

Directions paper

National Electricity Amendment
(Inter-regional settlements residue
arrangements for transmission loops)
Rule 2025

Proponent

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About the AEMC

The AEMC reports to the energy ministers. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the energy ministers.

Acknowledgement of Country

The AEMC acknowledges and shows respect for the traditional custodians of the many different lands across Australia on which we all live and work. We pay respect to all Elders past and present and the continuing connection of Aboriginal and Torres Strait Islander peoples to Country. The AEMC office is located on the land traditionally owned by the Gadigal people of the Eora nation.

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Summary

- 1 This paper seeks stakeholder feedback on a revised policy direction and indicative rule drafting, in relation to the rule change request submitted by the Australian Energy Market Operator (AEMO) on allocating inter-regional settlements residue (IRSR) in transmission loops. The revised policy direction has been informed by further analysis and stakeholder feedback to our draft determination, released on 12 December 2024.
- 2 We are working towards a final determination in September 2025, ahead of AEMO's integration of Project EnergyConnect Stage 2 (PEC) into the National Electricity Market (NEM).
- 3 We are seeking feedback on the policy proposals outlined in this paper, and the accompanying indicative rule drafting, **by Thursday, 10 July 2025**.

We are proposing a 'netting off' approach for IRSR in transmission loops

- 4 The Commission is proposing a 'netting off' approach for allocating positive and negative IRSR in transmission loops. We consider this would best promote the long term interests of consumers compared to other options. Under a netting off approach, negative IRSR is deducted from positive IRSR before positive IRSR is paid out to settlements residue distribution (SRD) unit holders.

IRSR behaves differently in transmission loops

- 5 IRSR arises in the NEM when interconnectors transfer electricity between two regions that have a price separation - that is, when two interconnected regions have different regional reference prices. IRSR is the surplus or deficit arising in settlement when there are different prices in two regions, and energy is flowing between them. It can be positive or negative. AEMO – which settles all market customers and generators – must allocate or recover IRSR from some party or parties.
- 6 Under the current arrangements for radial interconnectors, positive IRSR is allocated to SRD unit holders and negative IRSR is recovered from the Co-ordinating Network Service Provider (CNSP) in the importing region (and passed through to consumers via transmission use of system (TUOS) charges). The CNSP is the Transmission Network Service Provider (TNSP) responsible for coordinating transmission pricing for a region.
- 7 The PEC interconnector, combined with existing interconnectors, will create the first transmission loop between NSW, SA and Victoria. Negative IRSR on individual arms of the transmission loop is expected to be higher and more variable than it is in today's NEM. This negative IRSR would be a normal part of efficient loop operation and would only be 'clamped' when net loop IRSR is negative. Clamping is AEMO's process for limiting negative IRSR by constraining interconnector flows.
- 8 The current IRSR allocation method – if applied to the looped interconnectors – would result in:
 - high risk for consumers themselves, who ultimately face the negative IRSR, and
 - high cash flow risk to CNSPs, the cost of which is ultimately borne by consumers.

This rule change addresses the problem of how to manage inter-regional price risk in transmission loops

- 9 In this rule change, we are looking for the best way to manage the risks associated with negative (and positive) IRSR - thus achieving the best outcomes for consumers. Larger and more frequent negative IRSR on individual arms of the loop will be unavoidable due to the physics of the loop and the planned clamping approach, discussed in the body of this paper. We are looking for the party best placed to manage the impact of negative IRSR in the loop.

The draft rule may not adequately address the risk of negative IRSR for consumers

- 10 In the draft determination, we proposed to mitigate this risk by sharing negative IRSR for the looped interconnectors between the looped regions. The draft rule would have maintained the separate treatment of positive and negative IRSR, with positives being allocated via the Settlements Residue Auction (SRA) and negatives being recovered from CNSPs.
- 11 While most market participants supported the draft rule as a means to maintain the value of SRD units as hedging instruments once the loop commences operation, CNSPs and some consumer groups noted that the draft rule would still result in significant risks.
- 12 Based on this feedback and our further analysis, we now consider the draft determination is not the appropriate approach to manage the risk of negative IRSR arising on a loop.

We consider that netting off best manages the risk of negative IRSR

- 13 Under our proposed netting off approach, SRD unit payouts will reflect the interaction between different arms of the loop, which market participants will need to manage, rather than having CNSPs (on behalf of consumers), AEMO, market customers, or another party manage cash flow risks that arise under non-netted approaches.
- 14 We consider that this approach would achieve the best outcomes for consumers, taking into account the costs, benefits and risks. The Commission's further analysis, alongside stakeholder feedback, has informed this view. Market participants have appropriate expertise and tools at their disposal to manage inter-regional price risk, such as different types of contracts and hedging products. They could continue to use netted-off SRD units as part of inter-regional hedging strategies, because the proposed design would make all net positive IRSR in the transmission loop available to the market.
- 15 We considered in detail alternative options to netting. These were establishing an AEMO holding fund, recovering negative IRSR from market customers, scaling the amount of SRD units sold, clamping in net positive cases, representing PEC as a 'micro-slice', and maintaining the existing arrangements. We consider that none of these options adequately manage the risk for consumers without significant trade-offs, including market intervention, which we consider will ultimately not promote the National Electricity Objective (NEO).

We are seeking stakeholder feedback on how the proposed netting off rule would operate

- 16 There are various ways in which netting off can be applied. Our proposed approach, discussed in detail in this paper, is:
- when loop IRSR is net positive, negative IRSR in a dispatch interval would be deducted from the positive IRSR that arises on the other arms, in proportion to the size of the positive IRSR on each arm. This netted IRSR would then be allocated to SRD unit holders.
 - when loop IRSR is net negative, any positive IRSR on any arm would be used to reduce negative IRSR in that dispatch interval, and the remaining negative IRSR would be allocated to CNSPs who would in turn recover it from consumers via TUOS.
- 17 AEMO intends to clamp the loop interconnectors in net negative cases, mitigating the risk of extreme net negatives. Furthermore, under our preferred approach, SRD unit payouts would never be negative. SRA proceeds and unsold SRD units would continue to be allocated to CNSPs in the importing region (discussed in further detail below).
- 18 Rules for the loop would take effect when the loop begins operating, triggered by a transitional

provision in the indicative rule drafting which defines a 'PEC operational date'. The drafting also includes additional reporting and approaches to streamline AEMO's implementation, given there would be relatively limited time to implement the proposed netting approach.

Our approach to netting off was guided by our assessment criteria

- 19 For this rule change process, we are using three assessment criteria to assess whether the proposed rule change, no change to the rules (business-as-usual), or other viable, rule-based options are likely to better contribute to achieving the NEO. These are:
- Outcomes for consumers
 - Principles of market efficiency
 - Principles of good regulatory practice.
- 20 Based on these, our approach to netting in **net positive cases** is preferred because:
- **It is more predictable and simple to implement compared to other options.** Netting off in proportion to the positive IRSR around the loop would retain the relative magnitudes of the SRD unit payouts between arms of the loop - that is, SRD units for an arm accruing more positive IRSR would still pay out relatively more for that interval compared to units on an arm accruing less positive IRSR.
 - **It maintains the SRD unit as an inter-regional hedging tool.** SRD units support inter-regional hedging. Netting off in proportion to the positive IRSR around the loop retains a correlation between payouts on each arm of the loop with the price separation between regions. While netting off IRSR around the loop would change the way that SRA participants calculate risks (compared with radial interconnectors), we consider the simplicity of this netting approach would likely better support the continued use of these tools as inter-regional hedges than more complex options.
 - **It adequately manages risks to consumers, compared with other options.** In line with our rationale for netting off (discussed above), subtracting negative IRSR around the loop in proportion to positive IRSR achieves the objective of reducing risks to consumers, as there would be no residual IRSR for CNSPs to manage in net positive cases.
- 21 The Commission also prefers to net off in **net negative cases** because:
- **It avoids the potential for gaming.** Not netting off in net negative cases could create an incentive for generators that hold SRD units to force the net loop IRSR negative in the hope of receiving un-netted SRD unit payouts.
 - **It promotes stability by providing continuity across net positive and net negative cases.** Failing to net off in net negative cases would lead to a discontinuity between net positive and net negative cases. That is, there would be an abrupt change in SRD unit payouts and the amount owed by CNSPs as the net loop IRSR passes through zero.¹ This would introduce greater volatility between negative IRSR outcomes, which CNSPs would pass on to consumers through larger year-on-year changes to TUOS.

We are seeking stakeholder feedback on the approach to allocating cash flows to CNSPs

- 22 We are also seeking feedback on the approach to allocating cash flows relating to SRA proceeds, any unsold SRD units and net negative IRSR amongst CNSPs for the loop.

¹ For the avoidance of doubt, our proposed approach would also net off in a 'net zero' case (i.e. the total IRSR around the loop is zero).

- 23 We consider that the NEO is promoted by:
- allocating SRA proceeds and unsold SRD units to CNSPs for the importing region, and
 - allocating net negative IRSR to CNSPs in each region in proportion to regional demand. For the purposes of our proposal, 'regional demand' means each region's total annual electricity consumption over the prior year.
- 24 This approach is essentially the same as the draft rule. Stakeholders had mixed views on this approach in response to the draft determination, noting that the approach in the draft determination was driven by slightly different factors to what is contemplated in this directions paper (that is, the risks of large and unpredictable negative IRSR - which would be controlled by our proposed netting approach, if implemented).

Our proposed approach would balance uncertain outcomes with known practical complexities

- 25 We consider that net negative IRSR should be shared between regions based on regional demand to manage the potential for material net negative IRSR. Net negative IRSR may be material, despite netting and clamping, so a decision to allocate to the importing region (as is the status quo) is not necessarily justified compared with sharing the costs proportionally to regional demand.
- 26 Theoretically, we could also allocate SRA proceeds and unsold SRD units in the same way (that is, by sharing them between regions based on regional demand). However, we understand that allocating SRA proceeds and unsold SRD units by regional demand would require complex changes to AEMO's SRA systems. This may incur costs and potentially delay other important systems updates for what we consider is an uncertain benefit, as it is difficult to make assumptions about where the costs and benefits fall without seeing the loop in operation.

We are seeking stakeholder feedback on the need for, and timing of, a future review

- 27 This rule change – and our proposed netting off policy – is focused specifically on the arrangements for allocating IRSR on regionally-looped interconnectors. It has not sought to consider or address other possible issues relating to IRSR arrangements, SRAs or SRD units.
- 28 We consider there may be a need to review IRSR arrangements to determine whether they best meet the needs of both the current and future NEM.
- Our draft determination highlighted a significant gap between the SRA proceeds paid to consumers and the SRD unit payouts received by unit holders. Recent quarterly SRA results show that this trend is generally continuing.
 - We remain concerned that the SRA framework is not working as effectively as it could in the long-term interests of consumers, and consider that a future review could review this framework across both radial interconnectors and transmission loops.
- 29 A future review could examine broader issues that cannot be addressed in this rule change. This may include:
- reviewing the allocation of all negative IRSR
 - re-examining the allocation method for SRA proceeds and unsold SRD units
 - considering the role of SRD units and other financial instruments in a future NEM.
- 30 We are interested in stakeholder feedback on the need for, scope of, and timing of, a review.

Submissions are due by Thursday, 10 July 2025, with other engagement opportunities to follow

- 31 Written submissions responding to this consultation paper must be lodged with the Commission by **Thursday, 10 July 2025**, via the Commission's website, www.aemc.gov.au.
- 32 In providing feedback to this paper, we are particularly interested in any data or evidence stakeholders have to support views on which option results in the lowest costs for consumers. We are also interested in your feedback on the proposed design of netting off and IRSR allocation and how this is implemented into the Rules.
- 33 We will consider feedback to this paper in making our final determination, which is due by 25 September 2025 to align with AEMO's timing to implement PEC into the NEM.

How to make a submission

We encourage you to make a submission

Stakeholders can help shape the solutions by participating in the rule change process. Engaging with stakeholders helps us understand the potential impacts of our decisions and, in so doing, contributes to well-informed, high quality rule changes.

We have included questions in each chapter to guide feedback, and the full list of questions is above. However, you are welcome to provide feedback on any additional matters that may assist the Commission in making its decision.

How to make a written submission

Due date: Written submissions responding to this consultation paper must be lodged with Commission by 10 July 2025.

How to make a submission: Go to the Commission's website, www.aemc.gov.au, find the "lodge a submission" function under the "Contact Us" tab, and select the project reference code ERC0386.²

You may, but are not required to, use the stakeholder submission form published with this consultation paper.

Tips for making submissions are available on our website.³

Publication: The Commission publishes submissions on its website. However, we will not publish parts of a submission that we agree are confidential, or that we consider inappropriate (for example offensive or defamatory content, or content that is likely to infringe intellectual property rights).⁴

Other opportunities for engagement

There are other opportunities for you to engage with us, such as one-on-one discussions. Please contact the project team if you are interested in a briefing on the directions paper.

For more information, you can contact us

Please contact the project leader with questions or feedback at any stage.

² If you are not able to lodge a submission online, please contact us and we will provide instructions for alternative methods to lodge the submission.

³ See: <https://www.aemc.gov.au/our-work/changing-energy-rules-unique-process/making-rule-change-request/submission-tips>

⁴ Further information is available here: <https://www.aemc.gov.au/contact-us/lodge-submission>

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1 We are consulting on a revised proposal for allocating inter-regional settlements residue in transmission loops

This paper seeks stakeholder feedback on a revised policy direction and indicative rule drafting, in relation to the rule change request submitted by the Australian Energy Market Operator (AEMO) for allocating inter-regional settlements residue (IRSR) in transmission loops. The rule change request is [available here](#).

We are working towards a final determination in September 2025 to enable the updated arrangements to be known as soon as possible, ahead of AEMO's integration of Project EnergyConnect Stage 2 (PEC) into the National Electricity Market (NEM).

For more detailed information on:

- our revised policy direction, refer to chapter 2,
- how the proposed approach would allocate IRSR to SRD unit holders, refer to chapter 3,
- our proposed allocation of the cash flows resulting from IRSR around the loop to CNSPs, refer to chapter 4,
- how our proposed approach promotes the National Electricity Objective (NEO), refer to chapter 5,
- why there may still be a need to conduct a future review of IRSR arrangements, refer to chapter 6.

1.1 Our draft determination allocated negative IRSR in transmission loops by regional demand

On 12 December 2024, the Commission published the [Inter-regional settlements residue arrangements for transmission loops draft determination](#), in response to a rule change requested by AEMO. The rule change request proposed a new way to allocate negative IRSR in transmission loops. This is required because once PEC is integrated into the NEM a 'loop' will be created. The current National Electricity Rules (NER) arrangements do not contemplate loops existing within the NEM and so change is required.

1.1.1 IRSR arises in the NEM due to price separation between regions

The NEM is divided into five regions, approximately equivalent to the states of Queensland, New South Wales (comprising ACT), Victoria, South Australia and Tasmania, each with its own regional reference price (RRP).⁵ IRSR arises when interconnectors transfer electricity between two regions that have different prices - this is otherwise known as 'price separation'. IRSR is the surplus or deficit arising in settlement when there are different prices in two regions, and energy is flowing between them. It can be positive or negative. AEMO – which settles all market customers and generators – must allocate IRSR to, or recover IRSR from, some party or parties.⁶

5 All wholesale market participants located in a region transact at that region's RRP. Each market participant transacts at its RRP multiplied by a marginal loss factor which depends on market participants' or its customers' specific locations within a region.

6 If the direction of the flow of electricity along the interconnector between two regions is from the lower-priced region to the higher-priced region, then market customers are paying more than generators are being paid for the electricity flowing between the regions, and the IRSR is positive. This is known as a 'pro-price' flow between regions. If the flow is 'counter-price' (from a higher priced region to a lower priced region), generators are being paid more for the electricity flowing on the interconnector than market customers are paying, and the IRSR is negative.

Negative IRSR is currently allocated to the ‘appropriate Transmission Network Service Provider’ (TNSP).⁷ The Rules specify that this is the Co-ordinating Network Service Provider (CNSP) for the importing region. AEMO is the CNSP for the Victorian region while Transgrid and ElectraNet are the CNSPs for NSW and SA respectively. Otherwise, if there is more than one TNSP in a NEM region, the TNSPs appoint a CNSP for the region, which is responsible for coordinating transmission pricing for the region.⁸ CNSPs pass the negative IRSR to consumers through increased transmission use of system (TUOS) charges.

Positive IRSR is distributed via the settlements residue auction (SRA). SRA participants, including retailers and generators, can bid to purchase settlements residue distribution (SRD) units. SRD unit holders pay a fixed unit price (determined by the auction) in exchange for receiving a share of the variable positive IRSR. The auction proceeds for the sale of SRD units are allocated to the importing CNSPs and passed through to consumers via reduced TUOS charges.

AEMO currently limits negative IRSR by imposing dispatch constraints when negative IRSR is forecast to reach \$100,000 per instance of negative IRSR arising - a process known as ‘clamping’.⁹ Clamping constraints work by forcing the dispatch engine to limit inter-regional flows, which means selecting a higher-cost combination of generation (based on generators’ bids). This recognises that, in the absence of a transmission loop, counter-price flows and negative IRSR are typically associated with inefficient dispatch outcomes.¹⁰ If not clamped, negative IRSR could result in large and unpredictable costs to consumers and CNSPs, from whom it would be recovered. In effect, clamping addresses the financial problem of negative IRSR through a technical (and partly manual) solution.

1.1.2 Negative IRSR is expected to be more frequent in transmission loops

A transmission loop will be formed in the NEM when PEC becomes operational. PEC - with stage 2 currently under construction - will be the first interconnector between NSW and SA. Along with the existing Heywood (VIC-SA), VNI and Murraylink (NSW-VIC) interconnectors, PEC will create the first inter-regional transmission loop in the NEM.

In inter-regional transmission loops, counter-price flows and negative IRSR on individual interconnectors are expected to arise more frequently than they do for ‘radial’ interconnectors (that is, the existing regulated interconnectors that link two regions without forming part of an inter-regional transmission loop). This is due to the way that power flows in a transmission loop, and how this interacts with the NEM’s regional pricing model.¹¹ Specifically, negative IRSR may arise on one or two ‘arms’ of the loop between NSW, SA and Victoria, even when the total, or net, IRSR for all three arms is positive. This is due to the ‘spring washer effect’ which occurs in

⁷ Clause 3.6.5(a)(4) NER.

⁸ See clause 6A.29.1 NER. This will be amended on 3 July 2025 on commencement of Schedule 1 of the *National Electricity Amendment (Providing flexibility in the allocation of interconnector costs)* Rule 2024 No. 18.

⁹ The \$100,000 threshold applies per instance rather than over a defined time window. It is reset to zero after each application of clamping, and negative residues can accumulate from that point onwards. The NER does not specify detailed requirements for AEMO’s clamping procedures (see NER clauses 3.8.1(b)(11) and 3.8.10(5)). NER clause 3.8.10(c)(5) requires AEMO to set out its approach to clamping in its network constraint formulation guidelines.

For an exact description of the circumstances in which AEMO constrains dispatch to limit negative IRSR, and how, see: AEMO, Automation of Negative Residue Management, aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Dispatch/Policy_and_Process/2018/Brief-on-Automation-of-Negative-Residue-Management.pdf.

See also AEMO, Constraint Formulation Guidelines, aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/congestion-information-resource.

See also AEMO, SO_OP_3705 Dispatch procedure, pp. 37-38, aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/power-system-operation/power-system-operating-procedures.

¹⁰ Excessive negative IRSR is often the inefficient result of disorderly bidding and unnecessarily increases costs for consumers.

¹¹ AEMC, *Inter-regional settlements residue arrangements for transmission loops*, Consultation paper, section 1.1.2, www.aemc.gov.au/sites/default/files/2024-08/ERC0386%20Consultation%20paper%20-%20Inter-regional%20settlements%20residue%20arrangements%20for%20transmission%20loops.pdf.

transmission loops and is a normal outcome of efficient dispatch.¹² Modelling undertaken by AEMO suggests this scenario will occur frequently for the PEC transmission loop.¹³ The behaviour of IRSR in transmission loops is discussed further in section 2.1.

