment
		(c)(2) includes a risk that AEMO could unilaterally 'deregulate' an interconnector within the meaning to Chapter 3 by removing it from the dispatch algorithm. (c) concern regarding the use of 'actionable ISP projects'. Not all interconnectors may be ISP projects, and this change seems unnecessary to the definition.