1.1.3 AEMO's rule change request sought to align costs with beneficiaries

In a single dispatch interval, we expect that it will be a relatively common outcome that some arms of the loop will generate positive IRSR while others generate negative IRSR. As a result, sometimes the overall 'net IRSR' (the sum of all IRSR on all arms) of the loop will be positive, and at other times negative. This is explained diagrammatically in section 3.1. In this paper we refer to these outcomes as 'net positive cases' and 'net negative cases' respectively.

AEMO intends not to clamp negative IRSR on individual arms of the loop in net positive cases. Clamping in net positive cases would interfere with efficient dispatch and lead to under-utilisation of the looped interconnectors, ultimately increasing costs for consumers. AEMO would, however, clamp the looped interconnectors in net negative cases.¹⁴ The Commission agrees with AEMO's proposed approach, noting it can be implemented through procedure and guideline changes, with changes to the NER not required.

AEMO's rule change request proposed to reallocate negative IRSR accruing on an arm of a loop in net positive cases to the interconnectors accruing positive IRSR, then recover it from the importing CNSPs for those positive arms.¹⁵ AEMO considered this would align costs with beneficiaries, as the regions accruing positive IRSR would be better placed to pay the negative IRSR.

AEMO did not propose any changes to how positive IRSR is allocated or to the SRA arrangements.

1.1.4 The Commission made a more preferable draft rule that shared negative IRSR among CNSPs by regional demand

Our draft determination recognised that negative IRSR accruing on an arm of a loop is expected to occur more often in transmission loops and may be large and unpredictable. It presented a theoretical example illustrating that up to \$100 million of negative IRSR could accrue in a single week (under certain assumptions), and determined that the risk of this cost being assigned to a single region was too high.

As such, the Commission made a more preferable draft rule that we considered would achieve better outcomes for consumers, by sharing negative IRSR across looped regions' CNSPs in both net positive and net negative cases. By so doing, we sought to manage the risk and provide more stable and cost-reflective outcomes.

The draft rule had three key policy positions:

- sharing negative IRSR accruing on the arms of the loop by regional demand,
- not restricting extreme negative IRSR in net positive cases (for example, by clamping),
- retaining the existing arrangements for SRAs and the allocation of positive IRSR.

The draft rule allocated all negative IRSR in transmission loops to CNSPs according to their 'regional demand' share of electrical energy over the prior year. This approach sought to mitigate the risk to consumers and CNSPs of large, unpredictable negative IRSR, and reduce bill volatility

¹² See Box 8 in the draft determination, p.54, for a detailed explanation of the spring washer effect.

¹³ ACIL Allen, [Modelling the settlement effects of PEC](#), July 2023, p.i-ii.

¹⁴ AEMO, [Draft High Level Impact Assessment - PEC Market Integration](#), December 2024, p.11.

¹⁵ AEMO, Integration of PEC into the NEM, rule change request, February 2024, www.aemc.gov.au/sites/default/files/2024-03/New%20rule%20change%20proposal%20-%20AEMO%20-%20Integration%20of%20Project%20EnergyConnect%20into%20the%20NEM%20-%2020240223.pdf.

and share the maximum potential cost of negative IRSR for a consumer in any region. The Commission also considered that AEMO's existing clamping arrangements should continue for cases of net negative IRSR in transmission loops, consistent with AEMO's rule change proposal.

The draft rule retained the existing arrangements for allocating positive IRSR to SRD unit holders. These are purchased through SRAs with the proceeds of the auctions going to the CNSPs of the importing region. This approach was also consistent with AEMO's rule change proposal.

Although the draft determination retained the current arrangements for positive IRSR, the Commission questioned the extent to which consumers were benefiting from the broader SRA arrangements. The Commission stated its intention to review the SRA arrangements in 2025-26, subject to the outcomes of the AEMC's annual prioritisation process.

The draft rule supported AEMO's position not to clamp in dispatch intervals where the IRSR is net positive, recognising that this loop outcome is likely to support overall efficient outcomes. The Commission agreed with this approach, noting AEMO can implement it via procedure updates, with no need for a rule change, as described above. The Commission understands that AEMO still intends to approach clamping in this way.

1.2 We have consulted throughout this rule change

Prior to submitting its rule change request, AEMO undertook two rounds of formal consultation with industry on the preferred approach for integrating PEC into the NEM.¹⁶ Our work drew from and built on AEMO's prior consultation.

We released our [consultation paper](#) in August 2024, where we supported retaining the status quo arrangements for negative IRSR in transmission loops.¹⁷

On further analysis and stakeholder feedback, we determined that the potential impacts to consumers of large, unpredictable negative IRSR could cause extreme outcomes. We decided to share this risk between looped regions in the draft determination, which was published in December 2024. Stakeholders provided mixed feedback on our draft determination, with varying degrees of support for its distinct components. This feedback is discussed further below. We held a technical working group in April 2025 to discuss the issues with the draft rule and a possible alternative approach of netting off IRSR.¹⁸

1.2.1 TNSPs considered that the draft rule does not adequately manage risks to consumers

CNSPs provided feedback and evidence of the significant and unmitigated risk to their cash flow - and the implications for consumers - arising from the risk of potentially extreme negative IRSR. They noted that the draft rule's approach of sharing negative IRSR by regional demand between the looped regions would somewhat mitigate the risk by sharing it, but would not sufficiently address its potentially large magnitude.

Our further analysis confirmed that CNSPs are not well suited to managing such high risk, as they would need to have significant funds readily available to cover a large negative IRSR event, regardless of its probability. This would incur costs that consumers would ultimately be required

16 AEMO, PEC Market Integration Papers, aemo.com.au/consultations/current-and-closed-consultations/project-energy-connect-market-integration-paper.

17 AEMC, IRSR arrangements for transmission loops, [Consultation paper](#).

18 AEMC, Inter-regional settlements residue arrangements for transmission loops, Technical working group, www.aemc.gov.au/sites/default/files/2025-04/ERC0386%20TWG%20slides%20-%2015%20April%202025_2.pdf.

to pay.¹⁹ On top of this, consumers would also pay the direct cost of any large negative IRSR that accrued.²⁰

Neither consumers nor CNSPs can manage the risk of extreme negative IRSR through hedging. CNSPs are not wholesale market participants. Managing market risk - such as the risk of negative IRSR - is outside their general remit. Consumers are also typically not wholesale market participants and many do not actively manage their electricity pricing risks, other than through their interactions with retailers and their retail products.

CNSPs instead favoured a 'netting off' approach that would see negative IRSR deducted from positive IRSR before positive IRSR is paid out to SRD unit holders. They considered that SRD units would still be liquid and competitive under a netted-off approach.²¹

1.2.2 Market participants considered it important to maintain the value of SRD units to facilitate hedging

Market participants' feedback on our draft determination remained consistent with feedback throughout this rule change and AEMO's consultation process.²² There was strong support for retaining the existing positive IRSR arrangements to preserve the value of SRD units.²³ Stakeholders consider that this lowers a range of consumer costs by providing more inter-regional trading options.²⁴ Some stakeholders agreed that sharing negative IRSR by regional demand had the potential to manage consumer risk.²⁵ Origin Energy cautioned against the reallocation method being influenced by CNSPs' potential cash flow issues, arguing these are better addressed "through adjustments to the economic framework for transmission network businesses".²⁶

1.2.3 Consumer groups had mixed support for our draft determination

Consumer groups had diverse views on the draft rule. The Energy Users Association of Australia (EUAA) supported the approach because it reduced a single looped region's exposure to volatile negative IRSR.²⁷ By contrast, the Justice and Equity Centre (JEC) did not support the draft rule and considered it would unreasonably impact consumers in NSW through compounding costs with the infrastructure costs.²⁸

There was also broad support from consumer groups for AEMO's intended clamping approach.²⁹

1.2.4 AEMO broadly supported the draft rule but disagreed with the rationale

AEMO supported some, but not all, components of the draft determination. It agreed that sharing by regional demand would minimise the risk of one looped region paying for large negative IRSR.³⁰ However, it noted that this allocation method would lead NSW to receive the most negative IRSR cost as NSW has the highest megawatt hour (MWh) regional demand. AEMO also remained of the

19 Submissions to the draft determination: Energy Networks Australia (ENA), p.2; Transgrid pp.1-3.

20 Submission to the draft determination, Transgrid, p.1.

21 Submission to the draft determination, Transgrid, p.4.

22 AEMO, [PEC Market Integration Papers](#).

23 Submissions to the draft determination: Australian Financial Markets Association (AFMA), p.1; Origin Energy, p.1; Stanwell, p.1.

24 Submissions to the draft determination: Origin Energy, p.1; Snowy Hydro, p.2; Stanwell, p.2.

25 Submission to the draft determination, EnergyAustralia, p.1.

26 Submission to the draft determination, Origin Energy, p.1.

27 Submission to the draft determination, EUAA, p.1.

28 Submission to the draft determination, JEC, p.1.

29 Submissions to the draft determination: EUAA, p.2; ECA, p.1.

30 Submission to the draft determination, AEMO, p.3.

view that the rule change only needs to consider negative IRSR in net positive cases - which AEMO calls 'efficient spring washer negative IRSR'.³¹

AEMO supported our decision not to recommend clamping constraints for situations where the loop produces net positive IRSR, which is consistent with its rule change proposal.

1.2.5 There was mixed support for an SRA review

We heard a range of views from stakeholders about the benefits, timing and scope of an SRA review. CNSPs generally supported the review.³² Market participants had mixed support for an SRA review, with some suggesting it should be delayed, either until after a period of PEC's operation³³ or after other significant and fundamental regulatory reviews and processes have been completed.³⁴ This would notably include waiting until the in-progress *National Electricity Market wholesale market settings review* has been completed.³⁵ See chapter 6 for more detail on a future review of IRSR arrangements.

1.3 We have revised our approach based on stakeholder feedback and our further analysis

After considering the stakeholder feedback captured in section 1.2, the Commission considers that a 'netting off' approach for allocating positive and negative IRSR accruing on the arms of a loop is the preferred option and would promote the long term interests of consumers. Under this approach, in cases where IRSR is net positive across the PEC loop, negative IRSR would be netted from positive IRSR before it is allocated to SRD holders. The Commission also considers that the NEO is promoted by allocating SRA proceeds and unsold SRD units to the importing regions, and allocating net negative IRSR to CNSPs in looped regions by regional demand. The Commission considers that these changes place the risk with the parties best able to manage it and at the lowest cost for consumers, and reflect the interconnectedness of the loop.

1.3.1 We consider that netting off best promotes the NEO

The Commission recognises that the physics of the transmission loop will result in increased negative IRSR accruing on loop interconnectors in net positive cases. The Commission remains of the view that negative IRSR in net positive loop cases should not be clamped, because it is the result of efficient dispatch, and clamping an efficient outcome would undermine the intended benefits of PEC for consumers. The Commission also recognises that the cost of managing inter-regional price separation risks will continue to flow through to consumers, regardless of whether it is through the CNSPs or another party.

The material difference between different approaches to allocating IRSR in transmission loops is in the cost of managing inter-regional price risks arising from negative IRSR and how consumers are affected by these costs (see chapter 2). The approach needs to reflect the underlying physics of the loop, given this cannot be changed.

Under the current arrangements, SRD unit holders receive all the positive benefit from price separation, while consumers bear the entire cost of any associated negative IRSR.

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

32 Submissions to the draft determination: ENA, pp.3-4; Transgrid, p.5.

33 Submissions to the draft determination: EnergyAustralia, pp.1-2; Stanwell, p.2; AGL, pp.1-2; Australian Energy Council (AEC), pp.1-2.

34 Submission to the draft determination, AGL, p.2.

35 Australian Government, Department of Climate Change, Energy, the Environment and Water, National Electricity Market wholesale market settings review, www.dcccew.gov.au/energy/markets/nem-wms-review.

The Commission considers that the best way to allocate negative ISRS accruing on an arm of a loop in net positive cases is through a 'netting off' approach (see chapter 2). We propose to net off negative ISRS in the loop from positive ISRS in the loop in proportion to the amount of positive ISRS that accrues on each of the interconnector 'arms' (see chapter 3 for full details of our approach). Netting off ISRS would apply in transmission loops only, for each trading interval, and would be designed so that SRD units do not pay out negative. SRD units would pay out the net positive amount calculated for the relevant arm of the loop.

The Commission considers that this approach best manages negative ISRS accruing on an arm of a loop in net positive cases at the lowest cost. Market participants are exposed to the risk of inter-regional price separation (which can result in losses or gains for them), have built expertise in understanding and managing these risks, and have access to (and expertise in designing and using) hedging instruments and other products to manage the risks. SRD unit payouts will reflect the net positive position on the loop and market participants can take this into account when bidding for SRD units and in their other hedging strategies. Further, because we have designed a netting off approach that does not involve negative SRD unit payouts, there would be no requirement for SRA participants to hold an additional debt facility to manage this portion of ISRS.

The Commission considers that calculating SRD unit payouts using the net positive on a transmission loop would therefore continue to support the allocation of inter-regional price separation risk to those best placed to manage it.

1.3.2 The Commission considered alternative options

The Commission recognises that the SRA framework provides benefits to consumers through facilitating inter-regional trade. The Commission acknowledges that netting off would change the payouts on SRD units in loops compared to SRD units that are not in loops. This may mean that:

- hedging strategies may need to be adjusted and this could come at a cost to consumers. However, the Commission considers that the cost of market participants managing the different characteristics of SRD units for loops is likely lower than the costs of other parties managing negative ISRS on individual arms of the loop under other options (see section 1.3.1 and chapter 2). The Commission notes that when price separation results in negative ISRS, there are market participants that receive additional profits due to their exposure to the price separation, and that these can be traded to complement the netted-off SRD units.
- auction proceeds are affected, potentially reducing payments flowing to consumers through TUOS (the effect of this would be offset, however, by lower negative ISRS flowing to consumers through TUOS).
- some cancellation and re-auctioning of units that have already been sold, noting this would be a temporary issue (see chapter 2 and chapter 3).

However, the Commission considers these impacts to be manageable and a netting off arrangement can still support inter-regional hedging and outcomes that are in the long term interests of consumers (see chapter 2).

In progressing netting off for this directions paper, the Commission considered a range of other options that sought to appropriately allocate negative ISRS in transmission loops (see section 2.5).

These other options included:

- establishing an AEMO holding fund.
- recovering negative ISRS accruing on the arms of a loop from market customers.

- ‘scaling’ the amount of SRD units sold (where the quantity of positive IRSR that is allocated through SRAs would be reduced or ‘scaled down’).
- limiting the magnitude of negative IRSR in net positive loop outcomes (for example, through clamping).
- micro-slice implementation of PEC.
- not making a rule and retaining the status quo arrangements, as discussed in our consultation paper. Further analysis in the draft determination showed the potential for extreme, unlimited negative IRSR was too high a risk not to share between looped regions.

Our further analysis established that, in determining IRSR allocation in transmission loops, we need to determine the allocation method that best manages risk for consumers. None of the above options adequately manage the risk for consumers without significant trade-offs, including market intervention, which we consider will ultimately not promote the NEO.

1.3.3 There may be a need to conduct a future review of IRSR arrangements

The Commission has previously expressed concern about the benefits to consumers of the SRA framework and SRD units.³⁶ The consultation paper and draft determination raised concerns that SRD units do not provide a hedge for consumers or market participants when IRSR is negative. It noted that this problem would increase with the commissioning of PEC, as negative IRSR is likely to become more material in the transmission loops.³⁷ The draft determination also raised concerns that the SRA payouts appear to typically and substantially exceed SRA proceeds, leading the Commission to question whether selling SRD units was providing good value for consumers.

Stakeholders provided mixed feedback to our draft determination on the need for a review of SRA arrangements, its timing and content (see section 1.2). In proposing a netting off approach, the Commission is addressing some of the matters it considered should be reviewed.

The Commission considers that a future review would still be beneficial to consider all IRSR allocation arrangements (see chapter 6). There are a number of arrangements that could be examined in this broader review:

- How to amend the SRA framework to deliver better consumer outcomes, given SRA proceeds are consistently below SRD unit payouts.
- The problem of unhedged consumer liability for negative IRSR in ‘radial interconnectors’ (that is, the current regulated interconnectors that link two regions without forming part of an inter-regional transmission loop). Radial interconnectors are not within the scope of this rule change, so this rule change only addresses this issue for the looped NEM regions.
- Whether better consumer outcomes would be achieved by allocating SRA proceeds and SRD units between all looped regions by regional demand, as opposed to the proposed importing region allocation methodology.
- Broader implementation considerations such as the functionality of the software platform by which SRAs are provided and managed.

We also acknowledge the Australian Government has engaged an independent expert panel to undertake the NEM wholesale market settings review.³⁸

36 AEMC, IRSR arrangements for transmission loops, Draft determination, Chapter 4, www.aemc.gov.au/sites/default/files/2024-12/ERC0386%20IRSR%20arrangements%20for%20transmission%20loops%20-%20Draft%20determination.pdf.

37 Ibid.

38 Australian Government, Department of Climate Change, Energy, the Environment and Water, [National Electricity Market wholesale market settings review](#).

We consider there may be a case to delay a review and are interested in stakeholder feedback on the timing and content of a future review into IRSR arrangements.

1.4 Opportunities for stakeholder engagement

The Commission has carefully considered many options before proposing a netting off approach. This paper is the next stage in our rule change process.

We are seeking feedback on the policy proposals outlined in this paper, and the accompanying indicative rule drafting, which would implement the proposed netting off approach. In providing feedback to this paper, we are particularly interested in any data or evidence stakeholders have to support views on which option results in the lowest costs for consumers. We are also interested in your feedback on the proposed design of netting off and IRSR allocation and how this is implemented into the Rules.

Submissions to this directions paper are due **Thursday, 10 July 2025**.

We will consider feedback to this paper in making our final determination. The rule change has been extended to 25 September 2025 under section 107 of the National Electricity Law (NEL).³⁹ Publishing a final determination in September 2025 aligns with AEMO's timing to implement PEC into the NEM.

Information on how to provide your submission and other opportunities for engagement is set out at the front of this document .

You can find more information on the rule change process on our website.⁴⁰

³⁹ AEMC, IRSR arrangements for transmission loops, www.aemc.gov.au/sites/default/files/2025-03/Electricity_statutory%20notice_20250320.pdf.

⁴⁰ See our website: <https://www.aemc.gov.au/our-work/changing-energy-rules>.

2 We are proposing a ‘netting off’ approach for IRSR in transmission loops

Box 1: Key points

- This rule change considers how to allocate negative IRSR in transmission loops in a way that best serves the long-term interest of consumers. Specifically, we are seeking to minimise the risk for consumers - and the cost to consumers of managing that risk.
- The PEC interconnector, combined with existing interconnectors, will create the NEM’s first transmission loop between NSW, SA and Victoria.
- Negative IRSR on individual arms of the transmission loop interconnector is expected to be higher and more volatile than it is in today’s NEM. This negative IRSR would be a normal part of efficient loop operation and would not be clamped unless the net loop IRSR is negative.
- The current IRSR allocation method – if applied to the looped interconnectors – would result in:
 - high risk for consumers themselves, who ultimately face the negative IRSR,
 - high cash flow risk to CNSPs, the cost of which is ultimately borne by consumers.
- The draft determination, which shared negative IRSR between the three CNSPs in the looped regions, failed to adequately address these problems.
- Instead, we propose to net off negative IRSR from positive IRSR before it is allocated to SRD unit holders, in case where the net loop IRSR is positive. This revised proposal:
 - addresses cash flow concerns raised by CNSPs, by allocating only net negative IRSR, which would be limited by clamping, to CNSPs,
 - allocates net positive IRSR to SRD unit holders - typically market participants,
 - enables SRD units to continue support hedging of inter-regional price risk for market participants and consumers.
- We considered alternative options apart from netting off and the draft determination. Our view is that the other options either do not sufficiently address the problems with the status quo, and/or introduce new significant problems, such as reduced dispatch efficiency.
- We welcome stakeholder views on our analysis of the problem, our netting off proposal, and the alternative options we considered.

In this chapter:

- Section 2.1 provides further context for the rule change request including the behaviour of IRSR in transmission loops and the current arrangements for IRSR.
- Section 2.2 explains the problem that the proposed rule change is trying to address.
- Section 2.3 explains the feedback we received in response to the draft determination.
- Section 2.4 explains why we consider our proposed netting off approach would address the problem we have identified.
- Section 2.5 explains the other options we considered.

2.1 IRSR behaves differently in transmission loops

As discussed in section 1.1, PEC will create the first inter-regional transmission loop in the NEM. Due to the physics of electrical circuits, the power flows - and prices - in a transmission loop are highly interdependent. Therefore, IRSR in a transmission loop behaves differently to IRSR on radial interconnectors.

Generally, the PEC transmission loop will operate as a whole to transfer electricity from lower-priced regions to higher-priced regions, broadly consistent with efficient dispatch. When this occurs, the net IRSR for the loop is positive - that is, AEMO receives more funds from load than it pays to generators in settlement for the looped regions. This corresponds to a market shortfall, where market participants collectively would not have sufficient funds to pay their costs in that dispatch interval. The SRA can be used to return the surplus settlement funds to the market, enabling market participants to cover this shortfall.

Counter-price flows can occur in transmission loops when the loop is net positive because of the spring washer effect. A transmission loop creates multiple network paths between regions, and the laws of physics dictate that power flows are shared between all of these paths. This gives rise to the spring washer effect pricing pattern, which can lead to counter-price flows between regions as a normal part of efficient dispatch. This means that negative IRSR can arise on one or two arms of the transmission loop while the net IRSR for the loop is positive. Based on modelling undertaken by AEMO, this situation (negative IRSR in net positive cases due to the spring washer effect) is expected to occur frequently in the PEC transmission loop.⁴¹ A detailed explanation of the spring washer effect is included in the draft determination.⁴²

The net IRSR for a transmission loop can also be negative, in which case AEMO see a settlement shortfall and there is a corresponding market surplus. That is, market participants are collectively paid more than is needed to cover the cost of generation. Net negative IRSR in a transmission loop would typically occur when dispatch is strongly influenced by intra-regional constraints - analogous to negative IRSR on a radial interconnector. Intra-regional constraints can create incentives for disorderly bidding, which further influences dispatch and leads to inefficient outcomes. For this reason, negative net loop IRSR is likely to be inefficient, whereas negative IRSR on one or two arms in net positive cases is more likely to be efficient.

To account for the interdependent operation of the loop, AEMO will clamp the looped interconnectors only when the loop is net negative. However, unclamped negative IRSR on individual arms of the loop could be large and unpredictable. In certain extreme circumstances, it could potentially reach \$100 million in one week.⁴³ An instance of extreme negative IRSR may also be concentrated on one arm of the loop, and the current Rules would allocate all of this negative IRSR to the CNSP for one region (see Box 2).

This gives rise to the question of where to allocate negative IRSR that arises on looped interconnectors, given that it will often not be clamped. AEMO's rule change request proposed a method to reallocate negative IRSR between the CNSPs in the looped regions in net positive cases, which it considered would better align costs with beneficiaries.⁴⁴

41 ACIL Allen, [Modelling the settlement effects of PEC](#), July 2023, p.i-ii.

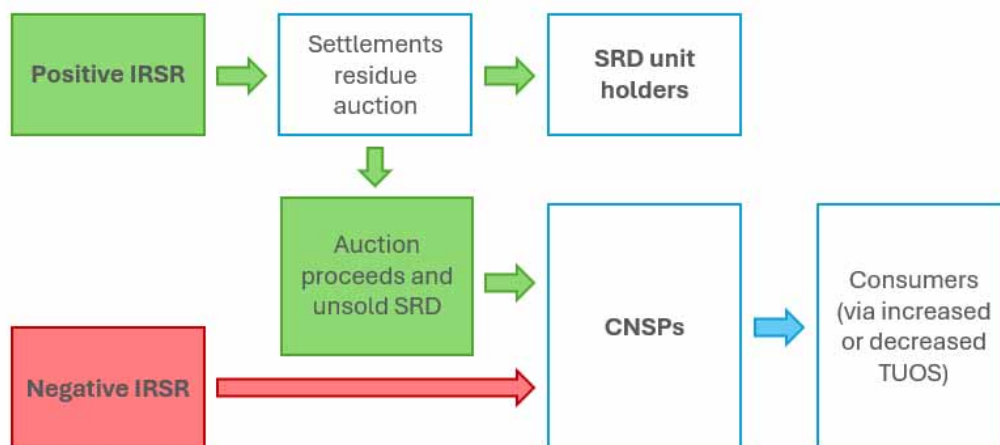
42 Refer to Box 8 in the draft determination, p.54.

43 See Box 3 in the draft determination, p.20, for an example demonstrating this.

44 Refer to AEMO's rule change request and appendix A of the draft determination, pp.44-46.

Box 2: How positive and negative IRSR are currently allocated in the NEM

- **Positive IRSR** is distributed through the settlements residue auction (SRA). These auctions are held quarterly by AEMO up to three years in advance. Auction participants (typically retailers, generators and energy traders) bid for SRD units, which are rights to receive portions of future positive IRSR. The proceeds from the sale of SRD units are allocated to the CNSP in the importing region, in lieu of the positive IRSR. CNSPs return this revenue to their customers via (a reduction in) TUOS charges. If any SRD units are unsold, the IRSR that would be allocated to those units is instead allocated to the importing CNSP and so to consumers.
- **Negative IRSR** is allocated to the CNSP in the importing region. CNSPs recover the cost of negative IRSR from their customers through (an increase to) TUOS charges. TUOS charges are set annually based on an estimate of negative IRSR for the coming year (as per clause 6A.23.3(e)(2) of the NER). CNSPs must pay negative IRSR to AEMO in each settlement cycle in time for AEMO to balance settlement (as per clause 3.6.5(a)(4) of the NER).



2.2 This rule change addresses the problem of how to manage inter-regional price risk in transmission loops

In this rule change, we are looking for the best way to manage the risks associated with negative (and positive) IRSR - thus achieving the best outcomes for consumers. Larger and more frequent negative IRSR on individual arms of the loop will be unavoidable due to the physics of the loop and the planned clamping approach. Under the current arrangements, this would expose consumers to a risk of unhedged, unclamped negative IRSR. Therefore, we are looking for a way to allocate negative IRSR that arises on the arms of a loop that minimises the costs to consumers of managing inter-regional price risk in the loop.

In this section:

- Section 2.2.1 explains that market participants play an important role in managing market risk, which benefits consumers,
- Section 2.2.2 explains the specific role of SRD units in hedging inter-regional price risk, and how this benefits market participants and consumers,

- Section 2.2.3 explains why the current SRA design does not account for the behaviour of a transmission loop and thus could expose consumers to unhedged negative IRSR risk.

2.2.1 Market participants manage market risks on behalf of consumers

Retailers play an important role in managing many wholesale market risks on behalf of consumers. Consumers typically pay a fixed price to retailers for electricity, who in return, take on and manage many of the risks of the wholesale market price of electricity. The retailer can manage these risks on behalf of the consumer through hedging arrangements such as vertical integration and various forms of contracts. This may impose some costs (overheads and risk premiums) on the consumer, such that the wholesale component of retail bills is higher than average spot prices in the long run. However, consumers generally value a predictable price for their electricity, as opposed to slightly lower prices overall but with extreme variation in the short-term.

Hedging arrangements not only benefit consumers, but are also important for retailers and generators themselves. Most – if not all – wholesale market participants (or their financiers) would prefer predictable rather than unpredictable profit, all else equal.

2.2.2 SRD units enable hedging of inter-regional price risk for both market participants and consumers

Inter-regional price risk arises when the RRP differs between two regions where a market participant has exposure. Consider a stylised case of a vertically integrated company that operates generation in Victoria and serves retail customers in NSW.⁴⁵ If the NSW RRP is higher than the Victorian RRP, then the business is purchasing electricity on behalf of its retail customers at a higher price than it is selling its generation for – and so – all else equal in a simplified world – it would make a loss. If the NSW RRP is lower than the Victorian RRP, it buys for a lower price than it sells, and makes a profit. That is, retailers and generators may face variable, uncertain revenues that depend on regional price differences.

If not hedged, this inter-regional price risk would ultimately have impacts for consumers, such as increased retail bills due to higher risk premiums. The ability for market participants to hedge inter-regional price risk is therefore important to support low prices for consumers as well as retail competition.

Market participants use SRD units to hedge inter-regional price risk and this benefits consumers

Positive IRSR has historically been auctioned for participants to use as hedging instruments, which also results in stable and predictable cash flows for consumers: the SRA proceeds. But when negative IRSR is allocated to CNSPs and recovered from consumers via transmission prices, consumers are unhedged to this cash flow, exposing them to risks.

Market participants that have generation and load (or retailing) in different regions, or financial derivative contracts struck at a different RRP than the RRP of the region they are in, can use SRD units to hedge their inter-regional price risk. By holding SRD units, they receive a variable positive IRSR cash flow which offsets (albeit imperfectly) their variable exposure arising from price separation between regions. The variability of their overall profit is reduced, which is valuable to market participants.

The use of SRD units to hedge inter-regional price risk also benefits consumers. From the consumer's perspective, SRD units provide a mechanism to hedge the variable cash flows that

⁴⁵ In practice, vertically integrated companies might have a variety of generator assets and retail customers in different regions, and financial contracts to manage their risks.

would otherwise arise were they to receive all the IRSR directly. By selling SRD units, consumers swap the variable IRSR cash flow for a fixed cash flow.

In this way, consumers (who would otherwise 'own' the IRSR) and market participants (who are exposed to inter-regional price risk) are 'natural counterparties' - both parties' risk is reduced by the consumer 'selling' the IRSR to market participants exposed to inter-regional price risk.

In addition to the direct benefits of reducing market participant and consumer risks, hedging IRSR via SRD units creates various flow-on benefits through encouraging competition and inter-regional trade which supports lower cost electricity for consumers.

Specifically:

- SRD units can support retail competition by helping retailers and gentailers manage their exposure to cost differentials across different regions. That is, SRD units can allow retailers and gentailers to provide competitive offers in regions where they do not own generation or hold swap or cap contracts, thus increasing the number of retailers active in each region.
- SRD units can support consumer access to cheaper electricity generated in other regions. By providing an instrument to manage inter-regional price risks, hedging encourages agreements to supply consumers from areas where costs are lower.
- SRD units encourage efficient investment in generation, storage and large loads. By providing a tool to manage the differences in wholesale prices across regions, SRD units work in concert with wholesale and contract markets to provide clear incentives for generators, storage and large loads to locate in appropriate places, without being biased towards a particular region because they cannot manage inter-regional price risk.

2.2.3 SRD units currently only provide a hedge for positive IRSR

SRD units provide a method for market participants to hedge the risk of price separation resulting in **losses** to their businesses (positive IRSR). However, there is no hedging instrument for price separation that results in **profits** to market participants and **costs** to consumers (negative IRSR). In these cases, consumers face a clear downside risk: the risk of being allocated an uncertain amount of negative IRSR.⁴⁶ This is allocated to consumers through transmission prices.

The PEC transmission loop will create the potential for larger and more frequent negative IRSR on individual arms of the loop. Since AEMO intends not to clamp this negative IRSR (an approach that stakeholders generally agree on), it may be large and unpredictable. This issue arises because the existing IRSR allocation arrangements - including the design of the SRA - do not account for the behaviour of a transmission loop. If the current arrangements were to continue, consumers and CNSPs would be exposed to greater unhedged risks due to this negative IRSR.

We note that the exclusion of negative IRSR from SRD unit design also creates more cash flow volatility, and therefore risk, for market participants. When negative IRSR occurs, some participants who trade inter-regionally earn higher returns, because the price they are paid for generation is above the price incurred to supply their customer base (that is, there is a market surplus). Negative IRSR corresponds to an increase in profit for those parties, but this return is uncertain and unpredictable, whereas market participants may wish to earn a more stable return where possible. The introduction of a transmission loop also increases these risks for market participants due to the larger magnitude and uncertainty of negative IRSR.

⁴⁶ See also section 4.2 of the draft determination, pp.39-41.

2.3 The draft rule would not adequately address the risks associated with negative IRSR

In the draft determination, we established that negative IRSR in a transmission loop represented a significant risk to consumers and CNSPs. We proposed to mitigate this risk by sharing negative IRSR for the looped interconnectors between the looped regions. The draft rule would have maintained the separate treatment of positive and negative IRSR, with positives being allocated via the SRA and negatives being recovered from CNSPs. However, based on stakeholder feedback and our further analysis, we now consider this approach is not sufficient to manage the risks associated with negative IRSR for consumers and CNSPs.

2.3.1 The draft rule aimed to manage the risk by sharing negative IRSR between regions

In the draft determination, we proposed to:

- share negative IRSR that accrues on the arms of a transmission loop between the looped regions' CNSPs in proportion to regional demand, and
- retain the existing SRA arrangements for the allocation of all positive IRSR on the arms of a transmission loop.

In making the draft rule, we were concerned with the risk of extreme and unexpected negative IRSR being placed on consumers:

- directly, as consumers would ultimately pay for this IRSR,⁴⁷ and
- indirectly, because the cost that CNSPs would incur in managing the possibility of extreme negative IRSR would ultimately also flow to consumers⁴⁸

The draft determination sought to manage these risks by reducing the cash flow risk for individual CNSPs and sharing the risk of negative IRSR on any arm of the loop between consumers across all three looped regions.

2.3.2 Feedback and further analysis suggests the draft rule is not sufficient to mitigate the risk

Following stakeholder feedback and our own further analysis, we now think the draft determination is not the appropriate approach to manage the risk of negative IRSR arising on a loop.

Feedback from CNSPs and some consumer groups noted that the draft rule would still result in some risks, despite the sharing approach:

- The EUAA considered that continuing to treat positive and negative IRSR separately under the draft rule would expose consumers to unnecessary risk because it did not account for the operation of the loop as a whole.⁴⁹
- CNSPs raised concerns and provided more information about the cash flow risks associated with negative IRSR and how this would impact consumers, discussed below.⁵⁰

⁴⁷ While consumers do not pay negative IRSR immediately as it arises, they do face the full risk of negative IRSR over time. CNSPs initially pay the negative IRSR and recover it through TUOS with some delay. This delays consumers' exposure to the negative IRSR but does not remove it. CNSPs are acting as creditors, not as parties that hedge risk. Also, most end consumers (other than large transmission-connected customers) do not directly face transmission pricing, but pay TUOS indirectly via their retailer and Distribution Network Service Provider (DNSP). However, most retailers update their prices annually, in part reflecting changes to their input costs, including distribution use of system (DUOS) charges, which are also updated annually reflecting TUOS paid by DNSPs. As such, unexpected changes to negative IRSR do flow to end consumers, albeit with a delay.

⁴⁸ There would be relatively lower wholesale prices in the case that there is extreme negative IRSR, because in these circumstances, wholesale customers are paying less than what generators are being paid. However, this benefit may not flow through to consumers, who are typically hedged against variations in the wholesale price via their retailer. That is, their retail contract would hedge against variations in the wholesale price, while TUOS would expose them – unhedged – to the variations in the IRSR.

⁴⁹ Submission to the draft determination, EUAA, p.1.

⁵⁰ Submissions to the draft determination: ENA, p.2; Transgrid, pp.1-2.

We note that similar or greater risks to consumers and CNSPs would also arise if the existing arrangements were applied to transmission loops, or if AEMO's proposed reallocation method were implemented.

Most other stakeholders supported the draft rule – notably market participants and some consumer groups.⁵¹ AEMO, while it preferred its original proposal, also accepted the draft rule.⁵²

Aside from this stakeholder feedback, the Commission has conducted further analysis that supports our conclusion that the draft rule does not sufficiently mitigate the risks associated with negative IRSR. Section 2.2 explains our view that the existing SRA design does not enable hedging of negative IRSR risk for consumers or market participants, and that the introduction of a transmission loop under these arrangements would expose consumers to a significant unhedged risk.

CNSPs are exposed to cash flow risks due to negative IRSR

In a transmission loop, the potential for extreme negative IRSR in any one billing period exposes CNSPs to cash flow risk – the risk of not being able to meet their IRSR liabilities when they arise.⁵³ This risk arises even though CNSPs can eventually recover the negative IRSR from customers through transmission prices, because there is a timing mismatch between CNSPs' obligation to pay and their ability to recover negative IRSR from customers. That is:

- CNSPs set transmission prices in March each year at the level required to recover their allowed revenue for the upcoming financial year.
- The allowed revenue includes an estimate of negative IRSR for the upcoming year.
- This amount is recovered (along with other costs) in a smoothed fashion over the year through the amounts billed to transmission customers.
- However, CNSPs are required to pay to AEMO the actual amounts of negative IRSR that arise in any given billing period throughout the year so that AEMO can balance settlement.⁵⁴ Currently, payment is due 14 days after the end of each billing period.⁵⁵
- If the actual amount of negative IRSR paid by CNSPs over the year is not the same as the estimate used to set transmission prices, a 'true-up' is required in the following year. Any over- or under-recovery of negative IRSR for that year is accounted for in the subsequent year's pricing, along with a new estimate of negative IRSR for the forthcoming year.⁵⁶ These true-up amounts may be large because negative IRSR is difficult to forecast.

If negative IRSR is extreme in a billing period,⁵⁷ then CNSPs need to have significant funds readily available to fund this amount at short notice. This is the case even if the CNSP has accurately forecast negative IRSR for the year, because the extreme period of negative IRSR could arise early in the year before the CNSP has recovered the full year's charges. In addition, if negative IRSR is large over multiple consecutive billing periods, the CNSP may not have sufficient funds available to manage the cumulative negative cash flow, given its revenues are set annually.

51 Submissions to the draft determination: ECA, pp.1-2; Snowy Hydro, p.1; Stanwell, p.2; EnergyAustralia, p.1; AFMA, p.1; Origin Energy, p.1; Engie, p.1.

52 Submission to the draft determination, AEMO, p.1.

53 Specifically, there is a risk that a CNSP may not be able to meet its obligation to pay AEMO for negative IRSR for a given billing period, which is essential for AEMO to balance settlement of the market under Chapter 3 of the NER.

54 Clause 3.6.5(a)(4) NER.

AEMO determines the exact date by which payments of negative IRSR are due. We note AEMO may choose to review this requirement as a result of the recent [Shortening the settlement cycle](#) rule change.

55 AEMO, [PEC Market Integration Papers](#), Directions paper, November 2023, p.11.

56 Also, because prices are set in March for the upcoming financial year, any over or under-recovery that occurs between March and June is not true-up until the second subsequent year.

57 Refer to Box 3 in the draft determination, p.20, which shows an example where negative IRSR reaches approximately \$100 million within a billing period.

CNSPs incur costs in managing this cash flow risk, for example, interest and fees associated with holding debt facilities with banks. These costs are ultimately met by consumers through higher transmission prices. With the introduction of a transmission loop, negative IRSR in the loop is expected to increase and there is a potential for extreme negative IRSR. With the larger magnitude and greater uncertainty of negative IRSR, it would become significantly more costly for CNSPs to manage their cash flow risk and these increased costs would also be paid by consumers. Even though CNSPs are only permitted to recover the actual amount of negative IRSR adjusted by the regulated weighted average cost of capital (WACC), we expect the increased costs of financing negative IRSR would flow to consumers over time through either increases to the WACC or a working capital allowance approved by the Australian Energy Regulator (AER). CNSPs also noted that unpredictable negative IRSR cash flows and the need to maintain additional debt facilities could impact their debt covenants and credit metrics, impacting their ability to provide services to customers.⁵⁸

2.4 We consider that netting off best manages the risk of negative IRSR

In this section:

- Section 2.4.1 briefly explains how our netting off proposal would work, with further detail provided in chapter 3.
- Section 2.4.2, section 2.4.3 and section 2.4.4 explain why the Commission considers the netting off approach would effectively manage the risk of negative IRSR and lead to the best outcomes for consumers.

2.4.1 Our preferred approach is to net off negative IRSR from positive IRSR in transmission loops

We consider that a 'netting off' approach to negative IRSR would achieve the best outcomes for consumers, taking into account the costs, benefits and risks described above. Generally speaking, under a netting off approach, negative IRSR is deducted from positive IRSR before positive IRSR is paid out to SRD unit holders. This means that SRD unit payouts will reflect the interaction between different arms of the loop, which market participants will need to manage, rather than having CNSPs, AEMO, market customers, or another party manage cash flow risks under non-netted approaches.

There are various ways in which netting off can be applied. Our preferred approach is described in detail in chapter 3:

- when loop IRSR is net positive, negative IRSR in a dispatch interval would be deducted from the positive IRSR that arises on the other arms, in proportion to the size of the positive IRSR on each arm. This netted IRSR would then be allocated to SRD unit holders.
- when loop IRSR is net negative, any positive IRSR on any arm would be used to reduce negative IRSR in that dispatch interval, and the remaining negative IRSR would be allocated to CNSPs, who would in turn recover it from consumers via TUOS.

AEMO intends to clamp in net negative cases, mitigating the risk of extreme negatives. Furthermore, under our preferred approach, SRD unit payouts would never be negative.

SRA proceeds would continue to be allocated to CNSPs. See chapter 4 for more detail on how net negative IRSR and SRA proceeds would be distributed amongst the looped regions' CNSPs.

⁵⁸ Submissions to the draft determination: ENA, p.2; Transgrid, p.3.

2.4.2 Market participants are best placed to manage the impact of negative IRSR in transmission loops

Larger and more frequent negative IRSR on individual arms of a transmission loop is unavoidable, and this must be borne and managed by some party. In this rule change we are seeking to allocate negative IRSR in a way that minimises the cost for consumers. We consider that netting off is likely to minimise the cost to consumers of managing the risks associated with negative IRSR on looped interconnectors, compared to the draft determination approach and other options.

Netting off would effectively place the cost of managing the interaction between different arms of a transmission loop with market participants, who we consider are best placed to manage this risk for the reasons discussed in this section. By deducting negative IRSR from positive IRSR on different arms of the loop, netting off affects the payouts of SRD units. The Commission understands that SRD unit holders are typically market participants using the units to hedge inter-regional price risk, although other parties such as energy traders may also purchase SRD units. We expect that netted SRD units would continue to be used for hedging by market participants. Therefore, netting off would broadly result in market participants managing the impact of negative IRSR in transmission loops on behalf of consumers.

Market participants have the capability to manage negative and positive IRSR at the lowest cost to consumers

Overall, we consider that market participants are best placed to manage these the impact of netting negative IRSR in net positive cases. Market participants (who are typically the purchasers of SRD units) already have the experience, expertise, tools and systems to manage inter-regional price risks using hedging strategies. They have already developed bidding strategies to account for 'non-firm' units – and have made significant average returns on SRD units to date. We consider they would have the expertise to adapt their use of SRD units for the arms of transmission loops under a netting off approach.

A netting off approach does create some costs for SRD unit holders compared to the status quo. The key cost is that of adjusting hedging strategies to account for the effects of netting off.

For example, market participants that typically use SRD units may need to purchase different or additional hedging products to protect against inter-regional price risk, and these products would come at a cost. However, we consider these parties are best placed to source and negotiate hedging products or other tools to manage their risks.

The Commission's understanding is that market participants have multiple tools at their disposal to manage inter-regional price risks. As noted in submissions, SRD units are one tool that market participants can use to manage price risk, alongside other tools such as inter-regional swaps and caps.⁵⁹ In making choices around which products to use, market participants (or any other parties eligible to purchase SRD units) can trade off the expected risk reduction against the expected cost (or payout) of the product.

Another hedging option for parties that expect to make losses from price separation is to trade with parties that would profit from the price separation. In these circumstances, market participants could contract with one another to reduce both counterparties' risks. An example of this is provided in appendix A. There are likely to be transaction costs associated with these trades: to design the appropriate instruments, find suitable and willing counterparties, and so on. Section 3.2 discusses how to best design the netted-off SRD units to minimise these costs. If these transaction costs exceed the benefits of hedging, then we would expect that market

⁵⁹ For example, refer to AFMA's submission to the draft determination, p.1.

participants would not enter into the trades, and they might remain exposed to inter-regional price risk.

On the whole, the Commission considers that SRD unit holders are best able to manage the impact of netting negative IRSR on behalf of consumers because of the tools and expertise available to them. While the cost of managing the risk would flow to consumers, we expect that market participants would be able to manage the risk at a lower cost than alternative approaches, resulting in lower overall costs and risks for consumers.

Netting off would reduce the payouts of SRD units – however, SRD unit holders would reduce their bids to account for this

Netted-off SRD units would pay out a lower amount than under a non-netted design, because negative IRSR would be deducted from positive IRSR before payouts occur. Under our proposed design, however, SRD units would never pay out negative amounts.

We expect that SRD unit holders would place lower bids than they would if netting was not applied, to account for expected lower SRD unit payouts. This would result in a lower revenue stream from SRA proceeds flowing to CNSPs, and therefore lower positive revenue flowing to consumers through transmission prices. However, this would be offset by the reduced negative IRSR stream flowing to CNSPs and to consumers through transmission pricing.

The Commission acknowledges the possibility that netting off may undermine the perceived hedging ability of SRD units to such an extent that stakeholders become less interested in buying them, or no longer wish to buy them at all. SRD units would then go unsold. In these circumstances, the net positive IRSR associated with those unsold units would be allocated directly to CNSPs and consumers. This outcome would undermine the intent of the SRA to support hedging of inter-regional price risk. However, we do not consider this to be a likely scenario. By design, the netted SRD units are guaranteed to pay out a positive amount, or at worst zero. As there is no reserve price, it would be rational for eligible auction participants to place bids of at least \$0, given that the SRD unit payout will be at least \$0.⁶⁰ Therefore, we expect that the SRD units would be sold even if payouts are uncertain or expected to be low.

2.4.3 The netted-off SRA design could continue to support inter-regional hedging

As discussed in section 2.2.2, the existing SRA is designed to return a settlement surplus (positive IRSR) to the market, allowing risks to be hedged for market participants and consumers. For a transmission loop, since the arms of the loop operate interdependently, it is appropriate to return the net positive IRSR, rather than all positive IRSR, to the market via the SRA. We consider this can continue to support hedging of inter-regional price risk for market participants and consumers.

The net loop IRSR is the difference between what market customers pay and what generators are paid for electricity in all of the looped regions, considered together. Therefore, the net IRSR for the loop - when returned to the market via the SRA - is sufficient for market participants, collectively, to hedge their risk.

Strictly, this applies in both net positive and net negative cases. However, our proposal provides that in net negative cases, the negative net IRSR for the loop would be recovered from CNSPs and not from SRD unit holders. This would ensure that SRD units do not result in negative payouts,

⁶⁰ In theory, there could be cases where the positive IRSR to be paid out is less than the amount of auction expenses recovered, but this already is a possibility under the current arrangements – see section 9.5 of AEMO's [Guide to the SRA](#), which deals with situations where the distribution of IRSR to be made is less than the amount of auction expenses. The AEMC expects this can continue to be managed in the same way. Under the current auction design, there is in fact a minimum payout of \$10. See section 8.2 of AEMO's [Guide to the SRA](#). The minimum bid is zero. See section 9.2(e) of the [auction rules](#).

thus limiting downside risks for SRD unit holders (see also section 3.2.1). Overall, we consider this design would best enable SRA participants to continue using SRD units for their intended purpose - to hedge inter-regional price risk - in the context of a transmission loop.

2.4.4 It is appropriate to reconsider arrangements for both IRSR and SRD units as market circumstances are changing

We acknowledge that the reasoning presented above differs from previous decisions made by the AEMC at a time when the SRA arrangements were relatively new. Indeed, AEMO's rule change request noted that its proposal to not net off negative IRSR was in part justified on the basis of previous AEMC decisions and regulatory precedent.⁶¹ When the AEMC introduced the separate treatment of positive and negative IRSR in 2009, it argued against recovering negative IRSR from SRD unit holders because it would:⁶²

reduce the funds paid out to IRSR [that is, SRD unit] holders and therefore reduce the firmness of the hedge.

However, these decisions were made in a different context, where negative IRSR was expected to be of a much lower magnitude, and where negative IRSR was clamped in all cases. We now consider that keeping positive and negative IRSR separate is not in the best interest of consumers, given the imminent changes in IRSR frequency and magnitudes due to the introduction of PEC. A looped interconnector configuration is new to the market and it is now necessary to consider how IRSR behaves in the context of a transmission loop. Our proposal in this directions paper is designed specifically for transmission loops and nets off IRSR on different arms of the loop, which is substantially different to the pre-2009 arrangements.

2.5 We have considered options other than the draft rule

We also considered alternative options to netting off and the draft determination. This section describes and assesses these alternatives.

2.5.1 Establishing an AEMO holding fund

In this option, AEMO would not recover the negative IRSR from CNSPs but instead would draw it from a fund which it manages itself. ENA and Transgrid suggested this option in their submissions to the draft determination.⁶³

AEMO would ultimately recover the money drawn from the fund – the negative IRSR – from consumers. A similar approach could be taken as to how CNSPs currently recover negative IRSR from consumers: an annually determined forecast of the negative IRSR being recovered from consumers, with that charge then updated for the next year to reflect the over- or under-recovery of negative IRSR (the difference between forecast and actual negative IRSR), plus a cost of capital. Additionally, AEMO could 'hold back' SRA auction proceeds to help cover the cost of negative IRSR.

AEMO, instead of CNSPs, would have to manage the cash flow risk arising from a mismatch in the timing and quantity of funds received from consumers and the negative IRSR that arises (as discussed in section 2.3.2).

61 AEMO, [Integration of PEC into the NEM](#), rule change request, February 2024, p.10.

62 AEMC, [Congestion Management Review](#), Final report, June 2008, p.159. The recommendations to recover negative IRSR from consumers via CNSPs in the Congestion Management Review were implemented through a 2009 rule change: [Arrangements for Managing Risks Associated with Transmission Network Congestion](#), Final determination, August 2009.

63 Submissions to the draft determination: ENA, p.3; Transgrid, pp.4-5.

We do not prefer this option as it does not fundamentally address the problems associated with the draft determination. Without netting off, AEMO would be exposed to the full risk of unclamped, unhedged negative IRSR on individual arms of the loop. That is, this option simply moves cash flow risk associated with negative IRSR from CNSPs to AEMO. AEMO would need to have access to debt facilities or other methods of funding potentially extreme negative IRSR events (which may exceed any SRA proceeds 'held back' in the fund).

We have no reason to think that AEMO would necessarily be better placed to manage this risk than CNSPs, with the costs associated with this then being passed on to consumers as well. Additionally, it would place the risk of a larger amount of money with one party (i.e. AEMO), rather than spreading it across multiple parties (i.e. three CNSPs). Even if AEMO were better at managing this cash flow risk, this option still ultimately exposes consumers to the risk of extreme negative IRSR. Implementation would also be complex because establishing a new role for AEMO (managing a holding fund) would likely require a lengthy process.

2.5.2 Recovering negative IRSR from market customers

In this option, negative IRSR would be allocated to market customers, for example, as a new type of non-energy cost, determined in proportion to their load. Market customers are market participants that purchase electricity from the spot market, including retailers and some large loads.

This approach shares some of the benefits of our preferred netting off approach. It would remove the direct risk of negative IRSR from consumers, and removes the costs of CNSPs managing the risk, instead allocating it to market participants, who we think are better placed to manage it.

All else equal it would also decrease transmission prices, as SRA proceeds would not be impacted. However, retail prices on the whole would not necessarily decrease, because retailers would still need to recover negative IRSR from customers by increasing other components of retail charges.

We consider that allocating negative IRSR to market customers has two clear downsides, compared to the preferred netting off approach.

First, allocation to all market customers would also expose any market customers that do not trade inter-regionally to negative IRSR. We expect that this could disproportionately impact smaller retailers that may operate in only one region, hindering retail competition. In addition, smaller retailers may be more acutely impacted by the cash flow implications of potential unexpected extreme negative IRSR and the associated increased prudential requirements.

Secondly, this approach would likely result in unhedged negative IRSR being passed directly through to end users (even if they are not market customers in their own right). Retailers would have discretion in how they pass on negative IRSR, particularly for large customers. It is likely that large commercial and industrial customers would be charged negative IRSR on a direct pass-through basis as 'market charges'. These would be unexpected, potentially material costs that customers could not hedge or renegotiate. Residential and small business customers would also face some negative IRSR costs, but these would be smoothed over time and based on estimates, due to the structure of small customer retail contracts. However, there is a risk that retailers would not compensate customers for any over-recovery of negative IRSR.

2.5.3 Scaling the amount of SRD units sold

Under this approach, the quantity of positive IRSR that is allocated through SRAs would be reduced ('scaled down'). This could be implemented by reducing the number of SRD units sold, or by selling the same number of SRD units but assigning a smaller proportion of total positive IRSR to each unit. As a result:

1. some percentage of the positive IRSR arising on an arm of the loop would be allocated to SRD unit holders,
2. the rest of the positive IRSR would be allocated directly to CNSPs, and ultimately consumers,
3. all the negative IRSR arising on an arm of the loop would be allocated to CNSPs, and ultimately consumers.

Transmission prices, calculated annually, would reflect an estimate of the combined revenue from the allocated positive IRSR, plus all negative IRSR (items 2 and 3), as well as an estimate of SRA proceeds. CNSPs would pay, or receive from, AEMO the actual combined revenue from items 2 and 3 and actual SRA proceeds. Transmission prices each year would also include a true-up for the previous year - that is, the difference between the actuals and estimates of items 2 and 3 and SRA proceeds combined.

The intent is to reduce the risk faced by consumers and CNSPs relating to negative IRSR. Negative IRSR is high when the loop is net positive, and so positive IRSR will also be high. This means the magnitudes of items 2 and 3 would be correlated, but would offset each other because item 2 is positive and item 3 is negative. The overall risk to consumers – and CNSPs – might therefore be reduced.

For this approach to be effective, it would be critical to determine the right proportions of positive IRSR allocations to CNSPs and SRD unit holders. This would be highly complex. Were the wrong amount to be 'held back' and allocated to CNSPs, the proposal could be ineffective in addressing the risks to consumers and CNSPs that arose under the draft determination. Worse, because positive IRSR is also variable, it might even *increase* the risks to consumers and CNSPs, by increasing the risk of incorrectly forecasting the IRSR that is allocated to CNSPs.

Holding back the wrong amount would also impact the ability of market participants to manage inter-regional price risk. Too much, and market participants would be collectively unable to manage the *downside* risk associated with inter-regional price differences.

2.5.4 Clamping in net positive cases

We also re-examined the option of AEMO clamping arms of the loop which are flowing counter-price, even in cases where the IRSR is net positive. Consistent with the feedback on this option, we continue to consider that this option is inappropriate as it would undermine efficient dispatch. It also may not be effective at managing the risks of negative IRSR, as explained in the draft determination,⁶⁴ as clamping constraints have a low constraint violation penalty, meaning they can be overridden relatively easily by other constraints.

Furthermore, clamping is practically challenging for AEMO, particularly on a transmission loop. This could further increase the costs and uncertainties of clamping, including both operational costs and impacts on efficient dispatch. Designing an appropriate clamping procedure for net positive cases would also be difficult without operational experience of PEC.

64 Refer to section 2.3.3 of the draft determination, p.9.

2.5.5 Micro-slice implementation of PEC

‘Micro-slice’ is an alternative way to represent PEC in the dispatch engine such that it does not form a loop between three regions. Under the micro-slice option, the boundaries of the three regions (NSW, SA and Victoria) would be adjusted and a ‘micro-slice’ of the Victorian region would be inserted between the NSW and SA regions. This means that from the perspective of the dispatch engine, PEC would run through Victoria. As a result of the micro-slice, NSW and SA would not be directly connected in the dispatch engine. Instead, the capacity of PEC would be added to the two interconnectors that are already modelled in dispatch (VIC-NSW and SA-VIC).

AEMO previously consulted on a micro-slice implementation in its PEC Market Integration work, but decided against it. Shell Energy noted a preference for the micro-slice model in its submission to our consultation paper.⁶⁵ EUAA’s submission to the draft determination suggested that the micro-slice model should be further considered for the implementation of PEC.⁶⁶

With the micro-slice implementation, any negative IRSR that would have arisen on PEC would be implicitly allocated between the NSW-VIC and SA-VIC interconnectors. In a sense, micro-slicing would be a form of netting off because any IRSR resulting from electricity flows between NSW and SA would be offset against IRSR on the other interconnectors before SRD payouts were calculated. However, this ‘netting’ would be incomplete and would not prevent (potentially extreme) negative IRSR on the NSW-VIC and SA-VIC interconnectors. We also note that SRD units would not be available for the PEC interconnector itself and this may create challenges for inter-regional hedging between NSW and SA.

More importantly, our concern with this approach - consistent with AEMO’s findings in its PEC Market Integration work - is that dispatch would be less efficient. Even if represented as a micro-slice, PEC and the existing interconnectors would still form an electrical loop that must obey the laws of physics, and dispatch would need to account for this. Abstracting the representation of PEC in the dispatch engine away from physical reality makes it more difficult to optimise targets and constraints. This would lead to under-utilisation of the network and decrease the efficiency of dispatch outcomes.⁶⁷

2.5.6 Status quo: Retaining the existing arrangements

We also considered a ‘status quo’ option where the current IRSR allocation arrangements would be applied to transmission loops. However, we consider that retaining the existing approach, which would allocate of negative IRSR on the arms of a loop to CNSPs in the importing region, would not promote the NEO. It would:

- expose consumers to the unhedged risk of negative IRSR, which could be substantial, and
- expose CNSPs to cash flow risk, the costs of which would ultimately be recovered from consumers.

For the reasons set out in section 2.4, we consider that the netting approach should be used for transmission loops and would result in lower risks and costs for consumers.

The status quo option, in this case, does not mean that the Commission would not make a rule. The existing IRSR allocation arrangements in the Rules apply to regulated interconnectors. PEC would not meet the Rules definition of ‘regulated interconnector’ as it is currently drafted.⁶⁸

65 Submission to the consultation paper, Shell Energy, p.3.

66 Submission to the draft determination, EUAA, p.1.

67 A more detailed discussion of micro-slicing is found here: AEMO, [PEC Market Integration Papers](#), Final report, February 2024.

68 Refer to the NER Chapter 10 Glossary definition of ‘regulated interconnector’ and NER clause 11.8.2.

Therefore, if we did not make a rule, it would be unclear what, if any, IRSR arrangements applied to PEC. For the status quo option, the Commission would need to make a rule updating the definition of ‘regulated interconnector’ to ensure that PEC is included.⁶⁹

⁶⁹ The indicative drafting for our netting off proposal also includes this definitional change, for the same reason. Refer to indicative drafting, Chapter 10 Glossary definition of ‘regulated interconnector’.

3 How the proposed netting off rule would operate

Box 3: Key points

- The net IRSR around the loop can be either positive or negative for each individual trading interval. Under our proposed approach:
 - Net positive IRSR would be allocated to SRD unit holders.
 - Net negative IRSR would be allocated amongst CNSPs.
- In net positive cases, negative IRSR in a dispatch interval would be deducted from the positive IRSR that arises on the other arm/s of the loop, in proportion to the size of the positive IRSR on each arm. The remaining IRSR on positive arms would be allocated to the relevant SRD unit holders.
- We selected this approach for three reasons:
 - It is more predictable and simple to implement compared to other design options for netting off.
 - It maintains the SRD unit as an inter-regional hedging tool.
 - It adequately manages risks to consumers, when compared with other options.
- We consider that other design options for netting off did not perform as well against these criteria and so this is our preferred option. However, we are interested in stakeholder feedback on both our assessment and the other options.
- In net negative cases, any positive IRSR on any limb would be used to reduce negative IRSR in that dispatch interval. This would effectively set SRD unit payouts relating to the trading interval to \$0 in net negative cases, and the remaining negative IRSR (net negative IRSR) would be allocated to CNSPs, who would in turn recover the revenue from consumers, via TUOS. Chapter 4 discusses the allocation of residual cash flows to CNSPs in more detail.
- Rules for the loop would take effect when the loop begins operating, triggered by a transitional provision in the indicative drafting which defines a 'PEC operational date'. The drafting also includes additional reporting and approaches to streamline AEMO's implementation, given there would be relatively limited time to implement the proposed netting approach.
- Netting off calculations would apply to the positive IRSR attributed to SRD units that have already been sold, so this would impact the payouts to these SRD unit holders. Section 16 of the Auction Participation Agreement (in its current form) covers the circumstances under which an auction participant may terminate its SRD agreement. A copy of the Agreement is available on AEMO's website.

In this chapter:

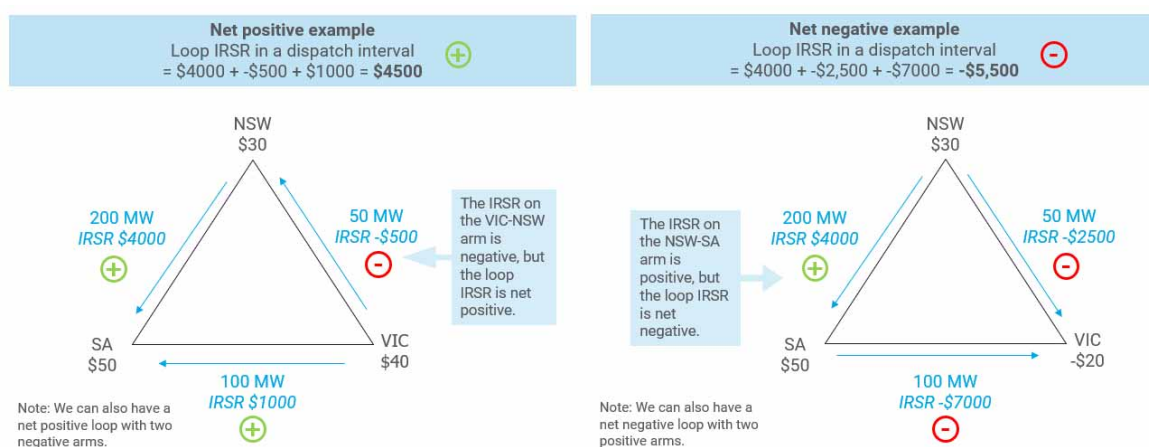
- Section 3.1 explains that net positive and net negative cases can arise on the loop
- Section 3.2 explains and seeks stakeholder feedback on the approach and rationale for netting in net positive cases
- Section 3.3 explains and seeks stakeholder feedback on the approach and rationale for netting in net negative cases
- Section 3.4 explains and seeks stakeholder feedback on the timing, implementation and transitional arrangements for netting off calculations.

3.1 Net positive and net negative cases can arise on the loop

In this paper, we discuss ‘net positive’ and ‘net negative’ cases. This refers to the net IRSR around the loop for each individual trading interval, as illustrated in Figure 3.1.

It is important to note that IRSR is allocated to a directional interconnector *before* the allocation method for either positive or negative IRSR is applied.⁷⁰ This is the case under both the current rules and the proposed netting approach, for both looped and radial interconnectors. This is explained in further detail in the draft determination.⁷¹

Figure 3.1: ‘Net positive’ vs ‘net negative’ cases



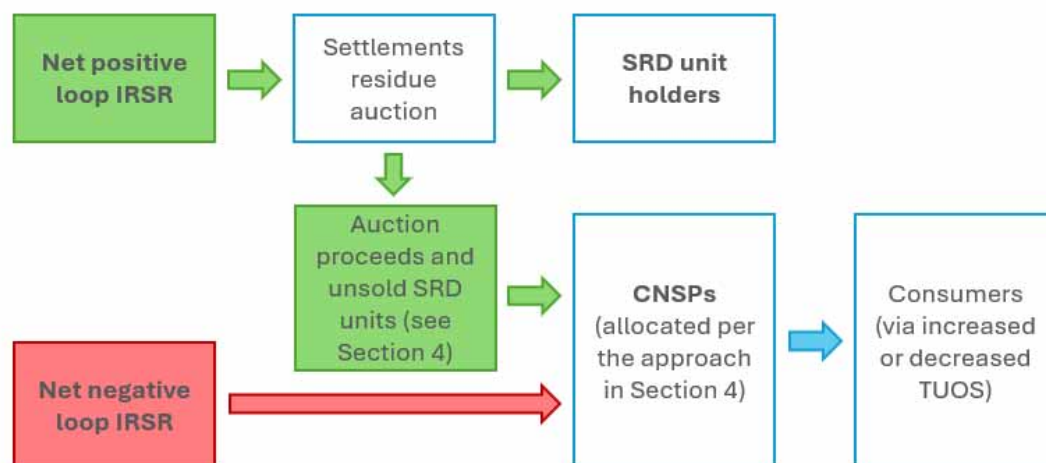
3.1.1 Net positive IRSR would be allocated to SRD unit holders and net negative IRSR would be allocated amongst CNSPs

Figure 3.2 illustrates the flow of net positive and net negative IRSR cash flows.

⁷⁰ There are two directional interconnectors for each pair of radially connected regions. For example, there is a NSW to Victoria directional interconnector (denoted NSW-VIC) and a Victoria to NSW directional interconnector (denoted VIC-NSW). Consequently, there would be six directional interconnectors in the PEC transmission loop: three clockwise and three anti-clockwise.

⁷¹ Refer to Box 2 in the draft determination, p.13.

Figure 3.2: Net positive and net negative IRSR cash flows



Net positive IRSR would be allocated to SRD unit holders

Participants in SRAs bid for the right to receive portions (units) of future positive IRSR that arises in a trading interval within the three month interval to which the SRD unit relates. SRAs are held quarterly by AEMO up to three years in advance (that is, auction participants can purchase the rights to positive IRSR that will accrue up to three years in the future). Under our proposed approach:

- SRD unit holders would receive a portion of the net positive IRSR around the loop. This would be calculated using the approach set out in section 3.2.
- CNSPs would pay nothing in net positive cases.

Proceeds from SRAs (and any positive IRSR from unsold SRD units) would be allocated to CNSPs for the importing region - refer to chapter 4 for further details.

Net negative IRSR would be allocated amongst CNSPs

CNSPs would be allocated any net negative IRSR around the loop in any given trading interval.⁷²

We are not proposing to allocate net negatives to SRD unit holders, as this may have limitations and complexities that are unlikely to be in the best interest of consumers at this time. Chapter 6 discusses this in more detail.

Note that AEMO will clamp interconnector flows in cases where there is net negative IRSR, limiting its magnitude.

Net negative IRSR would be allocated to CNSPs based on regional demand - refer to chapter 4 for further details on this approach.

⁷² The Rules allocate negative IRSR to the CNPS for the importing region and the CNPS in turn recovers it through transmission prices.

3.2 In net positive cases, negative IRSR would be netted off around the loop in proportion to positive IRSR

3.2.1 How our preferred netting off approach would work

Under our proposed approach, provided the loop is net positive in a trading interval, negative IRSR on one or two arms would be reallocated to the arms with positive IRSR in proportion to the amount of positive IRSR accrued on those arms in the trading interval. This means that, for a given dispatch interval, the IRSR allocated to SRD unit holders would be the IRSR on the relevant arm before netting, less a proportionate share of the negative IRSR on the other arm/s of the loop.⁷³

The Commission is interested in feedback on our proposed design for netting off in net positive cases.

In the indicative drafting, the calculation is expressed slightly differently to the description in the paragraph above (with SRD unit holders receiving a proportional share of the net positive IRSR around the loop), but has the same effect. ‘Proportional allocation’ would be defined locally in indicative clause 3.6.6(a) with an associated formula, where the ‘proportional allocation’ is the netted positive amount allocated to the relevant SRD unit holders on the arms accruing positive IRSR. For each trading interval, if the loop is net positive (determined by the test in indicative clause 3.6.6(b)), the ‘proportional allocation’ for a specific directional interconnector is calculated using the following formula:

Figure 3.3: Proportional allocation

$$\text{Proportional allocation}_i = NLA_i \times \frac{LIA_i}{TPA_i}$$

Source: Refer to indicative drafting, clause 3.6.6(a), definition of ‘proportional allocation’, part b.

where:

1. subscript i refers to the trading interval;
2. NLA is the net loop allocation for the relevant parallel interconnector configuration - that is, the net IRSR around the loop for that trading interval;
3. LIA is the allocation to the looped interconnector - that is, the IRSR for that directional interconnector in the loop for that trading interval (noting that a directional interconnector in the loop is defined as a ‘looped interconnector’ in the indicative drafting); and
4. TPA is the total positive allocation for the relevant parallel interconnector configuration - that is, the sum of the IRSR on any arms accruing positive IRSR around the loop, before netting.

The worked example in Box 4 illustrates how the proposed netting off approach would operate.

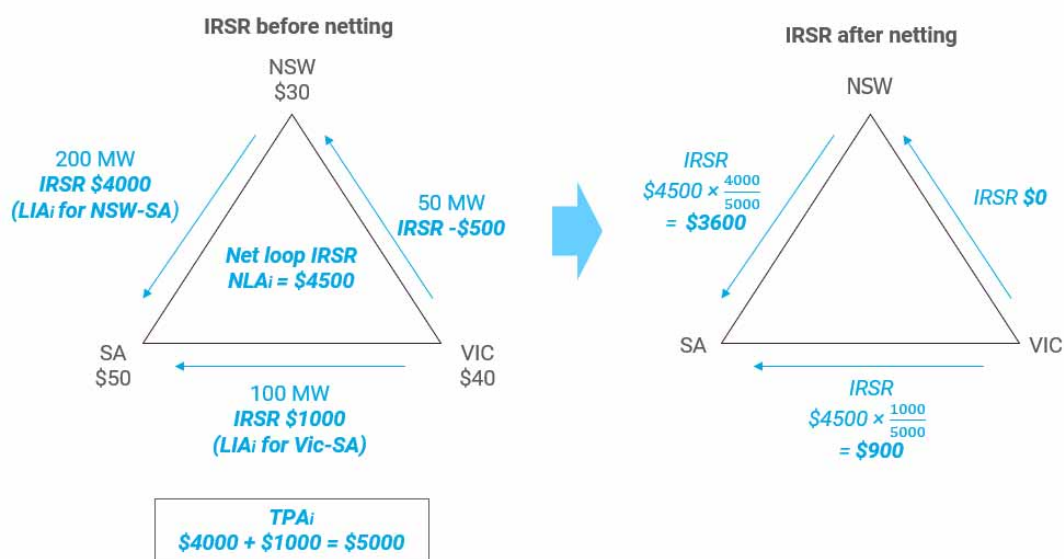
⁷³ Subject to any minimum payouts as specified in section 8.2 of AEMO’s [Guide to the SRA](#) and subtracting any auction expense fees under clause 3.6.6(b) in the indicative drafting.

Box 4: Worked example - Netting off in proportion to positive IRSR

In this example, the NSW-SA and VIC-SA directional interconnectors are accruing positive IRSR and the VIC-NSW interconnector is accruing negative IRSR.

To net off using our proposed approach, we calculate the net positive IRSR around the loop and pay this out to the NSW-SA and VIC-SA unit holders in proportion to the positive IRSR accrued on those arms. That is:

- 4/5ths of the net loop IRSR amount is paid out to NSW-SA SRD unit holders.
- 1/5th of the net loop IRSR amount is paid out to VIC-SA SRD unit holders.



Netted IRSR for the dispatch interval:

- **NSW-SA:** \$3600
- **VIC-SA:** \$900
- **All others:** \$0

Since SRD units are sold quarterly, total payouts would be the sum of all dispatch intervals with net positive IRSR in the quarter. Payouts would never be negative. This is because total positive IRSR is always greater than negative IRSR in net positive cases and the negative amount is allocated in proportion to positive IRSR.⁷⁴

The ratio is the same as that proposed by AEMO in its rule change request.⁷⁵ However, we are proposing to apply the formula when allocating negative IRSR between SRD unit holders, when net IRSR is positive, whereas AEMO proposed it as the proportion to determine the allocation of all negative IRSR to CNSPs.

We understand this approach could be implemented in AEMO's settlement systems in time for the commencement of the loop.

⁷⁴ Currently, there is a minimum payout of \$10 for a SRD unit, as specified in section 8.2 of AEMO's [Guide to the SRA](#).

⁷⁵ AEMO, [Integration of PEC into the NEM](#), rule change request, February 2024, p.15.

3.2.2 Our rationale for selecting our preferred netting off approach

The Commission developed our proposed approach alongside three other options, which are explored further in section 3.2.3. We consider this approach to be the best approach for three key reasons:

- **It is more predictable and simple to implement compared to other options.** Netting off in proportion to the positive IRSR around the loop retains the relative magnitudes of the SRD unit payouts between arms of the loop - that is, SRD units for an arm accruing more positive IRSR would still pay out relatively more for that interval compared to units on an arm accruing less positive IRSR. This adds simplicity and predictability to the netting approach, where other methods are more likely to disrupt this correlation to some extent.
- **It maintains the SRD unit as an inter-regional hedging tool.** SRD units support inter-regional hedging. Netting off in proportion to the positive IRSR around the loop retains a correlation between payouts on each arm of the loop with the price separation between regions. While netting off IRSR around the loop would change the way that SRA participants calculate risks (compared with a radial interconnector), we consider the simplicity of this netting approach would likely better support the continued use of these tools as inter-regional hedges than more complex options. We are interested to understand whether this approach is likely to minimise the transaction costs associated with any further trades that market participants may wish to enter between themselves to manage their risk. Chapter 2 discusses hedging and netting further.
- **It adequately manages risks to consumers, compared with other options.** Chapter 2 discusses our rationale for netting off IRSR in transmission loops, and why we consider the draft rule would not adequately manage the risks to CNSPs and consumers. Subtracting negative IRSR around the loop in proportion to positive IRSR reduces cash flow risks to CNSPs, as there would be no residual IRSR for CNSPs to manage in net positive cases.

3.2.3 Other options we considered

The Commission considered three alternative options for netting off in net positive cases. However, we consider that they have drawbacks compared with the proposal set out in this paper (described above). We are interested in stakeholder feedback on our assessment of the options.

Alternative option 1: Netting off around the loop based on net trade

This option is similar to the preferred approach in this proposal (described above), however, would net off in proportion to the net flows around the loop. We consider this would have similar benefits to our preferred approach in section 3.2 (netting off in proportion to positive IRSR), however, would be more complex to implement.

This option would redistribute negative IRSR between the arms of the loop in such a way as to reflect 'net trade' between the three regions. This would seek to align the payouts with the outcomes around the loop, that is, the 'net electrical flows'.

The worked example in Box 5 illustrates this approach.

Box 5: Worked example - Netting off around the loop based on net trade

We first determine the looped regions that are net importing and net exporting. In this example:

- NSW and Victoria are net exporting 150 MW
- SA is net importing 300 MW.



Note: This example uses a dispatch interval of one hour to simplify the calculation.

The SRD unit payout is then the 'net trade' between two regions, multiplied by the price difference between those same two regions. In this case, there is no net trade between NSW and VIC, and therefore no positive IRSR to pay out to SRD unit holders on that arm.

SRD unit payout in the dispatch interval:

- **NSW-SA:** $150 \times (\$50 - \$30) = \$3000$
- **VIC-SA:** $150 \times (\$50 - \$40) = \$1500$
- **All others:** \$0

The SRD unit payouts on each arm would generally be positive, but in the case that one arm is negative, this amount would be netted off a second time, taking from the positive arm. This approach would only apply for the loop.

We understand this approach could be implemented in AEMO's settlement systems in time for the commencement of PEC. However, we have not chosen to progress this option as we consider it would not be as simple to implement and apply as our preferred option. We consider the added complexity would make payouts more difficult to predict, so it may not support inter-regional hedging to the same extent. We are interested in stakeholder feedback on this assessment.

Alternative option 2: Netting off by directional interconnector over a quarter.

This option would consider each of the six directional interconnectors in the loop separately for netting off purposes. Any negative IRSR would be subtracted from positive IRSR for each directional interconnector over a quarter. Were the sum over the quarter of the negatives and positives to be negative, it would be paid by CNSPs.

We understand this approach could be implemented in AEMO's settlement systems in time for the commencement of PEC. However, we have not chosen to progress this option as it would still present the risk of extreme negative IRSR arising for CNSPs (and therefore consumers). One

directional interconnector may still accrue extreme negative IRSR in a dispatch interval, and if this occurs consistently across multiple dispatch intervals in a quarter, the negative amount may just become more extreme.

As the netted IRSR payout would be calculated on a quarterly basis, it may also be difficult to link it to the risk that market participants are trying to hedge on an interval by interval basis. This is likely to diminish the quality of the SRD units as hedging instruments.

Our preferred approach would instead manage IRSR by netting on a dispatch interval by dispatch interval basis.

Alternative option 3: Creating a new loop SRD unit category.

This option would create a new, whole-of-loop SRD unit category, replacing SRD units related to individual arms of the loop. Participants that have bought units in this new category would be paid out portions of the net IRSR around the loop (where the net IRSR around the loop is positive in a trading interval).

We have not chosen to progress this option as we are unsure if these units would provide an effective hedge for the risk arising around the loop. It would be a significant change to the design of SRD units, that would not fundamentally reallocate more or less IRSR than other netting options. It is also unlikely that it could be implemented in time for the commencement of PEC and would require complex transitional arrangements (for example, SRD units for the VIC-NSW/NSW-VIC and SA-VIC/VIC-SA directional interconnectors would no longer exist after the commencement of the loop rules, so already sold units would need to be transitioned).

3.3 In net negative cases, the net IRSR around the loop would be allocated to CNSPs

3.3.1 How the netting off approach would work in net negative cases

Netting off in net negative cases would simply involve subtracting all positive IRSR around the loop from all negative IRSR in each trading interval.⁷⁶ This effectively sets SRD unit payouts relating to the trading interval to \$0 in net negative cases, and allocates the balance of negative IRSR in the trading interval (net negative IRSR) to CNSPs (using the regional demand approach set out in chapter 4).

The Commission is interested in feedback on the decision to net off in net negative cases.

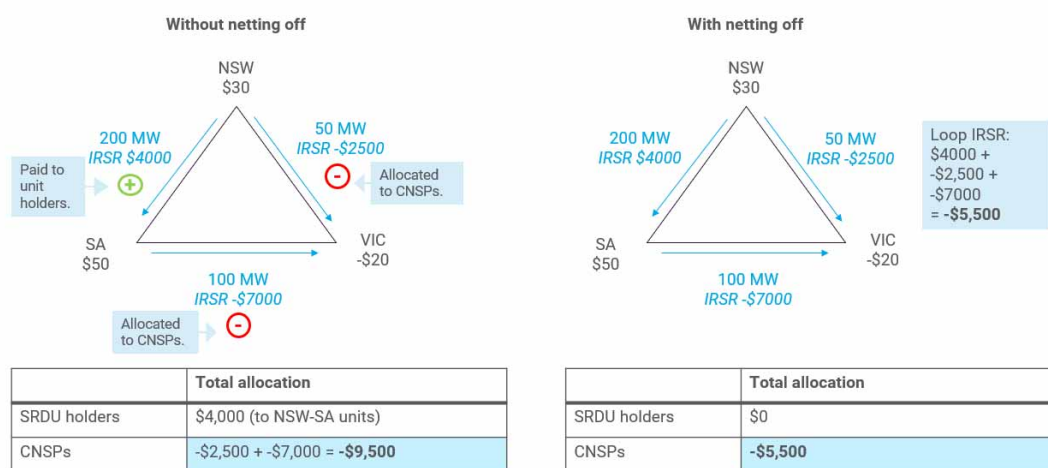
The worked example in Box 6 illustrates this approach.

⁷⁶ Refer to indicative drafting, clause 3.6.6(a), definitions of 'total negative allocation' and 'net loop allocation', and how these are applied in clause 3.6.6(c).

Box 6: Worked example - Netting off in net negative cases

In this example,

- If we **do not net off** - shown on the left hand side - CNSPs are allocated the negative IRSR on each arm totalling -\$9,500 and the positive totalling \$4,000 is paid out to NSW-SA SRD unit holders.
- If we **do net off** - shown on the right hand side - CNSPs are allocated the net IRSR around the loop totalling -\$5,500 and there is no payout to SRD unit holders.



Note: This example uses a dispatch interval of one hour to simplify the calculation.

3.3.2 Our rationale for netting off in net negative cases

The Commission has decided to net off in net negative cases for three key reasons:

- It avoids the potential for gaming.** Not netting off in net negative cases could create an incentive for generators that hold SRD units to force the net loop IRSR negative in the hope of receiving un-netted SRD unit payouts. Generators may do this by adjusting their offer price or quantity when net loop IRSR is near zero – leading to inefficient dispatch outcomes.
- It promotes stability by providing continuity across net positive and net negative cases.** Failing to net off in net negative cases would lead to a discontinuity between net positive and net negative cases. That is, there would be an abrupt change in SRD unit payouts and the amount owed by CNSPs as the net loop IRSR passes through zero. This would introduce greater volatility between negative IRSR outcomes, which CNSPs would pass on to consumers through larger year-on-year changes to TUOS.

For the avoidance of doubt, our proposed approach would also net off in a 'net zero' case (i.e. the total IRSR around the loop is zero). The rationale is the same as the rationale for netting in net negative cases. There would be no SRD unit payouts and no negative IRSR allocated to CNSPs in this case.

Netting off in net negative cases is justified, despite clamping

We note that AEMO would clamp net negative IRSR in the loop. The Commission supports AEMO's intended approach to clamping, as we did in the draft rule.⁷⁷ However, there is still a risk that material negative IRSR could arise in net negative cases. AEMO's reporting shows that negative IRSR on non-looped interconnectors can be up to approximately \$40 million quarterly, despite clamping.⁷⁸ Netting off would assist with managing this.

3.4 Timing, implementation and transitional arrangements

3.4.1 Rules for the loop would take effect when the loop begins operating

We propose that these arrangements would commence at the time the Commission makes a final determination.⁷⁹ PEC will not yet be operational at that time, and therefore a 'loop' will not yet exist. However, the rules for the allocation and distribution of IRSR for radial interconnectors would remain and therefore, would continue to apply until such time as PEC is operational (and a loop configuration is formed). From that time, AEMO would be required to use the new rules in relation to loops (termed 'parallel interconnector configuration' in the indicative drafting).⁸⁰ As such, a proposed transitional provision in the indicative drafting defines a 'PEC operational date' to create a clear trigger from when these rules must be used.⁸¹

PEC operational date means the date from which AEMO cuts over from the 'micro-slice' model initially used for the PEC interconnector to the 'interconnector dispatch integration model', which represents the PEC flows as an *interconnector* in the *dispatch algorithm* (known as NEMDE).

The definition uses terms defined by AEMO in its PEC Market Integration final report:⁸²

- "The 'micro-slice', which inserts a small Victoria region interfaced between the New South Wales and South Australia regions model... AEMO notes the micro-slice option retains the radial (i.e., no loops) network topology of the current network." AEMO is currently operating Stage 1 of the PEC interconnector using a micro-slice approach.
- "The 'interconnector', where PEC is considered as a separate line linking New South Wales and South Australia". When PEC becomes operational, it will be considered an interconnector and the 'loop' network topology will commence.

Therefore, the existing rules would apply prior to the 'PEC operational date' (that is, the existing NSW-VIC and VIC-SA interconnectors would be subject to the current rules and SRD unit calculations until this time) and any rule made under this proposal would apply after that date (that is, netting would be applied to calculations for all looped interconnectors after this date, including NSW-SA and SA-NSW SRD units sold prior to PEC's commencement).

⁷⁷ For further information on clamping and AEMO's intended approach, refer to the draft rule determination, section 3.1.3 (p. 15) and appendix C.3. An AEMO consultation process is open on its management of negative settlements residue, and is due to close on 11 July 2025. Refer to: aemo.com.au/consultations/current-and-closed-consultations/automation-of-negative-residue-management-for-the-implementation-of-transmission-loops.

⁷⁸ Negative IRSR is reported in AEMO's Quarterly Energy Dynamics reports. This figure was drawn from AEMO, [Quarterly Energy Dynamics Q4 2024](#), January 2025, p.45.

⁷⁹ That is, the amendments to the NER would be consolidated on or about the same time as the final determination is published.

⁸⁰ The rules relating to radial interconnectors would be preserved and continue to apply to non-looped directional interconnectors, i.e. QLD-NSW and NSW-QLD.

⁸¹ Refer to indicative drafting, clause 11.[XXX].1, definition of 'PEC operational date'.

⁸² AEMO, PEC Market Integration Papers, Final report, February 2024, p.15, available at aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/pec-market-integration-paper/february-2024/final-paper-pec-market-integration.pdf?la=en.

This definition adds clarity to the draft rule approach

Section 3.1.1 and 3.1.2 of the draft determination defined the transmission loop and used the formation of the transmission loop as the basis for when the draft rule would take effect.⁸³

We would not change the approach set out in the draft determination for defining the loop as a 'parallel interconnector configuration', which would cover the NSW, SA and Victoria loop, and would utilise the defined term 'regulated interconnector'.

However, this proposal more clearly specifies how the new concept of a 'loop' applies in relation to PEC. Therefore, our proposed approach also defines 'PEC interconnector', 'PEC interconnector loop' and the 'PEC operational date' in a proposed transitional provision.⁸⁴ This would add clarity compared to the draft rule approach, which had drawbacks since it relied on the general definition of a regulated interconnector and did not specify how this applied specifically in relation to PEC.⁸⁵

3.4.2 Netting off calculations would apply to previously sold SRD units

SRD units are sold up to three years in advance of the quarter in which they pay out. This means that some SRD units have already been sold for the VIC-NSW/NSW-VIC and SA-VIC/VIC-SA directional interconnectors of the loop that will be formed by PEC. Netting off calculations would apply to the positive IRSR attributed to these already sold units, so this would impact the payouts to these SRD unit holders.⁸⁶ Fifty per cent of the SRD units for the VIC-NSW/NSW-VIC and SA-VIC/VIC-SA directional interconnectors for Q4 2026 (when PEC is expected to become operational) have been sold at the time of writing.⁸⁷

Clause 16 of the Auction Participation Agreement⁸⁸ covers the circumstances under which an auction participant may terminate its SRD agreement. The agreement also provides for a refund as calculated under clause 16.6. AEMO indicated as part of its consultations on the integration of PEC that the clause may allow participants to terminate SRD units under a netting off approach.⁸⁹ The Commission intends to work with AEMO for the final determination to provide clarification for auction participants about how AEMO intends to apply the termination and repayment provisions in light of the proposed netting off approach.

Under clause 3.18.4(a)(2) of the Rules, AEMO must distribute any unsold positive IRSR to the relevant CNSP (which would be the CNSP for the importing region in accordance with the approach set out in chapter 4). We understand that AEMO may also re-sell these units in certain circumstances. Our view is that AEMO should offer cancelled SRD units in a subsequent SRA in order to increase the SRD unit pool available for hedging under the new framework.

3.4.3 Additional reporting would be required under a netting approach

We have proposed to retain the reporting requirements in the draft rule⁹⁰ as well as including some additional requirements to promote transparency over our proposed netting approach.

83 Refer to the draft determination, pp. 13-15 and paragraph (c)(2) in the draft rule's definition of 'regulated interconnector'.

84 Refer to indicative drafting, clause 11.[XXX].1 for definitions and how they are applied in clause 11.[XXX].3.

85 While this rule change was prompted by PEC, it applies generally to any 'loop' configuration. In other words, it is addressing the issue introduced by PEC, but it could also apply to any future loop configurations that appear in the NEM.

86 For the avoidance of doubt, if the PEC operational date occurs part way through a calendar quarter, SRD unit holders for that quarter would receive payouts under the current rules until the PEC operational date, then receive payouts under the new rules for the rest of that quarter. Refer to indicative drafting, clause 11.[XXX].3.

87 Refer to AEMO, [Auction Report 2025 Quarter 1](#), 22 April 2025, p. 4.

88 Available on AEMO's website: aemo.com.au/energy-systems/electricity/national-electricity-market-nem/market-operations/settlements-and-payments/settlements/settlements-residue-auction/auction-participant-agreement.

89 AEMO, [PEC Market Integration Papers](#), Directions paper, November 2023, pp.40-41.

90 Refer to section 3.5 of the draft determination, pp.34-35 and amendments to clause 3.13.5A in the draft rule.

The proposed reporting requirements that are in addition to existing reporting requirements are:⁹¹

- for each category of SRD unit:
 - the number of SRD units sold, and of that number:
 - how many were offered by eligible persons under the secondary trading arrangements.
- for the billing period for each category of SRD unit, the payment per unit on account of settlement residue (but not the name of the person receiving payment).
- for the billing period, the amount of net negative IRSR recoverable from CNSPs for each region (under clause 3.6.6).
- how many SRD units had been terminated under the auction agreement, other than under the secondary trading arrangements, since the last billing period.

These requirements largely reflect AEMO's existing auction reporting (or the intent of similar metrics we included in the draft determination). We are proposing to elevate these to the NER to increase market transparency and assist CNSPs with cash flow forecasting. However, we are interested in stakeholder feedback on additional information that may be beneficial to market participants under a netting off approach - for example, to inform hedging decisions.

3.4.4 Streamlined processes would assist AEMO's implementation

Given the extended timeframe to develop this new proposal for netting, the Commission is now required to make a final determination by 25 September 2025. AEMO would have relatively limited time to implement this proposal before PEC becomes operational. This includes making necessary updates to procedures, the methodology for apportioning IRSR, and relevant auction material.

At a minimum, AEMO would be required to:

- review and amend the auction rules
- review and amend the network constraint formulation guidelines, which would cover a new clamping procedure
- review and amend its methodology for apportioning IRSR, which would be different to its current methodology given the proposed the netting approach.

These activities were also necessary under the draft rule, although the draft rule did not specify each requirement.⁹² Under this proposal, the indicative drafting includes proposed transitional provisions that require AEMO to review and update the three documents above.⁹³ However, given the commencement date of PEC is unknown, the transitional provisions in the indicative drafting do not include a specific date by which AEMO must make these changes. Instead, the provisions require AEMO to make the changes no later than four weeks before the 'PEC operational date'.⁹⁴ The Commission considers this approach balances flexibility for AEMO with certainty for the market by accounting for any changes to the commencement of PEC, while ensuring the relevant documentation is updated and published in advance of that time.

In addition, to assist AEMO to make these changes before PEC becomes operational, the indicative drafting allows AEMO to use the expedited rules consultation procedure for changes to

91 Refer to indicative drafting, clause 3.13.5A(a), (b) and (b1).

92 Instead, the draft rule, in clause 11.[XXX].2, took an approach which generally required AEMO to review and update guides and information but did not specify which ones or a timeframe for doing so.

93 Refer to indicative drafting, clause 11.[XXX].2.

94 Refer to indicative drafting, clause 11.[XXX].1 for the definition of 'PEC operational date' and to clauses 11.[XXX].2(a) and (c).

the auction rules and network constraint formulation guidelines (see the indicative transitional rules, clause 11.[XXX].2(b)).⁹⁵

The proposal also includes an ongoing provision (not transitional), which allows AEMO to amend the auction rules without the approval of the SRC where the amendments to the auction rules are required to comply with the Rules.⁹⁶ Changes to the auction rules under this proposed clause 3.18.3(d)(3) will ordinarily require the standard rules consultation procedure. However, that amendment, together with the transitional rule proposed in clause 11.[XXX].2(b), would enable AEMO to use the expedited process for any changes required by this rule change.

⁹⁵ See clause 8.9.3 of the NER for the expedited rules consultation procedure.

⁹⁶ Refer to indicative drafting, clause 3.18.3(d)(3).

4 How cash flows to CNSPs would be allocated

Box 7: Key points

- The previous chapter explained how negative IRSR would be netted off from positive IRSR and allocated to SRD unit holders. This chapter seeks feedback on the approach to allocating cash flows relating to SRA proceeds, any unsold SRD units and net negative IRSR amongst CNSPs for the loop.
- Negative cash flows (net negative IRSR) would be allocated to CNSPs in each region in proportion to regional demand. For the purposes of our proposal, 'regional demand' means each region's total annual electricity consumption over the prior year.
- Positive cash flows (SRA proceeds and positive IRSR from unsold SRD units) would be allocated to the CNSP in the importing region.
- The proposed approach would balance uncertain outcomes with known practical complexities and costs.
- This approach is essentially the same as the draft rule. A future review could reconsider the approach to allocating CNSP cash flows when more information becomes available (as discussed in further detail in chapter 6).
- The approach in this paper makes no changes to IRSR arrangements for radial interconnectors. This means that the approach for allocating net negative IRSR in our proposal (that is, by regional demand) would be different to the approach for allocating negative IRSR in the current rules for radial interconnectors (that is, to the importing region). The proposal to allocate SRA proceeds and net positive IRSR from unsold SRD units to the importing region maintains the same approach as for radial interconnectors.
- We consider that there would be enough time for CNSPs to forecast and implement any TUOS adjustments for the first regulatory year after the final rule commences (which is expected in September 2025). We are interested in CNSP feedback on this.

In this chapter:

- Section 4.1 explains that CNSPs are exposed to cash flows resulting from IRSR around the loop
- Section 4.2 explains and seeks stakeholder feedback on the approach to allocating these cash flows amongst CNSPs for the loop
- Section 4.3 explains and seeks feedback on the rationale for this allocation method
- Section 4.4 explains how this approach compares to the approach on radial interconnectors
- Section 4.5 explains and seeks stakeholder feedback on the timing, implementation and transitional arrangements for the allocation approach.

4.1 CNSPs are exposed to positive and negative cash flows around the loop, which would be passed through to consumers

CNSPs are exposed to both positive and negative cash flows resulting from IRSR around the loop and the associated SRD units, which are passed through to consumers via reductions and increases in transmission charges respectively. These amounts are:

- **SRA proceeds.** CNSPs receive SRA proceeds, which are a positive amount resulting from the sale of SRD units in SRAs. For any financial year, approximately 80 per cent of SRA proceeds are known to CNSPs in advance of setting transmission prices for that year.
- **Unsold SRD units.** CNSPs receive positive IRSR from unsold SRD units, but the positive IRSR is a variable positive cash flow which is unknown in advance.
- **Net negative IRSR.** Net negative IRSR is a variable negative amount which is unknown in advance and allocated to CNSPs for payment. Both netting and clamping will minimise the magnitude of negative IRSR. However, there is still a risk that material negative IRSR could arise in net negative cases. As discussed in chapter 3, AEMO's reporting shows that negative IRSR on non-looped interconnectors has been up to approximately \$40 million quarterly, despite clamping.⁹⁷

The draft rule determination described how IRSR and SRA proceeds are currently transferred between AEMO, CNSPs, and consumers.⁹⁸ CNSPs account for forecast SRA proceeds, any forecast positive IRSR from unsold SRD units and forecast negative IRSR when setting transmission prices each March.⁹⁹

On radial interconnectors, these cash flows are allocated to the importing region. This chapter deals with allocation for looped interconnectors. For the avoidance of doubt, we are not proposing to change the arrangements for radial interconnectors (as discussed in section 4.4).

4.2 How our proposed allocation approach would work

Under our proposed approach, CNSP cash flows for transmission loops would be allocated using two different methods. That is:

- Positive cash flows (SRA proceeds and positive IRSR from unsold SRD units) would be allocated to the CNSP in the importing region.
- Negative cash flows (net negative IRSR) would be allocated to CNSPs in each region in proportion to regional demand. For the purposes of our proposal, 'regional demand' means each region's total annual electricity consumption over the prior year.¹⁰⁰

We consider this approach strikes a balance between sharing the costs of the loop and implementation feasibility. We are interested in stakeholder feedback on the approach (outlined in this section - section 4.2) and our rationale (outlined in section 4.3).

4.2.1 SRA proceeds and net positive IRSR from unsold SRD units would be allocated to the CNSP in the importing region

Our proposed approach is to allocate SRA proceeds and positive IRSR from unsold SRD units to the importing region's CNSP. This is the same as the current approach in the Rules for radial interconnectors.¹⁰¹ When applied to netting on the loop, the importing region's CNSP can be determined based on the unit category for the units sold/accruing positive IRSR (that is, the importing region for NSW-SA units is SA).

In our proposal:

⁹⁷ Negative IRSR is reported in AEMO's Quarterly Energy Dynamics reports. This figure was drawn from AEMO, [Quarterly Energy Dynamics Q4 2024](#), January 2025, p.45.

⁹⁸ Refer to Box 4 in the draft determination, p.22.

⁹⁹ Clauses 6A.23.3(b)(1) and 6A.23.3(e)(2) NER.

¹⁰⁰ Refer to indicative drafting, clause 3.6.6(a), definition of 'regional share'.

¹⁰¹ Clauses 3.18.4(a) and 3.6.5 NER.

- SRA proceeds ('auction clearing price') would be allocated to the importing region's CNSP under indicative clause 3.18.4(a).
- Net positive IRSR from unsold SRD units would be allocated to the importing region's CNSP under indicative clause 3.6.6(b)(3), using the locally defined term 'unsold unit amount' in 3.6.6(a). The positive IRSR allocated to CNSPs will be the leftover netted amount on an arm, once the positive IRSR has been paid to unit holders.

4.2.2 Net negative IRSR would be allocated to CNSPs based on regional demand

The CNSP for each region would be allocated the net negative IRSR in a trading interval multiplied by its 'regional share' (as per indicative clause 3.6.6(c) in the indicative drafting).

Regional demand would be defined as rolling annual energy consumption

A region's proportional electricity demand is a ratio defined in clause 3.6.6(a) of the indicative drafting as 'regional share'. This would be calculated as:¹⁰²

$$\text{Regional share} = \text{Annual regional demand (ARD)} / \text{Total regional demand for the looped regions (TRD)}$$

where:

Annual regional demand is the rolling annual regional demand of the region for the billing period, which means the total *electrical energy consumed by a region in a year*. This would be calculated as ACE (adjusted consumed energy) for the region for the past 52 weeks on a rolling basis.¹⁰³ That is, for each billing period (week), regional demand would equal ACE summed across:

- all trading intervals within that billing period and the previous 51 billing periods, and
- all market connection points in the region.

ACE is defined as now in the NER.¹⁰⁴ In plain language, ACE for a market connection point is the amount of electrical energy consumed by that market connection point, and where applicable, adjusted for distribution losses and unaccounted for energy.¹⁰⁵

Total regional demand means the sum of all annual regional demand for looped regions.

This approach to calculating a CNSP's regional share is the same as in draft rule.¹⁰⁶

4.3 Our proposed approach would balance uncertain outcomes with known practical complexities

We considered two key options for allocating each of SRA proceeds, unsold SRD units and net negative IRSR:

- Allocating cash flows in accordance with the status quo (to the CNSP in the importing region).
- Allocating cash flows based on regional demand.

¹⁰² Refer to indicative drafting, clause 3.6.6(a), definition of 'regional share'.

¹⁰³ Refer to indicative drafting, clause 3.6.6(a), definition of 'regional share', paragraph (c).

¹⁰⁴ Clause 3.15.4(a) NER.

¹⁰⁵ Any energy exported from the connection point (i.e. generation) is not netted off from ACE but is counted in a separate quantity. ACE for a market connection point in the distribution network includes adjustments for unaccounted for energy (UFE) and distribution losses. UFE is the difference between the energy that leaves the transmission network and metered consumption, after accounting for distribution losses. It is generally related to meter faults and electricity theft. The NER provides a methodology for distributing UFE amongst market connection points for settlements purposes (NER clause 3.15.5).

¹⁰⁶ Refer to section 3.2.1 of the draft determination, pp.17-18.

4.3.1 The benefits of allocating SRA proceeds and unsold SRD units by regional demand are uncertain, and unlikely to outweigh the implementation costs

We consider that net negative IRSR should be shared between regions based on regional demand. It is not clear the extent to which each region benefits from the loop - and therefore, it is not clear the extent to which each region should bear the costs of net negative IRSR. Net negative IRSR may be material, despite netting and clamping, so a decision to allocate to the importing region (as is the status quo) is not necessarily justified compared with sharing the costs proportionally to regional demand. We also note that a regional demand approach for net negative IRSR is feasible from an implementation perspective.

Theoretically, we could also allocate SRA proceeds and unsold SRD units in the same way (that is, by sharing them between regions based on regional demand). This may align the allocation of positive and negative cash flows with the long term costs and benefits of the loop.

However, it is difficult to make assumptions about where the costs and benefits fall without seeing the loop in operation, as the arms of the loop are interdependent.

We also understand that allocating SRA proceeds and unsold SRD units by regional demand would require complex changes to AEMO's SRA systems.¹⁰⁷ This may incur costs and potentially delay other important systems updates for what we consider is an uncertain benefit. Therefore, we are proposing to allocate SRA proceeds and unsold SRD units to the importing region. This is the status quo for these cash flows on radial interconnectors, so may also have some simplicity benefits.

A future review could reconsider the approach to allocating CNRP cash flows when more information becomes available (as discussed in further detail in chapter 6).

We are interested in stakeholder feedback on our proposed approach.

4.3.2 Stakeholders had mixed views on allocation in response to the draft determination

The draft determination proposed to allocate negative IRSR by regional demand

In the draft determination, we proposed to allocate all negative IRSR to CNRPs in proportion to regional demand, and then recover this from customers via transmission charges.

Our rationale in the draft rule for sharing negative IRSR by regional demand was to manage risks for all parties by spreading it widely. The 'risks' arose because negative IRSR was proposed to be kept separate from positive IRSR, and is expected to occur more often and may be large and unpredictable in transmission loops. This large and unpredictable negative IRSR would pose financial risks to consumers and CNRPs (as discussed in detail in Chapter 2).

We did not propose to change the allocation of SRA proceeds or unsold SRD units in the draft determination. That is, we proposed positive cash flows would be allocated to the importing region, as per the status quo arrangements.

Stakeholders had mixed views on the draft determination approach

Several stakeholders (ECA, AEMO, Origin Energy, EnergyAustralia) supported allocation by regional demand to address the risk of unexpected and extreme negative IRSR.¹⁰⁸ CNRPs generally did not

¹⁰⁷ The SRA system is separate from the settlements system, which calculates the positive and negative IRSR weekly and is where the majority of the changes due to netting will be made.

¹⁰⁸ Submissions to the draft determination: ECA, p.1; AEMO, p.3; Origin Energy, p.1; EnergyAustralia, p.1.

raise issues with the allocation method specifically, but were concerned about the unpredictability and magnitude of negative IRSR without netting (discussed in detail in chapter 2).

- ENA, AEMO, EUAA and JEC noted the draft rule would allocate the largest amount of negative IRSR to NSW.¹⁰⁹
- JEC said the draft rule would misalign costs and benefits, and unreasonably impact NSW customers.¹¹⁰
- AEMO noted that this may reduce volatility of negative cash flows as the ratio between regions would remain relatively stable over time, but queried whether the by-regional-demand approach is more cost reflective, and therefore efficient, than other options.¹¹¹
- EUAA and EnergyAustralia raised concerns related to the costs of financing new transmission assets and the allocation of these costs.¹¹² These issues are not in the scope of this rule change request.

AEMO further noted that the draft rule would treat SRA proceeds and negative IRSR differently, potentially impacting CNSPs' capacity to pay.¹¹³ We have not had any feedback from CNSPs on this issue, but are interested in CNSP views in response to this chapter.

4.3.3 Our proposal is consistent with the draft rule approach

The proposed netting off approach described in this paper (refer to chapter 2 and chapter 3) would manage the large and unpredictable negative IRSR risks that drove the draft rule approach. However, we consider that allocation to CNSPs based on regional demand would still be justified for net negative IRSR (as opposed to all negative IRSR - which was the proposal in the draft rule) to share the costs.

We acknowledge that some stakeholders were concerned this could disproportionately impact NSW customers. We note, however, that the costs should be proportional to demand and so would be an equivalent amount between states on a per-MWh basis.¹¹⁴

For SRA proceeds and unsold SRD units, given the uncertainty of the benefits, weighed against the relatively certain costs and complexity of implementing a different approach to the current arrangements (discussed in section 4.3.1), we have maintained the draft rule position to allocate SRA proceeds and net positive IRSR from unsold SRD units to the importing region.

We consider this could be reviewed in the future - as discussed in chapter 6 - when more information becomes available.

4.4 This would be different to the approach on radial interconnectors

The approach in this paper makes no changes to IRSR arrangements for radial interconnectors. This means that the approach for allocating net negative IRSR in this proposal (that is, by regional demand) would be different to the approach for allocating negative IRSR in the current rules for radial interconnectors (that is, to the importing region).

¹⁰⁹ Submissions to the draft determination: ENA, p.2; AEMO, p.3; EUAA, p.3; JEC, p.1.

¹¹⁰ Submission to the draft determination, JEC, p.1.

¹¹¹ Submission to the draft determination, AEMO, p.3.

¹¹² Submissions to the draft determination: EUAA, p.3; EnergyAustralia, p.2.

¹¹³ Submission to the draft determination, AEMO, p.4.

¹¹⁴ We also preferred a timeframe of a full year to calculate regional demand in the draft determination (p.18) because we considered this would provide sufficiently stable and predictable outcomes. We have retained this position and consider that it would benefit CNSP forecasting. In its response to the draft determination (p.2), Transgrid noted the potential costs of IRSR volatility to consumers, in the form of fluctuating TUOS. This was particularly with regard to the proposal to allocate all negative IRSR to consumers, however, we have also taken this into account in our proposed approach to allocating net negative IRSR.

The scope of this rule change deals with transmission loops, and therefore, we have not considered the existing arrangements for radial interconnectors. We consider it may be appropriate to allocate net negative IRSR differently in a loop because of the interconnectedness of the outcomes on the loop.¹¹⁵

However, our proposal to allocate SRA proceeds and net positive IRSR from unsold SRD units to the importing region maintains the same approach for these cash flows as for radial interconnectors.

Allocation of IRSR for radial interconnectors may be reviewed in future - as discussed in chapter 6.

4.5 Timing, implementation and transitional arrangements

As with the netting off provisions in chapter 3, the arrangements described in this chapter would commence at the time the Commission makes a final determination,¹¹⁶ however AEMO would not be required to use the new rules in relation to loops until after the loop is operational. Refer to section 3.4 for further details on how this would be implemented via a transitional rule defining the 'PEC operational date' in the indicative drafting.

In effect, all negative IRSR would be recovered from CNSPs in the respective importing regions until the PEC operational date. After that date, in the transmission loop, only net negative IRSR would be recovered from CNSPs and this would be on a regional demand basis. SRA proceeds for the quarter in which the loop becomes operational would be allocated to the CNSP for the relevant importing region (consistent with both our proposal in this paper and the existing arrangements).

No other specific transitionals would be required for the allocation of CNSP cash flows. AEMO's settlements systems would need to be updated for the allocation of net negative IRSR. Streamlined processes to assist AEMO to update applicable documents are discussed in section 3.4.4.

4.5.1 We expect that CNSPs would have enough time to forecast and implement any TUOS adjustments

As discussed in this chapter, cash flows from IRSR that are allocated to CNSPs are passed through to consumers via TUOS charges.

- SRA proceeds and positive IRSR from unsold SRD units allocated to the importing CNSP would be passed through to consumers via reduced TUOS.
- Net negative IRSR allocated based on regional demand would be passed through to consumers via increased TUOS.

CNSPs set transmission charges annually in March.¹¹⁷ If IRSR is larger or smaller than expected, CNSPs must recover the difference from (or return the difference to) customers as part of their regulated cost recovery.

We consider that there would be enough time for CNSPs to forecast and implement any TUOS adjustments for the first regulatory year after the final rule commences (which is expected in September 2025). We are interested in CNSP feedback on this.

Updated reporting requirements would assist CNSPs with forecasting in future

Section 3.4.3 discusses the updated reporting requirements that form part of our proposal.

¹¹⁵ As noted in section 4.3.1, we are not proposing to change the allocation of SRA proceeds and unsold SRD units due to our the uncertainty of the benefits.

¹¹⁶ That is, the amendments to the NER would be consolidated on or about the same time as the final determination is published.

¹¹⁷ Clause 6A.24.2 NER.

As stated in that section, these requirements largely reflect AEMO's existing auction reporting (or the intent of similar metrics we included in the draft determination). We are proposing to elevate these to the NER to increase market transparency and assist CNSPs with cash flow forecasting.

We are interested in CNSP feedback on whether this information is useful to them and any additional information that may be beneficial.

5 Our proposal would contribute to the energy objectives

This paper puts forward our proposal to net off positive and negative IRSR in transmission loops and for related matters. We are seeking stakeholder input on our proposal before proceeding to a final determination on the rule change.

The Commission will only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO. In this chapter:

- Section 5.1 outlines the NEO.
- Section 5.2 outlines our assessment criteria and rationale for this rule change request and our assessment against them.

5.1 The Commission must act in the long-term interests of consumers

The Commission is bound by the NEL to make a rule only if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.¹¹⁸

The NEO is:¹¹⁹

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; and
- (c) the achievement of targets set by a participating jurisdiction—
 - (i) for reducing Australia’s greenhouse gas emissions; or
 - (ii) that are likely to contribute to reducing Australia’s greenhouse gas emissions.

The targets statement, available on the AEMC website, lists the emissions reduction targets to be considered, as a minimum, in having regard to the NEO.¹²⁰

The Commission may make a rule that is different, including materially different, to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule is likely to better contribute to the achievement of the NEO.¹²¹ We must also consider how the rule would apply in the Northern Territory. Refer to section 2.2 of the draft determination for more information on these matters.

5.2 Our assessment criteria and rationale for the proposal

For this rule change process, we are using three assessment criteria to assess whether the proposed rule change, no change to the rules (business-as-usual), or other viable, rule-based options are likely to better contribute to achieving the NEO.

¹¹⁸ Section 88 of the NEL.

¹¹⁹ Section 7 of the NEL.

¹²⁰ Section 32A(5) of the NEL.

¹²¹ Section 91A of the NEL.

- **Outcomes for consumers:** We selected outcomes for consumers because the design of the arrangements to manage and allocate IRSR in a transmission loop will affect the distribution of costs to consumers in different regions. The introduction of the transmission loop will affect market outcomes (including dispatch, imports and exports, prices, and positive and negative IRSR) in complex ways due to the interdependent nature of loop flows. Under this criterion, we have considered how the rule change would affect outcomes for consumers and which approach for managing and allocating IRSR is in the best interests of consumers.
- **Principles of market efficiency:** Principles of efficiency are relevant because the market arrangements for transmission loops will affect the extent to which some of the benefits of PEC are realised and flow through to consumers. Under this criterion, we have considered questions relating to concepts of efficiency and risk allocation. Specifically, we have considered:
 - how to allocate settlements residue in the most efficient way to ensure that risks are managed for consumers,
 - the role of SRD units in realising the inter-regional trade benefits of the loop,
 - how clamping arrangements will influence loop flows and hence the consumer benefits of PEC.
- **Principles of good regulatory practice:** It is important to create clear, stable, and predictable market arrangements for allocation of residues and inter-regional trading, so that the incentives for market participants and investors lead to efficient outcomes. Under this criterion, we have considered whether the rule change will promote predictable and stable outcomes for consumers, and how to balance certain and uncertain outcomes.

The rest of this section explains how we have evaluated the proposal in this paper against these assessment criteria.

5.2.1 How this assessment differs from our assessment of the draft rule

We used the same assessment criteria for our draft determination, which also included our assessment of the draft rule against the NEO.¹²² Stakeholder feedback on the draft rule and our further analysis has resulted in a proposed new approach that nets off positive and negative IRSR in transmission loops. As a result, much of our assessment in the draft determination is inapplicable to the new proposal, while some of the assessment remains relevant, for example with respect to not imposing additional clamping requirements.

To assist stakeholders to respond to our proposed new approach, this chapter sets out our indicative assessment of the new proposal against the NEO.

5.2.2 Our proposal would promote improved outcomes for consumers

Our netting approach would place risks with the parties best placed to manage them - reducing consumers' exposure to the variable IRSR risks arising from price separation between regions. While there would be costs of managing the risk that would flow to consumers, we expect that market participants would be able to manage the risk at a lower cost than CNSPs are able to, lowering overall risks (and therefore, costs) for consumers. See section 2.4.2.

Our proposal also supports the continued use of SRD units to hedge inter-regional price risk, which would benefit consumers. From the consumer's perspective, SRD units provide a mechanism to hedge the variable cash flows that would otherwise arise were they to receive all the IRSR directly.

¹²² Refer to chapter 2 of the draft determination.

By selling SRD units, consumers swap the variable IRSR cash flow for a fixed cash flow. Effective inter-regional hedging contributes to lower energy costs for consumers, including by supporting retail competition across regions. See section 2.2.2.

These points are elaborated further below.

5.2.3 Our proposal would support efficient risk management and use of the loop

Our proposal would place the risk with those best placed to manage it

The Commission considers that market participants are best able to manage the impact of netting negative IRSR in net positive cases because of the tools and expertise available to them. These include the option to trade with other parties. These opportunities would promote efficiencies in how IRSR is managed. See section 2.4.2.

CNSPs are not able to realise these efficiencies, as they cannot purchase or trade SRD units. Any risks faced by CNSPs from the accrual of IRSR on interconnectors are instead passed directly through to consumers via TUOS. See section 2.3.

Our proposal would continue to support inter-regional hedging and trade

Market participants that have generation and load (or retailing) in different regions, or financial derivative contracts struck at a different RRP than the RRP of the region they are in, face inter-regional price risk when there is price separation between those regions. These parties can use SRD units to hedge their inter-regional price risk by offsetting their variable exposure to some extent. In a transmission loop, making the net positive IRSR available through SRD units would be sufficient to allow the market to hedge its risk. This is because net positive IRSR for the loop is the difference between what load pays for electricity and what generators receive. Therefore, netted-off SRD units, combined with other hedging tools available to market participants, could continue to be used as part of an effective hedging strategy. See chapter 2.

We have also designed the netted-off SRD units to be simple to use. Our proposed approach to netting maintains a connection between IRSR outcomes and the directional interconnector on which the IRSR accrues, and does not allow for negative SRD unit payouts (section 3.1.1 and section 3.2.2). Although SRD unit payouts would be lower and may be more uncertain than if the current arrangements were applied, we expect they would correlate sufficiently with price separation to be useful as hedging instruments (noting, again, that net positive IRSR would be sufficient to hedge collective market risk). Auction participants could place lower bids to reflect any expectation of lower payouts, noting there is no reserve price. These factors would assist with the continued use of SRD units for inter-regional hedging (section 2.4.2). This means that the SRA framework could continue to benefit consumers by supporting inter-regional trade and competition under a netting off approach (section 2.2.2).

The approach to clamping would promote efficient utilisation of the looped interconnectors

Currently, for radial interconnectors, AEMO limits counter-price flows and negative IRSR by applying constraints in the National Electricity Market Dispatch Engine (NEMDE). This is known as negative residue management (NRM) or clamping. The clamping procedure is designed to keep negative IRSR at a 'manageable' level, but not to prevent it completely.

To account for the interdependent operation of the loop, AEMO has proposed to clamp the looped interconnectors only when the loop is net negative. This is because counter-price flows that occur when net IRSR is positive are likely to support overall efficient outcomes. The Commission agrees with AEMO's proposed approach. Clamping in net positive cases would interfere with efficient

dispatch and lead to under-utilisation of the looped interconnectors. Section 2.5.4 explains in more detail why the Commission considers clamping in net positive cases is not in consumers' interests.

5.2.4 Our proposal would be consistent with good regulatory practice

Our proposal promotes consistency and simplicity, acknowledging that there is limited time before the loop becomes operational

AEMO, CNSPs and the market require time to implement any resulting changes flowing from this rule change before the loop becomes operational.

Our proposal would facilitate this by maintaining elements of the existing frameworks where possible, minimising the necessary system updates and other changes. For example, our proposal would maintain the existing relationship between SRD units and directional interconnectors, not allow for negative payouts from SRD units, and continue to allocate net negative IRSR to CNSPs. Our allocation method for SRA proceeds and unsold SRD units would also be consistent with the status quo (that is, allocation to the importing region).

As noted in section 3.4.2, netting off would apply from the time the loop becomes operational and this would impact previously sold SRD units. Section 16 of the existing Auction Participation Agreement provides a mechanism by which unit holders may be able to terminate affected units and receive a refund.¹²³

We expect that CNSPs will have enough time to forecast and implement any TUOS adjustments. We consider our approach to sharing net negative IRSR between CNSPs based on rolling annual regional demand would provide sufficiently stable and predictable outcomes to assist with CNSP forecasting.

We would also make transitional arrangements to streamline AEMO's implementation. For example, our proposal would allow AEMO to use the expedited rules consultation procedure for changes to the auction rules and network constraint formulation guidelines, which is faster than the requirement for the standard rules consultation procedure.

See section 3.4 and section 4.5 for more detail on timing, implementation and transitional arrangements for the netting off proposal.

Our proposal for allocating cash flows between CNSPs balances uncertain outcomes with known practical complexities

Our proposal would allocate net negative IRSR between CNSPs in the looped regions based on regional demand. Net negative IRSR may be material, despite netting and clamping, so a decision to allocate to the importing region (as is the status quo) is not necessarily justified compared with sharing the costs proportionally to demand on the network.

However, we would not adopt this same approach for the remaining CNSP cash flows - that is, SRA proceeds and unsold SRD units would be allocated to the importing region. This is the status quo arrangement for these cash flows on radial interconnectors. We are uncertain of the benefits of changing the approach to allocating these cash flows, and we understand that changes here would come with costs and potentially delay other important system upgrades.

¹²³ The Auction Participation Agreement is available on AEMO's website: aemo.com.au/energy-systems/electricity/national-electricity-market-nem/market-operations/settlements-and-payments/settlements/settlements-residue-auction/auction-participant-agreement.

See section 4.3 for more detail on why the Commission is proposing this approach for allocating CNSP cash flows.

6 There may be a need to conduct a future review of IRSR arrangements

Box 8: Key points

- We consider there may be a need to review IRSR arrangements to determine whether they best meet the needs of both the current and future NEM.
- We have previously identified potential issues with IRSR arrangements, SRAs and SRD units that merit further attention to ensure that these arrangements are best serving the interests of consumers.
 - Our draft determination highlighted a significant gap between the SRA proceeds paid to consumers versus SRD unit payouts received by unit holders. Recent quarterly SRA results show that this trend is generally continuing.
 - We remain concerned that the SRA framework is not working as effectively as it could in the long-term interests of consumers, and consider that a future review could review this framework across both radial interconnectors and transmission loops.
- A future review could also consider:
 - The allocation method for SRA proceeds and unsold SRD units, once the IRSR outcomes around the loop can be observed through its operation.
 - Whether IRSR arrangements are best placed to support the NEM of the future.
 - Broader implementation considerations.
- The Commission considers there may be a case to delay a review into broader IRSR arrangements, including to better understand the findings of the NEM Expert Panel review as relevant context for an SRA review.
- We welcome stakeholder feedback on the timing, scope and content of a future review into IRSR arrangements.

In this chapter:

- Section 6.1 explains why our draft determination proposed reviewing SRA arrangements.
- Section 6.2 explains that SRA proceeds are consistently below SRD unit payouts.
- Section 6.3 considers that a review could examine broader issues that could not be examined in this rule change.
- Section 6.4 suggests that a review may be less urgent with a netting off policy approach.
- Section 6.5 seeks stakeholder feedback on a future review of IRSR arrangements.

6.1 Our draft determination proposed reviewing SRA arrangements

Our draft determination highlighted that we were concerned that:¹²⁴

- SRD units do not provide any hedge for consumers or market participants when IRSR is negative. This will become particularly problematic once PEC is commissioned and energised, given negative IRSR is likely to become more material.

¹²⁴ Refer to chapter 4 of the draft determination.

- SRD units are sold 'at a loss' for consumers.

We proposed to review the overall benefit of SRD units and the efficiency of the current arrangements for managing IRSR cash flows. This would include the extent to which SRD arrangements enable different stakeholders (market participants, CNSPs and consumers) to manage the risk of inter-regional price separation and IRSR. In so doing, we would also consider the flow-on implications of SRAs to consumers, and whether these changes would promote the NEO.

Under the proposed netting off approach outlined throughout this paper, the first concern above would be partially addressed. However, it would still remain in the case of net negative IRSR on looped interconnectors, and negative IRSR on radial interconnectors. This is discussed in section 6.3.1.

The second concern is not addressed by the proposals outlined in this paper. This is discussed in section 6.2.

6.2 SRA proceeds are consistently below SRD unit payouts

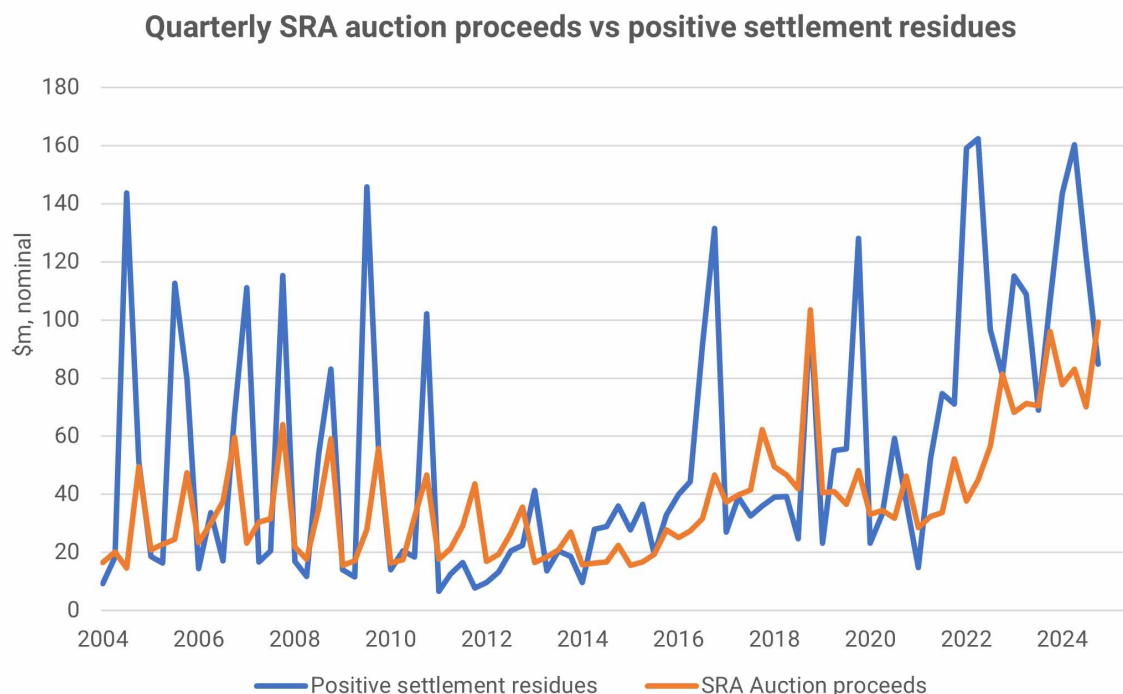
As outlined in chapter 2, SRD units have important benefits that flow through to consumers. They promote competition through:

- facilitating increased inter-regional trade,
- providing more efficient investment signals for new generation, and
- managing the risks that retailers and gentailers face in serving customers across regions.

The Commission remains concerned that the benefits of SRAs could be outweighed by the fact that the revenue consumers are receiving through SRA proceeds has proven to be much lower than the average value of the IRSR allocated to SRD unit holders over time. This concern arises regardless of the approach taken to allocate IRSR. As outlined in our draft determination, consumers have received an average of \$0.72 in SRA proceeds for every \$1 paid to SRD unit holders over the 20 years (80 quarters) from Q2 2004 to Q1 2024. A comparison of proceeds and payouts is provided in Figure 6.1.

There are several possible explanations for this, including that the SRAs are not sufficiently competitive. These results have led the Commission to question whether it is in the long-term interest of consumers to sell the SRD units at the price determined via the SRA, despite the broad benefits of SRD units to the market. For example, these outcomes suggest it is conceivable that consumers could be better off overall if SRD units were not sold, or were only sold above a certain reserve price. We intend to investigate these outcomes, their causes, and possible remedies through the proposed review.

Figure 6.1: SRA proceeds are persistently lower than actual positive residues



Source: AER data, [Quarterly settlement residues and settlement residue auction proceeds](#), December 2024; AEMO, [Auction Report 2025, Quarter 1](#), April 2025, p.21.

6.3 A review could examine broader issues that cannot be addressed in this rule change

The Commission considers there is a case to review further matters relating to IRSR arrangements at a future date, which we were unable to examine in this rule change:

- It is not within the scope of this rule change to propose a new policy position for negative IRSR on radial interconnectors (see chapter 4).
- We are constrained by not having operational observations or data about outcomes around the loop. For example, the method for allocating cash flows resulting from IRSR around the loop amongst CNSPs could benefit from data reflecting the loop dynamics and loop IRSR (see chapter 4).
- The Commission is mindful that the NEM Expert Panel review is currently underway, which would provide relevant context to any future review.
- A review could consider broader implementation considerations such as the functionality of the software platform by which SRAs are provided and managed.

6.3.1 A review could examine the allocation of all negative IRSR

Our proposal in this directions paper is to allocate only net positive IRSR arising in transmission loops to SRD unit holders. The position put forward in this paper is to:

- allocate net negative IRSR in a transmission loop to CNSPs, for the reasons provided in section 3.1, notably because of the limitations and complexities of other options, which are unlikely to be in the best interests of consumers.

- allocate all negative IRSR on radial interconnectors to CNSPs (and consumers via TUOS), for reasons provided in section 4.4.

However, we consider there could be further benefits from allocating all IRSR to SRD unit holders – including net negative IRSR in a transmission loop and negative IRSR that arises on radial interconnectors. This is because consumers and the market are natural counterparties for both positive and negative IRSR. Chapter 2 discusses the advantages of market participants – rather than CNSPs or another party – managing inter-regional price risks arising from negative IRSR, as well as being able to manage their pricing exposure through access to positive IRSR through SRAs. Therefore, a future review could consider allocating all positive and negative IRSR to SRD unit holders. This may enable market participants (collectively) to manage their own risk more effectively, while also reducing risks for consumers.

Through the review, we would holistically consider the design of the SRA and SRD units. This could include consideration of altering the SRA design to allow for negatively paying SRD units, enabling the allocation of net negative IRSR to SRD units (looped) and negative IRSR to SRD units (radial). Doing this could remove all consumers' and CNSPs' direct exposure to negative IRSR, but would require in-depth design considerations such as how a negative SRD unit could be purchased, for example, through receiving a known unit price in exchange for paying an unknown amount of negative IRSR. A review would carefully consider the trade-offs involved in these and other changes.

6.3.2 A review could re-examine the allocation method for SRA proceeds and unsold SRD units

Section 4.3 explains our proposal to allocate SRA proceeds and unsold SRD units to the importing region consistent with the status quo arrangements, and to allocate net negative IRSR between the looped regions by regional demand. Key reasons for this differentiated approach are:

- In the case of SRA proceeds and unsold SRD units - concerns about on-time implementation, favouring the allocation to importing region for positive cash flows.
- In the case of net negatives - we recognise that net negative IRSR could still be a materially high risk for CNSPs to manage, despite AEMO's proposed clamping approach, and so it is appropriate to share this risk between the looped regions by regional demand.

We do not consider that further modelling or investigation will aid our understanding of how the costs and benefits of the loop will operate in advance of the loop's physical operation from mid-2026. Our draft determination explained our reasons for not commissioning further modelling in this rule change. These primarily concern the complexity of the transmission loop and the sensitivity of outcomes to a wide range of factors, including the formulation of the loop constraint, spot prices, demand patterns, network constraints, participant bidding behaviour and other factors, all of which are difficult to forecast and leave modelling exposed to a potentially wide margin of error.¹²⁵

Given these limitations, it may be appropriate to delay a future review of IRSR arrangements until after the PEC transmission loop has operated for a period of time - see section 6.4.

6.3.3 A future review would benefit from the findings of the NEM Expert Panel review

We note that the NEM Expert Panel review is currently undertaking work to recommend wholesale market settings to promote investment in firmed, renewable generation and storage capacity in the NEM following the conclusion of Capacity Investment Scheme tenders in 2027.

¹²⁵ AEMC, IRSR arrangements for transmission loops, [Draft determination](#), pp.20-21.

The Commission considers there may be a case to delay a review into broader IRSR arrangements to better understand the findings of the NEM Expert Panel review as relevant context for an SRA review.

6.4 Our revised approach may mean that reviewing these issues is less urgent

Our draft determination proposed a review as early as 2025-26 subject to the AEMC's work program.¹²⁶

Our netting off proposal in this paper substantially resolves the risk of extreme, unpredictable negative IRSR arising in transmission loops by netting off negative IRSR that arises in overall net positive loop outcomes.¹²⁷ However, consumers are still exposed to unhedged 'net negative' IRSR on looped interconnectors, as well as to negative IRSR on radial interconnectors. Although a majority of the NEM's interconnectors will be incorporated into the transmission loop upon its operation, the Commission considers that the long-term interests of consumers may be best promoted by addressing this issue holistically across all regulated interconnectors.

Stakeholders put forward views about the importance of SRAs and concerns about changing them.¹²⁸ We understand these concerns, but consider that a netting off approach best promotes the NEO. We also recognise there is a case to review the effects of a netting off approach on hedging and inter-regional trade at a later date.

Data from PEC's operation may help quantify the benefits of the loop for each region, or may show this to be a continued challenge due to its physics.¹²⁹ This information may be useful in confirming the appropriate allocation method for SRA proceeds and unsold SRD units - for example, whether there is a case to share this between the looped regions according to regional demand, consistent with the allocation of net negative IRSR.

Given the difficulties in modelling the transmission loop and its inherent uncertainties, a number of stakeholders also supported delaying a review into SRA arrangements until we had the benefit of PEC's operational data.¹³⁰

As a result of the above, the Commission considers that it may be more appropriate to review the broader IRSR arrangements with the effects of this rule change, when we have the benefit of PEC's operational data. This would also allow the Commission to consider any relevant context from the NEM Expert Panel review.

6.5 We are interested in stakeholder views on the need for, and timing of, a review of IRSR and SRA arrangements

The Commission acknowledges that NEM stakeholders are subject to many rule changes and reviews, which can affect their capacity to contribute meaningfully to reviews. The NEM Expert Panel review is also considering broader fundamental changes to the NEM.¹³¹

¹²⁶ Refer to section 4.4 of the draft determination, p.42.

¹²⁷ AEMO's approach to clamping also mitigates this risk.

¹²⁸ Submissions to the draft determination: AFMA, p.1; Origin Energy, p.1; Stanwell, p.1

¹²⁹ In submissions to the draft determination (EnergyAustralia, p.1; EUAA, p.3; ENA, p.2), some stakeholders suggested that the Commission should use modelling to assess the risks and benefits of IRSR allocation methods in the loop. We have not progressed with further modelling since the draft determination, as it is unlikely to be meaningful without operational data. JEC (submission to the draft determination, p.2) supported further consideration of the loop's costs and benefits after the loop begins operating.

¹³⁰ Submissions to the draft determination: AEMO, p.7; ENA, p.3; JEC, p.2; Stanwell, p.2; AEC, pp.1-2.

¹³¹ Australian Government, Department of Climate Change, Energy, the Environment and Water, [National Electricity Market wholesale market settings review](#).

We are interested in stakeholder feedback on the need for, scope of, and timing of, a review. Stakeholder feedback helps the AEMC prioritise its workload.

We also note that stakeholders can submit a rule change request if they consider the IRSR, SRA or SRD unit arrangements to be unsatisfactory. The AEMC has a prioritisation process for rule change requests it receives.

A Worked example: Market participants contracting for IRSR

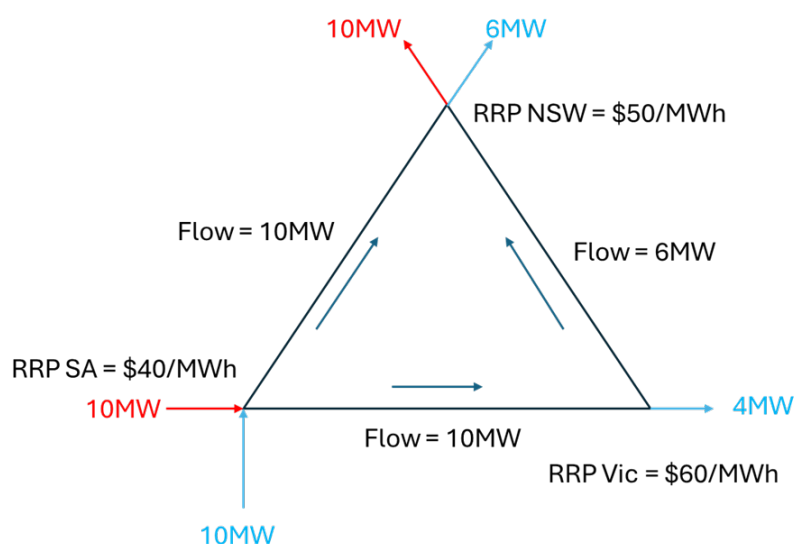
In this example, there are two vertically aggregated ‘gentailers’, which have generators in one region serving retail load in another.

- Gentailer A, represented in red, has 10 MW of generation in SA and 10 MW of load in NSW.
- Gentailer B, in blue, has 10 MW of generation in SA, 6 MW of load in NSW and 4 MW of load in Victoria.

This represents the entire market in this simplified example. Each of the companies’ supply and demand balances individually (i.e., both have 10 MW generation and 10 MW load).

The injections, withdrawals, flows and prices are illustrated in Figure A.1.

Figure A.1: Power flows and prices for worked example with two gentailers



We ignore losses, and for simplicity we also assume the dispatch interval is one hour. Note that the flow from NSW to Victoria is counter-price, and so the IRSR on that arm is negative.

The hourly IRSR on each arm¹³² is calculated in Table A.1.

Table A.1: IRSR for each arm of the loop and net loop IRSR

Arm	IRSR (per hour)
SA-NSW	$(50 - 40) \times 10 = \$100$
SA-VIC	$(60 - 40) \times 10 = \$200$
NSW-VIC	$(50 - 60) \times 6 = -\$60$
Total	\$240

¹³² There are six directional interconnectors – three clockwise and three anti-clockwise. The other three directional interconnectors have an IRSR of zero and so are not represented here for simplicity.

Table A.2 compares the SRA payouts and negative IRSR allocated to the CNSPs in the netted and unnetted approaches for the interval. We have used the netting off approach that is proposed in this directions paper (see chapter 3).

Table A.2: Netted and unnetted SRD unit payouts

SRD unit	Unnetted payout (per hour)	Netted payout (per hour)
SA-NSW	\$100	\$80
SA-VIC	\$200	\$160
NSW-VIC	\$0	\$0
Negative IRSR recovered from CNSPs	-\$60	\$0
Total	\$240	\$240

We consider the inter-regional price separation risk faced by gentailers A and B. The gentailers' wholesale market revenues without SRD units are shown in Table A.3. Note that the total revenue for the two entities is -\$240/hour, which is equal and opposite to the sum of the IRSR.

Table A.3: Gentailer wholesale market revenues without SRD units

Gentailer	Revenue in SA (per hour)	Revenue in VIC (per hour)	Revenue in NSW (per hour)	Total revenue (per hour)
A	$10 \times 40 = \$400$	\$0	$-10 \times 50 = -\$500$	-\$100
B	$10 \times 40 = \$400$	$-4 \times 60 = -\$240$	$-6 \times 50 = -\$300$	-\$140

If gentailer A acquires all of the unnetted SA-NSW SRD units, then it exactly offsets its inter-regional price risk. For this participant, the unnetted approach seems best. However, if gentailer B buys all of the unnetted SA-VIC units, it would receive a \$200/hour payout (Table A.2), which is \$60/hour more than it requires to cover its revenue shortfall (-\$140/hour, Table A.3). This is an undesirable outcome because the additional \$60/hour is ultimately recovered from consumers via CNSPs, and also because gentailer B may have paid a higher price at auction for SRD units that don't fully align with its underlying risk. With the unnetted approach, it is impossible for all market participants to exactly hedge their risks, and there will always be a market surplus that is paid for by consumers.

We now consider the netted SRD units. If gentailer A buys all of the SA-NSW SRD units, this only covers \$80/hour of its \$100/hour shortfall. It is exposed to a loss of \$20/hour. This is seemingly worse for gentailer A than the unnetted case, until we consider that it can also enter into a trade with gentailer B. If gentailer B buys all of the SA-VIC SRD units then it receives \$160/hour, which is \$20/hour more than required to manage its inter-regional price risk. Gentailers A and B can therefore enter into a subsequent trade for the excess \$20/hour, so that both gentailers can exactly manage their risk. Nothing is recovered from CNSPs and consumers (Table A.2). The netting off approach therefore enables market participants to manage inter-regional price risk without placing the costs and risks of negative IRSR (in net positive cases) on consumers.

Abbreviations and defined terms

ACE	Adjusted consumed energy
AEC	Australian Energy Council
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFMA	Australian Financial Markets Association
ARD	Annual regional demand
Commission	See AEMC
CNSP	Co-ordinating Network Service Provider
DNSP	Distribution Network Service Provider
DUOS	Distribution use of system
ENA	Energy Networks Australia
EUAA	Energy Users Association of Australia
IRSR	Inter-regional settlements residue
JEC	Justice and Equity Centre
MWh	Megawatt hour
NEL	National Electricity Law
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine
NEO	National Electricity Objective
NER	National Electricity Rules
NRM	Negative residue management
PEC	Project EnergyConnect Stage 2
Proponent	The proponent of the rule change request
RRP	Regional reference price
SRA	Settlements residue auction
SRD	Settlements residue distribution
TNSP	Transmission Network Service Provider
TRD	Total regional demand
TUOS	Transmission use of system
UFE	Unaccounted for energy
WACC	Weighted average cost of capital